

Chapter 15

Agricultural Transformation, Poverty Alleviation, and Improvement of Livelihoods in Himachal Pradesh, India

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INTRODUCTION

Himachal Pradesh (HP) is a small mountain state in the western Himalayas covering an area of over 55,000 sq km. Its 6.1 million population is 90% rural, living in over 20,000 villages. The arable land is about 11%, of which less than 17% is irrigated. Around 85% of farmers have small, marginal landholdings—the average size is 1.2 ha. With altitudes ranging from 350 – 6900m, the area has four agro-climatic regimes of low hills (below 650m, humid mid-hills (650 - 1800m), a wet temperate mountain zone (1800 – 2200m), and cold and dry highland (above 2200m).

The state has made significant progress in alleviating the poverty of hill and mountain farming communities and in transforming the living conditions of its people during the last 30–40 years. The state has developed a new concept in the development of hill economies (Dreze and Sen 2002; Verma and Partap 1992). The state's development experience has recently drawn the attention of scholars and policy-makers, and has come to be recognised as a model of development for other mountainous states, not only in India but in the whole Hindu Kush-Himalayan region. Dreze and Sen remark, "The experience of Himachal Pradesh illustrates an important feature of contemporary development patterns in India" (Dreze and Sen 2002).

This paper seeks to examine the extent of rural transformation regarding socioeconomic aspects, inter-regional variations in levels of development, factors that facilitated the process of transformation, and lessons that can be learned from the success story of Himachal Pradesh. Following an introduction, the next section explains the extent of rural transformation

regarding different socioeconomic aspects, including inter-regional variations in the levels of development. The factors that facilitated the process of transformation are then discussed in the third section. The fourth section discusses emerging constraints and problems that endanger the sustainability of the transformation process. The policy interventions required to sustain the ongoing process of rural transformation are discussed next, and a final summary highlights the salient features of the rural transformation process and draws important lessons that emerge from HP's development experience.

THE EXTENT OF RURAL TRANSFORMATION

The state has undergone rapid rural transformation since its formation, when it was considered one of the least developed regions in the country (Sharma 1987). The indicators of socioeconomic development in the state vis-à-vis Haryana (one of the most developed states in the country) and all-India are given in Table 1. The table shows that despite difficult mountain terrain and associated constraints, the state has performed equally well or even better than Haryana. Most of the socioeconomic indicators, such as infant mortality rate, total fertility rate, proportion of children who have been vaccinated, death rate, life expectancy, proportion of births attended by health professionals, and so on, indicate better performance of HP compared to other states and the all-India average. Likewise, performance in female literacy, access to education for children of different income and social groups, share of expenditure on education (including elementary education) in the net state domestic product, per capita expenditure on education and health, and so on are much higher in HP than in other states despite similar levels of per capita household expenditure. The state has also recorded a much lower decadal population growth, 17.5% compared to 21.3% at the all-India level.

The extent of infrastructural development in the state, which created an enabling environment for the development of social opportunities, is shown in Table 2. The availability of basic amenities like hospital beds, safe drinking water, and electricity is much higher than the all-India average. The number of educational institutions, health centres, and post offices per 100,000 is also much higher than average. The high road density is especially noteworthy in light of the mountain terrain and higher construction costs.

The easy availability of health, education, and other infrastructure has led to a substantial improvement in the living conditions of the local people, as demonstrated by a number of indicators such as low incidence of poverty; high per capita household expenditure and growth of per capita

Table 1: Rural transformation in Himachal Pradesh: selected indicators of social development

| No | Particulars | Unit | Himachal Pradesh | Haryana | All-India |
|-----|--|------|------------------|---------|-----------|
| 1. | Infant mortality rate (1997-99)(per 1000 births) | No | 63 | 69 | 71 |
| 2. | Total fertility rate (1996-8) | % | 2.4 | 3.4 | 3.3 |
| 3. | Decadal population growth (1991-2001) | % | 17.53 | 28.06 | 21.34 |
| 4. | Proportion of young children who have received vaccinations (all) | % | 83 | 63 | 42 |
| | At least one dose of vitamin A | % | 71 | 45 | 30 |
| 5. | Proportion of births attended by health professionals | % | 40 | 42 | 42 |
| 6. | Proportion of mothers who know about oral rehydration solution (ORS) | % | 93 | 72 | 62 |
| 7. | Proportion of households using adequately iodised salt | % | 91 | 71 | 40 |
| 8. | Life expectancy at birth | Yrs. | 65.2 | 64.6 | 61.8 |
| | Female | | 64.6 | 63.7 | 60.4 |
| | Male | | | | |
| 9. | Death rate per 1000 (1997-99) | % | 7.7 | 8.0 | 8.9 |
| 10. | Birth rate per 1000 (1997-99) | % | 23.0 | 27.6 | 26.6 |
| 11. | Female : male ratio per 1000 | No | 970 | 861 | 933 |
| 12. | Proportion of child population (0-6) in total population (2001) | % | 13.34 | 15.81 | 15.47 |
| | Male | | 12.32 | 15.05 | 15.36 |
| | Female | | 12.84 | 15.46 | 15.42 |
| | Total | | | | |
| 13. | Proportion of women aged 20-24 married before 18 (1998-99) | % | 11 | 42 | 50 |
| 14. | Proportion of currently married women who are using contraceptives | % | 68 | 62 | 48 |
| 15. | Literacy rate | % | | | |
| | Female | | 68 | 56 | 54 |
| | Male | | 86 | 79 | 76 |
| | Total | | 77 | 68 | 65 |

Table 2: Rural transformation in Himachal Pradesh: selected indicators of infrastructural development

| No. | Particulars | Unit | Himachal Pradesh | Haryana | All-India |
|-----|--|----------------|------------------|---------|-----------|
| 1. | Hospital beds per million persons | No. | 1663 | 600 | 926 |
| 2. | Proportion of rural households having access to safe drinking water (1991) | % | 77 | 68 | 64 |
| 3. | Proportion of households with electricity connection | % | 97 | 89 | 60 |
| 4. | Road length per 100 sq. km | km | 44.3 | 63.1 | 73.0 |
| 5. | Telephone per 100 sq. km | No. | 5.2 | 15.2 | 8.7 |
| 6. | Telephone per 100 population | No. | 4.3 | 3.4 | 2.9 |
| 7. | Proportion of ever married women aged 15-49 exposed to any media (1998-99) | % | 84 | 67 | 60 |
| 8. | Primary health centres | No/100,000 pop | 5.00 | 2.19 | - |
| 9. | Primary schools | No/100,000 pop | 138.65 | 30.41 | - |
| 10. | Middle/high school | No/100,000 pop | 18.60 | 7.74 | - |
| 11. | Post offices | No/100,000 pop | 49.35 | 14.35 | - |
| 12. | Bank branches (1997-98) | No/100,000 pop | 12.75 | 8.80 | 7.70 |

Source: As given in Table 1.

expenditure; high, real daily wage earnings of agricultural labourers; and so on (Table 3). The proportion of households having no cultivated land, proportion of agricultural labourers in the total workforce, proportion of assets owned by poor households, gini coefficient of per capita consumer expenditure, and the gini coefficient of distribution of ownership and operational holdings, and so on point towards a relatively egalitarian socioeconomic structure compared to many other north Indian states. This enabled people of all groups to participate in the development process, fostered growth with equity, and led to a process of widely-shared development. The low incidence of poverty and the availability of educational, health, and other infrastructure stand in sharp contrast to the situation prevailing in other mountainous regions in India and in those of China where poverty, inequality, and deprivation exist (Chand 2000).

Intra-state variations

The inter-district variations in areas like net state domestic product, growth rate of cereal production, growth rate of state domestic product, literacy, and so on are presented in Table 4, Annex I, and Annex II. Areas where cultivation of high-value cash crops like off-season vegetables and apples has been adopted widely enjoy high per capita income compared to other areas. Some other areas have also recorded high growth rates in the state domestic product. Second, employment in the public sector (including the army) is relatively higher in the low hill areas. Resulting remittance flows and exposure of the people to external influences are two important factors that facilitated the process of rural transformation. Third, cereal production recorded higher growth rates in the mid-hill areas, especially in the fertile valleys. Fourth, there are wide variations in the proportion of rural workers employed in the non-farm sector; it was very high in low-hill areas compared to others. Fifth, fruit production recorded significant growth between 1980-81 and 1997-98. Sixth, the area under vegetable cultivation is higher in the mid-hills compared to other areas. Most of this area is given to cultivating off-season vegetable crops because of suitable agro-climatic conditions. Seventh, compared to female literacy, male literacy is fairly high in all areas. Most impressive is the increase in literacy for children under 15 years of age, both boys and girls, which is over 90%.

FACTORS THAT FACILITATED TRANSFORMATION

The spectacular success the state has achieved in different social and economic spheres has been attributed to features such as the high proportion of persons employed in the public sector, flourishing fruit orchards, high level of per capita development expenditure and well-directed public intervention in support of social opportunities, the activity of women (gender relations being less patriarchal than elsewhere in India),

Table 3: Rural transformation in Himachal Pradesh: selected indicators of economic development

| No | Particulars | Unit | Himalchal Pradesh | Haryana | All-India |
|-----|---|--------|-----------------------------|-----------------------------|------------------------------|
| 1. | Proportion of poor (1999-2000) Head count ratio Poverty gap index | % | 7.5 1.0 | 7.4 1.3 | 26.8 5.2 |
| 2. | Average household expenditure per capita (1999-2000) | Rs/m | 740 | 771 | 589 |
| 3. | Growth rate of real per capita state domestic product (1992-93 to 1998-99) | %yr. | 4.6 | 3.1 | 4.4 |
| 4. | Annual growth of per capita expenditure (1993-94 to 1999-2000) | % | 5.06 | 3.05 | 4.36 |
| 5. | Gini coefficient of per capita consumer expenditure | | 0.10 | 0.10 | 0.18 |
| 6. | Proportion of rural households not owning any agricultural land (1992-93) | % | 16 | 43 | 36 |
| 7. | Proportion of asset-poor households | % | 7.0 | 11.0 | 40.0 |
| 8. | Gini coefficient of ownership holdings (1991-92) | | 0.60 | 0.68 | 0.71 |
| 9. | Gini coefficient of operational holdings (1991-92) | | 0.54 | 0.68 | 0.64 |
| 10. | Proportion of agricultural labourers in rural population (1991) | % | 1.0 | 7.0 | 11.0 |
| 11. | Daily real wage earnings of agricultural labourers Male Female | Rs/D | 10.82 8.85 | 9.72 8.29 | 7.62 5.42 |
| 12. | Proportion of population receiving subsidised cereals from the public distribution system | % | 45 | 5.0 | 27 |
| 13. | Per capita consumption of cereals obtained through public distribution in rural areas (1993-94) | Kg/yr. | 31.8 | 1.4 | 30.0 |
| 14. | Growth rate of number of rural enterprises | % | 2.63 | 1.62 | 2.27 |
| 15. | Growth rate of workers in rural enterprises | % | 2.73 | 1.60 | 2.15 |
| 16. | Proportion of ever married women (15-49 yrs) who have access to money | % | 80 | 71 | 60 |
| 17. | Rural workforce structure (1999-2000) Agriculture Rural male Rural female Non-agriculture Rural male Rural female | % | 71.4 96.1 44.7 4.9 | 59.5 92.7 40.5 7.3 | 71.4 86.3 28.6 13.7 |
| 18. | Rural labour force participation rates (1999-2000) Male Female Total | % | 54.6 47.4 50.9 | 48.1 20.2 34.9 | 54.0 30.2 42.3 |
| 19. | Rural workforce participation rates (1999-2000) Male Female Total | % | 98.2 99.4 98.8 | 98.8 100.0 99.1 | 98.3 99.0 98.6 |

Source: As given in Table 1.

local democracy and social co-operation, and so on (Dreze and Sen 2002). These features result from important factors that need to be explained to understand the process of rural transformation, its limitations, emerging constraints, lessons, and possible policy interventions. Moreover, because of high inter-regional differences in agro-climatic conditions, different factors have accelerated socioeconomic development in different areas of the state. For example, while cultivation of high-value cash crops like apples played an important role in districts like Shimla, Kullu, Kinnaur, Lahaul and Spiti, and parts of Solan, Sirmaur, and Chamba, relatively high public sector employment was an important factor in districts like Kangra, Hamirpur, Una, and Bilaspur. This section discusses the factors that contributed towards facilitating the process of transformation.

The adoption of development strategy responding to the imperatives of mountain specificities (i.e., specific niches and constraints) has been the singlemost important factor facilitating rural transformation in HP. In the beginning, planners accorded very high priority to creating basic infrastructure to address the problems of access and mobility. Table 5 shows that transport, communications, power, and social services; including education and health; accounted for more than half of the total plan outlay in the first three five-year plans (1951-1966). These high allocations led to a fairly good network of roads that connected the interiors with main towns and cities, thus breaking the barriers of inaccessibility and isolation, and created facilities such as schools and hospitals. The state has a huge potential for production of hydroelectricity—estimated to be 12,435 megawatts, which is about 20% of the country's total potential. The high allocations to this sector, particularly since the fourth plan, helped not only to further strengthen infrastructural facilities but also to earn additional revenue for the state.

Infrastructure and farm sector focus

The high resource allocations to the agricultural sector coupled with the creation of basic infrastructure created conditions for its development. The horticultural sector made rapid strides. The area under fruit cultivation, including apples, increased from 26,307 ha in the triennium ending 1967-68 to 205,613 ha in the triennium ending 1999-2000, and production rose from 48,492 to 272,264 tonnes. The area under apple cultivation during the same period increased from 15,148 to 84,772 ha, and the production from 30,748 to 225,679 tonnes. Apples are the most important fruit crop, accounting for 80% of all fruit production and around 67% of the total area under fruit crops. Other fruits such as plums, pears, citrus fruits, mangos, and litchis do not have comparative cost advantages and therefore cannot compete with those produced in the plains.

Table 5: Resource allocations in different five year plans; first to ninth five year plans (%)

| Sectors | First Plan 1951-56 | Second Plan 1956-61 | Third Plan 1961-66 | Annual Plan 1966-69 | Fourth Plan 1969-74 | Fifth Plan 1974-79 | Sixth Plan 1980-85 | Seventh Plan 1985-90 | Eighth Plan 1992-97 | Ninth Plan 1997- 2002 |
|--|-----------------------|---------------------------|--------------------------|---------------------------|---------------------------|-----------------------|--------------------------|----------------------------|---------------------------|--------------------------------|
| 1. Agriculture & allied services | 17.56 | 22.90 | 28.43 | 27.74 | 30.76 | 22.49 | 22.61 | 25.70 | 20.72 | 19.22 |
| 2. Irrigation | 9.78 | 3.22 | 2.69 | 4.85 | 2.91 | 5.10 | 6.21 | 7.09 | 4.78 | 4.54 |
| 3. Power | 5.87 | 14.52 | 7.05 | 19.56 | 15.23 | 25.11 | 24.94 | 25.22 | 20.21 | 18.23 |
| 4. Industry | 1.95 | 3.23 | 3.62 | 4.27 | 4.14 | 3.66 | 3.22 | 2.53 | 3.02 | 2.63 |
| 5. Transport & communication | 44.66 | 31.16 | 34.08 | 28.65 | 29.90 | 23.04 | 21.91 | 15.67 | 13.23 | 10.78 |
| 6. Social services of which: | 19.96 | 23.16 | 22.63 | 14.25 | 16.69 | 18.14 | 19.33 | 20.19 | 29.90 | 36.95 |
| Education | 8.86 | 7.74 | 7.98 | 5.82 | 7.01 | 5.19 | 3.17 | 6.21 | 11.36 | 14.33 |
| Health | 6.37 | 5.41 | 6.12 | 3.37 | 4.09 | 3.13 | 2.89 | 2.50 | 4.84 | 5.57 |
| Others | 4.73 | 10.01 | 8.53 | 5.06 | 5.69 | 9.82 | 13.27 | 11.48 | 13.70 | 17.04 |
| 7. Miscellaneous | 0.22 | 1.81 | 1.50 | 0.68 | 0.37 | 2.46 | 2.50 | 3.60 | 8.14 | 7.65 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 9. Plan outlay (100,000 Rs) | 564.40 | 1472.53 | 2793 | 4022 | 10,140 | 23,895 | 56,000 | 105,000 | 250,200 | 570,000 |
| 10. Per capita per annum investment (Rs) | 4.00 | 11.00 | 21.00 | 40.00 | 61.20 | 100.50 | 287.80 | 544.59 | 1353.60 | 2205.03 |

Source: HP (1971), (1976), (1981), (1989), (1994) and (1999), HP (1997-98)

More recently, the state's agriculture has been undergoing a rapid 'demand-driven niche-based' transition; the cultivation of off-season vegetables like peas, cabbage, beans, tomatoes, and so on is fast spreading to new areas, including those that were earlier growing apples. While apples can be grown only in a temperate belt because of their agro-climatic requirements, off-season vegetables can be grown in large areas, including some areas in low-hill districts like Hamirpur, Kangra, and Bilaspur. As a result, the sown area of vegetables increased from 25,000 ha in 1995-96 to 29,000 ha in 1998-99, and production from 425,000 to 500,000 tonnes. The high allocations to agriculture coupled with high priority to transport enabled even the most difficult areas, including the tribal areas of Kinnaur, Lahaul and Spiti, and the Pangi and Bharmaur regions of Chamba district, to benefit from diversification of agriculture.

Agro-linked off-farm activities

The cultivation of high-value cash crops promotes employment in a number of non-farm activities through strong backward and forward linkages. For example, it has given rise to a number of activities in trade and business; numerous shops have come up to supply chemicals and other inputs, post-harvest material like packing boxes, transportation facilities, nursery plants, and so on. It has also given a big boost to local cottage industries like manufacturing bamboo baskets. Many people in these areas have bought tractors, pick-up vans, and trucks and are supplying construction material, transporting fruit and vegetables, and so on. Numerous repair shops for scooters, televisions, cars, and other consumer goods have also come up to cater to the needs of local people. The most important effect has, however, been construction activities causing a surge in demand for carpenters, masons, and unskilled labour as well as increasing demand for construction material like cement, iron and steel, and bricks. This has had a significant effect on the wages and employment of the local labour force, both skilled and unskilled. High-value cash crop agriculture has also given rise to a powerful rural-urban nexus.

The cultivation of high-value cash crops has also promoted agroforestry in the neighbouring states of Punjab and Haryana, and these states have hence become an important source of timber for packing boxes in HP. The economic and ecological impacts of the cultivation of apples and other high-value cash crops have been well documented by now (Chand 1998; Dahiya and Singh 1997; Sharma 1996). Recent studies have shown that net returns from off-season vegetables are much higher than other crops, including fruit crops (Mehta et al. 1998).

External market links and responsive farmers

The transformation of cereal-dominated agriculture to high-value cash crops has been facilitated by a host of factors. The availability of a huge market in Delhi and other places in neighbouring states has contributed greatly. Delhi is reachable in less than 24 hours from almost all parts of HP, and in less than 12 hours from important areas like Shimla, Sirmaur, Mandi, and Kullu. Vegetables are therefore harvested during the day and packed and transported to Delhi that night, reaching markets the next day while retaining freshness and quality. This has been further facilitated by the availability of fairly efficient means of transportation and communication and a vast road network. This gives HP an advantage over other mountainous regions in Jammu and Kashmir and the north-eastern states where lack of nearby markets has limited the cultivation of high-value cash-crops.

The rapid spread of cultivation of off-season vegetables is due to the very high level of preparedness, awareness, and market consciousness among farmers. Many factors have contributed towards this. Farmers in Shimla, Solan, and Kullu districts have traditionally grown cash crops like potatoes and fruit and have remained in touch with markets outside the state. They have developed a spirit of innovation and are ready to experiment with new crops or enterprises that promise high economic returns. For instance, when potatoes ceased to be a cash crop in the 1950s and early 1960s due to falling yields, diseases, and falling demand, they switched to cauliflowers and subsequently to other off-season vegetables. Likewise, in recent times when apple production is fluctuating and becoming uncertain because of erratic weather, farmers in some areas have started switching to off-season vegetables and even to floriculture. The leading farmers always remain in touch with research institutions and other sources of seeds. They introduce new crops, and others soon follow them. The belief that mountain farmers are conservative and risk averse does not hold true; even marginal and sub-marginal farmers have completely switched to cultivating high-value cash crops and are buying cereals from the public distribution system and even the market (Sharma 1996).

Political commitment/patronage

Committed state intervention and political encouragement and promotion played important roles in popularising cultivation of high-value cash crops. Initially massive subsidies were given to set up plant nurseries, for digging pits, procuring inputs and agricultural implements, etc. to popularise and promote apple cultivation. In many cases apple orchards were planted on private lands by the forest department to encourage people to adopt apple cultivation. A network of institutions was created by setting up a

directorate of horticulture in 1961, appointing a horticultural officer, opening training schools to train growers to prepare nurseries and plant apple orchards. The Himachal Pradesh Horticultural Produce Marketing and Processing Corporation (HPMC) was set up in 1971 with the assistance of the World Bank to provide post-harvest infrastructure like link roads, cold storage, grading and packing facilities, and so on.

Support prices have been introduced for different fruit crops to insulate farmers from fluctuations in market prices. In more recent times, a market intervention scheme has been introduced under which the prices of different fruit crops are fixed according to the grade and quality. If prices fall below these levels, the state government purchases the produce at fixed prices. A vast network of R & D infrastructure has been created to evolve and provide technical know-how to farmers. In addition to an agricultural university, a separate University of Horticulture and Forestry has been established to provide technical back-up to the growing horticultural sector. The central government has also established research institutions to strengthen R & D facilities—the Central Potato Research Institute in Shimla, National Institute of Mushroom Research in Solan, Indian Agricultural Research Institution (IARI) Regional Research Station for Vegetable Research in Katrian (Kullu), and the Institute of Himalayan Bio-resources in Palampur are notable examples. These research institutions have played a vital role in promoting the adoption of high-value cash crops.

The emergence of a relatively efficient marketing system is another factor contributing to adoption and popularisation of high-value production options. In areas where the cultivation of off-season vegetables is 10-15 years' old, local youths have come together and formed cooperatives to market their produce. They act as forwarding agents, collecting produce from small and marginal producers and delivering it to sales' agents in the markets. The system is less exploitative than others, particularly for the small and marginal farmers who have only a little marketable surplus and cannot afford to market their produce. The forwarding agents supply credit to the farmers for buying inputs and also for consumption purposes in exchange for marketing their output. In other areas, a relatively less efficient marketing system has evolved. Under this, growers sell their produce to traders at prices much lower than those prevailing in the market. Discussions with the growers, however, reveal that they know about this difference. The formation of cooperatives by local youths has also started taking place in these areas. The state marketing board also played an important role in boosting the cultivation of high-value cash crops. It has opened marketing yards and established regulated markets where small and marginal growers sell their produce.

The emergence of self-help institutions, such as fruit growers' associations/cooperatives, in some producing regions has also promoted cultivation of high-value cash crops. These institutions help farmers, particularly the small and marginal farmers, in different ways; by procuring inputs and marketing their produce for example. The Lahul Potato Growers' Cooperative Society is a notable example that played an important role in promoting seed potato cultivation in Lahul Valley.

PREPARING TO FACE NEW CHALLENGES

The process of rural transformation in HP state is challenged by a number of emerging problems. The backward and forward linkages arising from the cultivation of high-value cash crops have not stimulated growth in the industrial sector, especially small-scale agro-processing and other industries. These benefits have mostly spilled over to the neighbouring provinces. For example, the cultivation of high-value cash crops has given a big boost to construction activities. The service sector has also not given sufficient boost for the development of other industries, particularly through the effects of forward linkages, and most of the consumer demand for durable goods is met by importing them from neighbouring cities in the plains of India.

Economic reform and falling state support

Assistance has declined, especially since the beginning of the 1990s, which is partly attributed to the changes made on the recommendations of the Ninth Finance Commission. The decline in central assistance, coupled with mounting expenditure, has led to a huge gap between revenue and expenditure obliging the state to borrow, and the debt burden has increased. Decreasing financial assistance coupled with a lack of internal sources of revenue has led to financial unsustainability, which may affect the whole process of rural development. To counter it the state is now advocating payment of compensation for ecological services it offers to the country and, when that happens, it will adequately compensate for the deficit (Azad et al. 1988).

Liberal trade policies

The new outward-looking open trade policies/strategy and joining the World Trade Organization (WTO) have led to the import of apples under Open General License (OGL), and this may pose new problems. Cheaper imports can adversely affect the production of hops, honey, and rabbit wool and sericulture. The problem is likely to emerge in times to come, particularly for horticultural crops. The role of institutions and government line departments in supplying different inputs has declined significantly in

recent years. Since farmers are increasingly switching to hybrids, private seed companies have become an extremely important source of seed supplies. These companies are so far not amenable to any regulatory mechanism and go unpunished in the event of the supply of spurious seeds and chemicals. Not only that, because of their monopoly, they exploit farmers by charging exorbitant prices.

In an era of fast-changing technological developments, hilly regions, or for that matter any region, cannot take their natural comparative advantages as given forever. Experience shows that advantages are now acquired through manmade circumstances like technology and innovations. Many hill areas have lost their comparative advantage due to technological changes outside, as in many crops like off-season vegetables, seed potatoes, etc. that are grown on a large scale in the plains under controlled conditions. The process is likely to be accentuated with the intensification of globalisation, which is bound to bring in new technologies, infrastructure, and support systems (Jodha 2000; Sharma 1999).

STRATEGIES FOR SUSTAINING TRANSFORMATION

Focus on research and development (R & D)

In the current circumstances, continuous development of new technological options has become a prerequisite for sustaining high-value cash crop farming in hilly areas. This has become essential because of weather fluctuations, high incidence of diseases, and the entry of multinationals and private companies for supplying seeds and other inputs. In times to come, inadequacy of appropriate technologies may erode the comparative advantage of mountain environments currently enjoyed by the hill farmer. The strategy of HP therefore is to increase investment in R & D for evolving new technologies to retain the comparative advantage currently enjoyed by the state.

New or improved support systems

Easy access to markets and timely market intelligence are the most important factors for promoting cultivation of high-value cash crops. Floriculture and off-season vegetables require quick, refrigerated transport and storage facilities. Interventions therefore focus on improving efficient infrastructural facilities like metalloid roads and linking far-flung inaccessible areas with road heads through link roads and ropeways, efficient means of transportation, irrigation, market infrastructure like purchase centres, grading facilities, packaging, cold storage, and so on. A regulatory mechanism for ensuring the proper quality of seeds, chemicals, and so on is essential in the changed economic climate. The government is providing

a regulatory mechanism and setting rules to safeguard the interests of farmers.

Local value-adding initiatives

Improving technology to minimise post-harvest losses and ensure proper grading and standardisation to improve product quality is essential to compete in the changed economic circumstances. The encouragement of private companies to set up small-scale agro-processing plants to add value is an important initiative. About 20% of the produce is culled fruit, which does not fetch favourable prices in the market, but which can be processed and sold at better prices. The state has been advocating for a continuous vigil on the quantity of imports of fruit like apples and for improving or raising the tariff on imports—of course within tariff bindings—to protect domestic growers from undue foreign competition.

Taking advantage of its dust-free environment for the development of electronic goods and precision equipment industries and eco-tourism are new areas with potential. Likewise, hydroelectric potential is being harnessed all over the state. These measures will add to the state's revenue and at the same time boost employment and income opportunities for local people on a more enduring basis.

CONCLUSIONS AND LESSONS

Himachal Pradesh has made remarkable progress in rural transformation during the last three-four decades. This is evident from a number of indicators related to social opportunities such as literacy, health, and other infrastructural facilities, low incidence of poverty, and substantial improvement in living conditions. The egalitarian social structure—evident from the low incidence of landlessness, low proportion of asset-poor households, low proportion of agricultural labourers, and low inequality in the distribution of landholdings—resulted in growth with equity and led to a widely-shared development. The adoption of a development strategy sensitive to mountain specificities has been the singlemost important factor in facilitating rural transformation.

The heavy investment in developing roads, transportation, communication, and other social services like health and education led to strong physical and social infrastructure development. This broke the barrier of inaccessibility and enabled even the most difficult tribal areas to benefit from rural transformation. The spreading cultivation of high-value cash crops played an important role in triggering the process of agricultural diversification. This began with apples and later diversified to off-season vegetable crops. Factors such as political patronage and committed state

interventions, easing of inaccessibility constraints, provision of infrastructure, the availability of huge markets in Delhi and other places downstream, and R & D institutions and other supporting departments, and so on played important roles in popularising the cultivation of high-value cash crops suited to the mountain environment.

Though the development model of Himachal Pradesh may not be strictly replicable elsewhere, it has produced important lessons for use with necessary adaptations.

- Committed state intervention and adoption of development strategies incorporating mountain specificities are essential prerequisites for creating basic conditions for development.
- Creating basic infrastructure like transport, health, education, and so on is essential for harnessing local niches. Small and marginal farmers respond quickly by seizing the economic opportunities offered by the availability of basic infrastructure.
- Agriculture facilitated by rural transformation based on high-value cash crops requires continuous technological upgrading to retain advantages and to promote economic viability and ecological sustainability. This assumes all the more importance in the context of economic liberalisation when the comparative advantages of a region cannot be sustained by natural endowments alone.
- Development of local resource-based industries is essential to impart internal strength and resilience to the development process, increase income and employment opportunities, augment revenue, and improve long-run financial sustainability. Development of hydroelectricity, small-scale agro-processing and cottage industries, and eco-tourism are potential areas to explore.

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Annex I: Inter-regional development: selected indicators of infrastructural development

| Districts | Road length/100 sq.km (1997-98) | Banks/100,000 pop. (1997-98) | Schools/100 sq. km (2000) | Hospitals/100 sq. km (2000) | Literacy male (2001) | Literacy female (2001) | No. of regulated markets |
|----------------|---------------------------------|------------------------------|---------------------------|-----------------------------|----------------------|------------------------|--------------------------|
| Bilaspur | 91.94 | 12.35 | 61.44 | 8.99 | 87.13 | 70.53 | 1 |
| Chamba | 18.70 | 11.74 | 20.11 | 2.76 | 77.22 | 49.7 | 1 |
| Hamirpur | 99.37 | 13.11 | 59.12 | 9.21 | 90.86 | 76.41 | 1 |
| Kangra | 67.55 | 11.36 | 40.04 | 5.94 | 88.19 | 73.57 | 4 |
| Kinnaur | 0.08 | 21.42 | 3.86 | 1.11 | - | - | - |
| Kullu | 6.47 | 12.37 | 14.28 | 1.85 | 84.55 | 61.24 | 2 |
| Lahaul & Spiti | 6.42 | 24.24 | 1.85 | 0.30 | 82.76 | 60.94 | - |
| Mandi | 71.95 | 11.00 | 52.30 | 6.65 | 86.67 | 65.36 | 1 |
| Shimla | 58.60 | 16.92 | 39.37 | 5.69 | 87.72 | 70.68 | 3 |
| Sirmaur | 62.76 | 10.69 | 40.57 | 5.38 | 79.73 | 60.93 | 3 |
| Solan | 90.65 | 15.63 | 47.88 | 6.71 | 85.35 | 67.48 | 9 |
| Una | 84.54 | 11.61 | 43.18 | 6.49 | 88.49 | 73.85 | 1 |
| H.P | 36.00 | 12.75 | 23.53 | 3.38 | 86.00 | 68.00 | 26 |

Source: HP (1999), HP(1997-98),HP (n.d.)

Annex II: Inter-regional development: selected indicators

| Districts | Net cultivated area (ha) '97-98 | Area under non-FG (%) | Area under apple (ha) '97-98 | Area under veg. (ha) '98-99 | GR area under veg '98-99 | Share of prime sector (%) | No of small scale industrial units '98-99 | No. of ag. enterprises '98 | No. of non-ag. enterprises '98 | Urbanisation (%) | Gini ratio of operational holdings 1990-91 |
|----------------|---------------------------------|-----------------------|------------------------------|-----------------------------|--------------------------|---------------------------|---|----------------------------|--------------------------------|------------------|--|
| Bilaspur | 30,771 (26.37) | 3.62 | 2 (0.002) | 1,548 (3.53) | 3.90 | 30.57 | 49 | 446 | 11,003 | 6.44 | 0.4446 |
| Chamba | 42,387 (6.50) | 8.98 | 7,655 (9.22) | 1810 (4.13) | 4.45 | 36.77 | 42 | 511 | 13,554 | 7.50 | 0.4471 |
| Hamirpur | 37,418 (32.57) | 1.15 | - | 752 (1.71) | 5.97 | 25.92 | 60 | 945 | 15,437 | 7.32 | 0.5241 |
| Kangra | 119,058 (20.74) | 11.22 | 600 (0.72) | 3,886 (8.86) | 0.42 | 33.75 | 156 | 4352 | 46,431 | 5.39 | 0.6266 |
| Kinnaur | 7,602 (1.16) | 37.58 | 5,616 (6.76) | 984 (2.24) | -2.24 | 38.01 | 6 | 34 | 4,408 | 0.00 | 0.5129 |
| Kullu | 36,603 (6.65) | 16.84 | 18,552 (22.34) | 4,298 (9.80) | 5.28 | 32.13 | 92 | 856 | 15,971 | 7.92 | 0.4981 |
| Lahaul & Spiti | 3,238 (0.24) | 34.33 | 372 (0.45) | 2,160 (4.93) | 3.26 | 19.63 | 17 | 1150 | 29,945 | 0.00 | 0.4330 |
| Mandi | 91,127 (23.06) | 9.20 | 12,872 (15.50) | 5,328 (12.15) | 1.30 | 31.39 | 125 | 1339 | 27,497 | 6.77 | 0.4821 |
| Shimla | 71,059 (13.85) | 38.46 | 32,908 (39.61) | 11,455 (26.13) | 0.53 | 16.12 | 85 | 1225 | 13,961 | 23.12 | 0.5120 |
| Sirmaur | 42,201 (14.93) | 14.41 | 3,929 (4.73) | 5,347 (12.20) | 1.18 | 30.15 | 49 | 76 | 16,997 | 10.38 | 0.5779 |
| Solan | 39,438 (20.36) | 11.74 | 550 (0.65) | 4,868 (11.10) | 3.60 | 12.37 | 137 | 135 | 16,911 | 18.26 | 0.5038 |
| Una | 40,252 (26.14) | 8.23 | - | 1,404 (3.20) | 5.06 | 25.38 | 57 | 79 | 2,215 | 8.80 | 0.6348 |
| H.P. | 560,154 (10.06) | 13.27 | 83,056 (100) | 43,840 (100) | 1.76 | 26.82 | 875 | 11148 | 214,330 | 9.79 | - |

Key: FG = fruit grower

Note: Figures in parentheses are percentages.

Source: As in Annex I.