AGRICULTURAL POLICY IN HIMACHAL PRADESH: A POLICY MATRIX IN A FEDERAL SYSTEM

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FOREWORD

Agriculture has an important place in the economy of Himachal Pradesh as it is single largest industry providing direct or indirect employment to about 75 percent population of the state and contributes more than half of net domestic product of the state. Due to this fact this sector continues to receive adequate attention from the state government. This is obvious from the fact that various department like horticulture etc. which were covered under the preview of department of agriculture were later on established as separate identities for effective and efficient administration of different programmes and strategies. During June 1988, it was decided to revitalize the planning process by adopting the Agro-Climatic Regional Planning (ACRP), which in fact was to be applied for whole of the country. Under ACRP the factors like soil type, rainfall and irrigation etc. were made use of for sub-regionalisation of the state into agro-climatically homogeneous sub-zones for effecting micro-level planning. Accordingly, the state was divided into four sub-zones with the objectives of identification of resource endowment and potential for agriculture development and to maximize the use of land and water resources so that income of the farmers could be increased. This exercise also aimed at identification of suitable technologies and to evaluate such technologies in terms of their economic viability. Four sectors viz. Agriculture, horticulture, fisheries and animal husbandry have been covered under this approach and these sectors are not dealt in isolation of each other but as they get integrated in to the overall economy. This exercise has been taken up on pilot basis in Shimla and Solan districts of the state.

When the planning era began during 1951 the main thrust of the plan was to increase the food grain production, as the state was deficient in its production. During first five-year plan a total of about 264 thousand MT of food grain were produced in the state for which a plan allocation stood at Rs. 1.20 crores but actual expenditure was only about Rs.74 lakhs. This budget and actual expenditure also included horticulture sector, which was separated out as a separate directorate during IV plan (1969-74). Though the plan outlays for agriculture have increasing continuously, the share of agriculture in total plan out lays have been declining lately after and initial increase for many plans. The reason for this scenario could be the realization on the part of state government that the agricultural development cannot be materialized without increasing investments in sectors like

education, physical infrastructure etc. Thus, the relative decline of financial outlays for agricultural sector has to be viewed holistically keeping in mind that the welfare of farming community cannot be materialized without development of other sectors of the economy. This fact has gained further importance with the advent of era of globalization where one has to be internationally competitive for survival.

The evolution of the present scenario from the earlier period when main emphasis was to produce sufficient food grains to attain self-sufficiency in this respect has been long and gradual. The priority has shifted from food grain production to diversification into commercial crops like fruit and off-season vegetable production and other allied activities like apiculture, sericulture, pisciculture etc. The shift in policy has been deliberate and with dual purpose of crop diversification leading to dilution of risk of production and simultaneously augmenting the meager farm incomes associated with traditional cereal based cropping pattern. However, diversification especially towards the off-season vegetables requires the assured irrigation, which has remained main thrust area during all plan periods. Despite this no significant achievement has been made in augmenting the net irrigated area in the state. The main bottleneck has been the topography of the state and decline in water source over the period of time. However, the state has made tremendous progress in increasing the area and production of fruits and especially apples.

The Present study on Agricultural Policy in Himachal Pradesh: A Policy Matrix in A Federal System has been assigned to Agro-Economic Research Centre, Shimla by the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India. The AERCentre, Shimla is thankful to the ministry for assigning this innovative study to this centre.

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Objectives of the study

The specific objectives of the study are:

1. To review the available material (including policy documents at selected country level, five year plan document at the center and at the State level, policy statements made at the state level, etc) at the state level dealing with policy interventions after the formation of the state.

2. To identify important constraints and review the efforts made by the state in the past to meet major challenges pertaining to agriculture and allied activities.

3. To record the state's response to the already formulated National Agricultural Policy, that is, to find out precisely how and where the state would like to suitably supplement, modify and re-articulate the National Policy in the local context.

4. To bring out the state's concerns as well as to record the state's view on the changing economic situation due to India's involvement with the WTO.

5. To document the State's initiatives to meet the problems and constraints arising out of India's WTO commitments and review in brief the effectiveness of government interventions in the form of technology adoption, institutional adaptation, price policy changes (e.g., through changes in tax and subsidy regimes) and legal policy changes undertaken so far.

6. To discuss with the important stakeholders (as identified above) the requirements for formulation of a policy document at the state level, in response to the country's growing concerns at home and abroad (i.e., in response to challenges arising from WTO or otherwise).

7. To elaborate on the initiatives taken to meet the challenge of diversification, technology, resource management and price policy at the state level (whether in response to WTO or otherwise).

8. To assemble these views in the form of a meaningful policy requirement matrix, relating problems/issues to action points suggested/recommended and also trying to spell out the agencies, which should undertake such actions.

Methodology

The present study is based on the published and unpublished sources of data and information. The information regarding plan outlay, objectives of various plans, strategies, schemes, programmes are obtained from Five Year Plan documents of State Planning Department and concerned departments of state government. The data regarding Agricultural crops, Horticultural crops and animal Husbandry were gathered from the concerned departments of government of Himachal Pradesh. The needed information is also taken from the reports and books published by AER Centre, Shimla and other institutes/Universities in the state.

Five Year Plans Strategies For Agriculture

The goals of planning in Himachal Pradesh, clearly shows that the planners in Himachal Pradesh have, by and large, followed the framework and objectives of the National Plan and have thus failed to give the much-needed regional focus for planned development in the context of the distinct physical features and environmental conditions of the State. However, it must be recognized that if the sectoral allocation of resources in the plans is in accordance with the regional resource endowments and the requirements of socio-economic development, the shortcomings involved in not specifying the planned developmental goals might be conveniently overlooked.

The data on resource allocation in various plans reveals that there has been a pattern of sectoral priorities in the Five Year Plans of Himachal Pradesh. The highest priority was given to transport and communications up to the fourth Plan. After that, the highest priority was accorded to water and power development during the Fifth, Sixth, and Seventh Plans. By and large, the second position was given to the agriculture and allied services' sector in various Plans of the State. Social and Community services were accorded third position in the first three plans and fourth position later on. Industries and minerals ranked fifth in priorities. As far as agriculture sector is concerned the allocation of resources were relatively more in agriculture than horticulture and animal husbandry. The share of

agriculture, horticulture and animal husbandry in total plan outlay during eight plan is 3.17, 2.58 and 1.84 percent respectively.

Agricultural Development Scenario of Himachal Pradesh

Fairly heavy allocation of resources (above 20% of the total outlay) to the agriculture and allied services, on which about three-fourths of population depends for a livelihood, is also justified. However, the main emphasis in agriculture should shift from 'self-sufficiency in foodgrains' to maximization of farm income through cash crops (fruits and vegetables) that are highly remunerative and for which the region has comparative advantages (due to climate and other factors). In 1971-72 the share of field crops was 68.6 per cent in the total agricultural output of the State, and this declined to 49.3 per cent by 2000-2001. The respective shares of plantation crops and animal husbandry in the total agricultural output were 8.0 and 23.4 per cent in 1971/72, which respectively increased to 14.17 and 36.52 per cent by 2000-01. The land use data of the State reveals that the area under barren and uncultivable land is increasing over time, mainly due to an increase in the human and livestock population, which resulted in marginal land being brought under the plough and in overgrazing of pastures. Hence, the process of land degradation in the State needs to be contained and it is necessary to examine sustainable approaches to agricultural development. The livestock population has been increasing at the rate of 0.59 per cent per annum and fodder resources have been shrinking. Livestock numbers need to be contained/curtailed and their quality improved to increase income from livestock sources. In the animal husbandry programmes, attention to livestock diseases alone is not sufficient. Programmes for better breeding and feeding should also be popularised and form part of the programme for improving the livestock productivity. In a region where livestock owners heavily depend upon common pastures and grazing lands (whose conditions are deteriorating due to excess livestock pressure), some collective action, with financial and technical support from the Government, is very necessary to improve the forage productivity of the common pasture lands, which are currently ignored by animal husbandry programmes.

Major Initiatives in Agricultural Development in Himachal Pradesh

The state government implemented various programmes and scheme for the development of agriculture in Himachal Pradesh. The state has great potential for the production of Off-

season vegetables, ginger, potato, tea and maize. Keeping in view the potential of these crops in the state the Department of Agriculture implemented various programmes such as Accelerated Maize Development Programme, Accelerated Maize Development Programme, Vegetables Development Project, Ginger Development, Tea Development. Under these programmes the government provided material inputs and technical know how to the farmers for increasing area and productivity of these crops. The agro-climatic conditions prevailing in Himachal Pradesh have vast potential for the development of horticultural crops like fresh fruits, floriculture, mushroom, temperate vegetables, etc. Consequently, state government created needed infrastructure facilities like grading, packing, processing, transportation, credit facilities, besides various inventive schemes for the development of horticulture in the state. But fruit farming is bedeviled by sharp fluctuations in the production due to frequent attacks of several diseases and various other problems that could be attributed to weak extension efforts at educating the farmers and lack of timely input supplies of plant protection material.

During the last four decades of planed development, a base for future cattle improvement has been built up. There is growing consciousness amongst the farmers to own and rear crossbred Jersey animals and they are prepared to buy good milch cattle of this breed at any cost. The Animal Husbandry Department of Himachal Pradesh is providing facilities of artificial insemination, disease control, milk collection and even distribution of agricultural inputs. The Department estimated that crossbred animals constitute about 18 per cent of total cattle population in H.P. Artificial Insemination facility in buffalo has been extended to 190 centres in four districts covered in Intensive Livestock Improvement Programme and during 1991-92 year 75 thousand buffaloes were inseminated with the semen processed at the Palampur Laboratory. After various crossbreeding trials, it has been found that the progeny born of Rambouillet are better than the progeny born out of Soviet or other Merinos. Annually more than 500 pure bred exotic male hoggets are distributed to the farmers for further breeding. The total wool production increased by one hundred per cent during the past 26 years. The crossbred sheep have adapted very well to the local conditions and the average yield of the crossbred is more than double to that of indigenous sheep. The entire structure of milk marketing is managed by the H.P. State Cooperative Milk Producers Federation Ltd. (Milkfed). To bring the marketing system of wool in an organized form, in 1988 the State

government under the guidance of government of India, established “The Himachal Pradesh State Cooperative Wool Procurement and Marketing Federation Limited”.

The Constraint Analysis of Agricultural Development in Himachal Pradesh

The process of agricultural transformation is taking place in Himachal Pradesh wherein the traditional cereal crops based subsistence farming system is giving way to high value cash crops (fruits and vegetables). This process will further intensify, as the process of commercialization of agriculture will further spread to those areas where presently infrastructure facilities, such as rural roads, marketing and credit are lacking. The main problems the hill agriculture is facing are small size of land holdings, lack irrigation facilities, Low consumption of chemical fertilizers, Lack of road infrastructure. The roads should be dependable and all weather.

Constraints in Horticulture Sector are poor quality planting material including seed and root stocks; poor layout of orchards; lack of appropriate polynizer in the orchard, lack of proper training and pruning of the fruit trees; inadequate plant nutrition and organic matters; lack adequate use of plant protection materials; poor over all management of orchards. Post harvest quality controls almost non-existent resulting in considerable wastage and damage. Absence of pre cooling and cold storage is major problems for horticultural produce. Processing facilities are limited. At present only about 4 percent of fruits and vegetables are being processed in the state.

Most of the animals are short statured and are of nondescript types. Only 14 percent of total livestock population is cross bred/improved bred in the state. Cultivation of fodder crops on farms is insignificant. More than 50 % of total fodder is being obtained from CPRs and rest from the owned land. Scarcity of green fodder in winter and summer seasons, poor productivity of private grassland, degradation of CPRs and waste of fodder in absence of chaffing are the major constraints. Poor yield. Poor production traits such as more first calving age more calving interval longer dry period and shorter lactation period. Foot and mouth disease, skin diseases, indigestion, milk fever, problems in udder and teat, cyst formation in ovary, retention of placenta are the common diseases found in the area. The conception rate is 55% in AI. The disposal of milk through private milk traders

was predominant. The reasons for largest share of private traders were observed to be inaccessibility of producing areas and low price offered by H. P. Milkfed.

Towards Agricultural Policy for the State

The future strategy for development of agriculture and for the well being of farmers has to be based on the existing agro-climatic conditions, resource base etc. Future emerging areas in mountain states like Himachal Pradesh are: High value and low volume crops (Kalazeera, Saffron, Kuth, etc).

Off-season vegetables (Pea, Cabbage, Capsicum, Cauliflower, Tomato, French beans). Forest-based products - medicinal and aromatic plants (MAPs) like Salam Panja, Patish, Karu, Rattanjot, Somlata, etc. Quality Apple. Niche-based agricultural crops (Tea, Potato). Organic manure-based agricultural products.

Conclusions and Suggestions

Efforts made by Himachal Pradesh to remove the constraints caused by inaccessibility by building a network of roads throughout the State, especially in remote rural areas, have greatly facilitated the developmental activities in all sectors. They have broken the barriers of isolation and remoteness and added attractiveness to rural life, greatly promoting the expansion of rural settlements and the functional growth of towns and service centres with increase in the area of influence of urban centres.

By reducing inaccessibility, the process of agricultural transformation, from traditional cereal crops to commercial cash crops such as off-season vegetables and fruits, especially apples, has been greatly expedited with remarkable improvement in the socio-economic status of the farmers in the State. It is only in recent years that exploitation of mountain specific natural resources, such as harnessing of hydroelectric potentials, minerals, tourism and small-scale industries, have flourished and are contributing increasing shares to the gross product of the State.

In agriculture the main emphasis should further shift from “self-sufficiency in food-grains” to maximization of farm income through cash crops (fruits and vegetables) which are highly remunerative and for which the State has comparative advantages due to climatic and other factors.

In the livestock sector, the number of unproductive livestock needs to be curtailed and their quality improved to increase income. Programmes such, as better breeding, feeding, and disease control should be encouraged. The productivity of common pasturelands should be improved.

Himachal Pradesh also offers a good example of how to handle the constraint of mountain fragility through a package of sound environmental practices including coverage of 50 per cent of the geographic area under forests, minimum possible diversion of forest areas to other sectors, raising multiple tree species, creating bio-sphere and game reserves, controlling grazing, developing suitable substitutes for wooden fruit cases, and enacting suitable laws for the control of water and air pollution, etc.

Himachal Pradesh has done pioneering work in removing inter-regional disparities within the State. This has been achieved by developing a special strategy for the economic development of backward areas, scheduled castes and tribes, as well the tribal people of the State. Under this new strategy, a sub-plan under the general plan for the development of these marginal areas and people was formulated with a major emphasis on the infrastructure sector, social service sector, and production sector through liberal economic assistance and subsidies. As a result of such efforts, these marginal people have joined the mainstream.

Chapter 1

INTRODUCTION

1.1 Relevance of the study

The development process, today, is a cause for great concern throughout the Third World. The evidence of acute deprivation and almost inhuman degradation is present everywhere. Shortage of good arable land, pressure due to rural population, inefficient agricultural systems, regional disparities, rural-urban migration, and rising unemployment are all attributes of the development process in most third world countries which demand urgent attention in order to be solved.

The problems brought about by the settling of the hilly areas in India are entirely different from those in the plains. So the solutions, therefore, have to be necessarily unique and specific. The fundamental question/problem that hill area planners and policy makers face is how to meet the basic human needs without simultaneously destroying the resource-base and the ecosystem from which these basic needs must be met. The environmental objective of development is to conserve and improve the productivity of natural and human resources. Therefore, while designing the much needed new economic development policy for hilly areas, one should not forget that there will be no sustained development or meaningful economic growth, without a clear commitment to conserve the fragile mountain ecosystem and promote rational use of resources. Keeping in mind the above points, in this study we will critically examine the past development strategies in Himachal Pradesh (a hilly State in India), so as to draw lessons for the future which may be useful in planning activities in Himachal Pradesh and other hilly areas having similar socio-economic and physical conditions.

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1.4 The Himachal Pradesh

Himachal Pradesh was born in April 1948 as a part C State of the Indian Union with the merger of 30 Punjab and Shimla Hill States into the Union. The then Himachal Pradesh covered an area of 2,117 thousand hectares divided into four districts, namely, Chamba, Mahasu, Mandi and Sirmour. After about 6 years, the State of Bilaspur was also integrated and that formed the 5th district of the State. For administrative reasons, Kinnaur was carved out of the Mahasu district as a separate district in 1960. The reorganization of Punjab in 1966 doubled the area of Himachal Pradesh by the transfer of the districts of Kangra, Kullu, Lahaul Spiti and Shimla along with a few more areas. Full Statehood was granted to Himachal Pradesh on 25.1.1971. Thereafter, in 1972, Hamirpur and Una were formed separate districts; Solan was also named as a separate district while the name of Mahasu district was dropped. Presently, the State comprises of 12 districts. The State forms part of western Himalayan region flanked by Jammu Kashmir on its northwest and U.P. hill districts on its east.

Himachal Pradesh, spread over 65,673 square kilometers and with a population of 56.8 lakh (estimate for 1995), is situated in the Western Himalayan region in northwest India. The state is bordered by Jammu-Kashmir in the North, Punjab in the west and southwest, Haryana in the south, Uttaranchal in the southeast and Tibet (China) in the east. It is situated between 30 ^{0} 12' 40" to 33 ^{0} 12' 20" north latitude and 75^0 45' 55" to 79^0 04' 20" east longitude.

1.5 Agro-Climatic Features and Agriculture in Himachal Pradesh

The Himachal Pradesh Directorate of Agriculture has divided the state into the following four agro-climatic zones on the basis of altitude, temperature, topography, rainfall and humidity: (a) Sub-mountain and Low Hills sub-Tropical Zone, (b) Mid hills Sub-Humid Zone, (c) High Hills Temperate Wet Zone, and (d) High Hills Temperate Dry Zone

1.5.1 Sub-Mountain and Low Hills Sub-Tropical Zone The area in this zone is situated up to 650 meters above mean sea level with an average rainfall of 1000 mm. This zone is located in the Shiwalik belts of Himachal Pradesh and occupies approximately 25 per cent of the geographical area and 38 per cent of the cultivated area of the state. The population pressure is the highest in this zone. The main crops cultivated in this zone are

wheat, paddy, maize, sugarcane, soyabean, pulses, oilseeds and barley. Citrus, mango and litchi are important fruit crops. Cattle dominate in the total livestock population of 2.63 million

1.5.2 Mid Hills Sub-Humid Zone The elevation of this zone varies from 651 meters to 1800 meters above mean sea level. The annual precipitation in this area varies from 1500 mm to 3000 mm, 70 per cent of which is received during monsoon season. This zone comprises 41 per cent of the total cultivated area. The texture of soils of this zone varies from loam to clay loam. These are deficient in nitrogen and phosphorus with poor water and nutrient holding capacity. Soils are acidic in reaction and respond to liming. Soil conservation and water management are the main problems in this zone. Although this zone receives the maximum rainfall, the agriculture still suffers from losses every now and then due to low water holding capacity of the soils and erratic distribution of rainfall. The main crops cultivated in this zone are wheat, paddy, maize, seed potato, pulses and oilseeds. Stone and citrus fruits also occupy considerable area. Forestry and pastures constitute an important component in this zone. This zone is milk-shed area wherein a number of chilling plants and milk processing plants have been installed. Out of total livestock population of 1.26 million 50.7 per cent are cattle and 6.1 per cent are buffaloes.

1.5.3 High Hills Temperate Wet Zone The altitude of this zone ranges from 1801 meters to 2200 meters above mean sea level and covers 18.4 per cent of the total cropped area of the State. The soils are shallow in depth, acidic in reaction and silt loam to loam in texture. The soils are deficient in nitrogen and phosphorus. Terraced farming is practiced in this zone. The main crops are wheat, maize, paddy, barley, pulses and oilseeds. Mostly rainfed farming is practiced. Soil erosion, low fertility and inadequate water management are the main problems. The average rainfall is about 1000 mm, which is mainly received during monsoon months. This zone is suitable for raising off-season vegetables and seed production of temperate vegetables. Apples, other temperate fruits and nuts are important horticultural crops grown in this zone. Sheep and milch cattle dairying also supplement the income of the farmers in this zone. Cattle are the main milch animals accounting for 50 per cent of total livestock. Sheep and goats constituted about 47 per cent of total livestock population of 4.39 million.

1.5.4 High Hills Temperate Dry Zone The area in this zone is situated above 2201 meters above mean sea level. This zone remains covered with snow for nearly 5-6

months a year i.e. from December to April. The rainfall is very low (about 25 cm) and the temperature remains low throughout the year. The soils are sandy loam in texture and neutral to alkaline in reaction and low in fertility. Practically no crop can be raised without irrigation. Gravitational channels (kuhls) are the only source of irrigation in this zone. The soil erosion and water management are the main problems in this zone. Potato, barley, wheat, buckwheat, peas, minor millets, temperate vegetables and dry fruits are the main crops. Sheep and goat rearing is the main source of income. The flocks migrate to low hills in winter due to snowfall in this zone. About 66 percent of total livestock population of 0.76 million are sheep and goats.

Agriculture is by far the major occupation of the people of Himachal Pradesh as it provides direct employment to about three fourths of the total working population. The valley areas of the State are most suited for growing food-grains. Elsewhere, due to climatic conditions varying from sub-tropical to temperate, the agro-climatic conditions are suitable for growing a wide variety of cash crops such as temperate fruits, potatoes, vegetables, ginger, etc. Since the scope for extension of cultivation is limited, emphasis has to be laid on increased production by maximizing output per unit area available for cultivation.

Chapter 2

FIVE YEAR PLANS STRATEGIES FOR AGRICULTURE IN HIMACHAL PRADESH

In countries where a mixed economy exists, as in India, the process of development is initiated and sustained by the Government through planning. Himachal Pradesh, along with other States in India, introduced planned economic development in 1951 through a series of five year plans to tackle the problems of poverty, unemployment, inequality, and infrastructural backwardness. An ex-post-facto evaluation of government efforts is given through the analysis of plan allocations and the objectives of development as spelt out in the different Five Year Plans. The sector wise outlay in different five year plans is given in Table-1.

2.1.1 First Five Year Plan Strategy

Planning means thinking before action. It is a scientific process based on information and reasoning. Two of its principal aims are the determination of priorities and the optimum utilization of resources. Planned economic development started in India with the First Five Year Plan (which commenced from April 1, 1951).

The First Five Year Plan (1951-56) of Himachal Pradesh did not make any explicit mention of the objectives underlying it, but simply followed the national pattern. At the national level, the First Five Year Plan of India had a two-fold objective: (a) correcting the disequilibrium in the economy caused by the war and partition of the country and (b) initiating a process of all-round balanced development to ensure a rising national income and a steady improvement in living standards over a period. The aim was not merely to plan within the existing socio-economic framework, but to change this framework progressively and by democratic methods.

In brief, the central objective of the first five Year Plan of Himachal Pradesh was “to initiate a process of development which will raise living standards and open out to people new opportunities for a richer and varied life”.

Table-1: Percentage Allocation of Expenditure of Different Sectors in the Five Year Plans of Himachal Pradesh.

(Percentage)

Plans	Agri. and allied services	Co-operation	Water And power development	Industries and minerals	Transport and commu-incations	Social and community services	Economic and general services	All Sectors	Total Rs. million
First plan 1951-56	14.1	14.1	4.1	1.7	46.2	19.8	0.1	100.00	52.7
Second plan 1956-61	15.7	14.9	9.4	2.5	37.1	19.2	1.2	100.00	160.3
Third plan 1961-66	22.7	10.3	7.1	2.5	35.2	21.2	1.0	100.00	338.4
Annual plans 1966-69	18.6	4.5	27.9	3.2	34.0	11.5	0.3	100.00	397.8
Fourth plan 1969-74	24.1	3.2	21.7	3.6	29.1	18.0	0.3	100.00	1134.3
Fifth plan 1974-78	26.2	1.1	26.7	3.3	24.1	16.3	2.3	100.00	1614.8
Annual plans 1978-80	26.6	1.7	22.2	3.0	22.9	21.3	2.3	100.00	1475.6
Sixth plan 1980-85	25.1	1.1	26.2	3.2	17.7	24.2	2.5	100.00	6556.6
Seventh plan 1985-90	1963	9.10	33.48	3.2	14.85	10.70	9.04	100.00	13247.6
Annual plans 1990-91	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	100.00	3776.29
Annual Plans 1991-92	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	100.00	4100.00
Eight plan 1992-97	13.96	7.50	18.40	2.54	12.80	35.22	9.58.	100.00	34807.2
Ninth plan 1997-02	14.79	4.21	23.00	2.63	10.78	37.08	7.51	100.00	57000.0
Tenth plan 2002-07	11.67	4.03	16.61	1.02	15.90	47.57	3.20	100.00	103000.0

Source: Draft of Different Five Year Plans, Planning Department Government of Himachal Pradesh, Shimla.

The first and foremost problem, which required immediate attention, was food shortage prevailing in many parts of the State. Looking towards other important and pressing needs of the State, it was imperative to lay emphasis on the development of roads and road-transport; provision of medical and public health facilities; improvement of

livestock; expansion and improvement of existing education facilities; land reforms; and cottage industries, etc.

The approach to the First Plan of Himachal Pradesh was: (a) top priority to transport and communications followed by social and community services and (b) agricultural development and cooperation. Transport and communication programmes accounted for 46.2 per cent of the total plan outlay of Rs. 52.7 million. Social and Community services got 19.8 per cent of the total budget. Agriculture and allied activities received 14.1 percent, industries 1.7 per cent, and waterpower development 4.1 per cent of the total budget.

While assessing the achievements under the plan for a State like Himachal Pradesh, with a difficult hilly terrain and lacking in resources, requiring trained and technical personnel for undertaking a maiden venture like the plan, it has to be admitted that the State, despite unfavourable shortcomings in certain sectors, made spectacular advances in various spheres during the First Plan. Activities in respect to agriculture sectors, which occupied a prominent place in the development programme, undertaken during the First Plan, are highlighted below.

Agriculture Realizing that the State was not self-sufficient in food-grains, much emphasis was laid on raising the tempo of foodgrain production. Increases in agricultural production were envisaged through wider use of manure fertilizers, improved seeds, provision of more irrigation facilities, and consolidation of holdings. The impact of the extension service and cooperative movement was also contemplated to go a long way towards promoting the development of agriculture by mobilizing local resources and providing more credit for investment. Potato is the most important cash crop in the context of the State economy. Owing to their excellent quality and higher yields, a vigorous seed production drive was undertaken in Himachal Pradesh. Development of horticulture, for which the State is best suited, was another important feature of the plan in terms of agricultural development. A scheme envisaging research on fruit plants was drawn up and implemented during the plan in various regions of the State. To increase vegetable cultivation in the State, a vegetable multiplication scheme was implemented so as to select and multiply high-yielding types of vegetables that suited different climatic regions of the State.

Livestock In a predominantly rural based economy, the importance of livestock, in supplying motive power, and of milk, meat, wool, dung, and other raw materials needs no emphasis. Having cognizance of the low yield of milk, meat, and wool in Himachal Pradesh, improvement of livestock received the attention of the Government under the first Five Year Plan. The development programme regarding the animal husbandry sector in the State, envisaged improvement of livestock through scientific breeding and expansion of curative and preventive measures for disease control.

Common criticism of the First Five Year Plan was that it had limited coverage and, as such, short of the requirements of the situation. Broadly, the policy laid down was one of balanced development – balance between (a) agriculture and industry and (b) between the private and public sectors. The investment programme in the public sector gave a comparatively high propriety to transport and communications to the neglect of agriculture. Agriculture was the mainstay of life for about 90 per cent of the population, and productivity in this sector was exceedingly low. The Plan put great emphasis on long-term, slow-yielding projects (viz. transport and communications), which had little relevance to the immediate problems of 'grow more food' or 'agricultural development'. These road construction projects helped in diverting a substantial working population away from agriculture, since the most serious drawback in the field of employment. The agriculturists, therefore, were not in a position to size fully the benefits of these projects.

Significant achievement was made in the agricultural field through land reforms, and this to prepare the ground for increased productivity. An important cause of low activity in agriculture was that few of those who actually cultivated the land had any proprietary interest in it. They were either tenants-at-will or sharecroppers only. So reform of agrarian structure was essential to build up an efficient agricultural economy. Particular basis was laid on the abolition of intermediary tenancy, reform and reduction of rents in the Plan.

Zamindari abolition was itself a great act, a kind of silent revolution. Through legislation, intermediate interests such as *Zamindari, Jagris*, and *inams* were done away with. This improved the social and economic position of the tenants.

2.1.2 Second Five Year Plan Strategy

The Second five Year Plan (1956-61) of Himachal Pradesh was more specific in its goals and its major objectives were to:

- Increase income by 25 per cent,
- Increase food production by 19 per cent,
- Develop village and small-scale industries in rural areas,
- Increase the installed capacity of power generating plants,
- Further develop roads and road transport,
- Improve cattle wealth,
- Increase welfare of backward classes and scheduled tribes, and
- Carry out land reforms to reduce inequalities in income and wealth.

The Second Plan proposed an investment of Rs.160.3 million. The distribution of the total outlay, by major development heads, reveals that again high priority was accorded to transport and communications as 37.1 per cent of the total outlay was allocated to this sector. Social and community services again got second position receiving 19.2 per cent of the total outlay. Agriculture and allied services received 15.7 per cent of the total budget and cooperation 14.9 per cent. Water and power development was allocated 9.4 per cent.

As was recognized in the mid-1950s, Himachal Pradesh is mainly an agricultural region where more than 90 per cent of the population depends directly or indirectly upon agriculture. Industrially, the State is very backward and there are hardly any industries of importance. The main causes for this industrial backwardness are lack of finance and lack of initiative among the indigenous inhabitants. The area is, however, rich in forests, horticulture, minerals, and animal resources. There is a great need to conduct intensive surveys in order to know the industrial potential of this State and to properly plan the development of industries in the area. Despite the foregoing, in the Second Plan also, high priority was accorded to the physical infrastructure, and agriculture and industries were largely neglected. However, the outcome was reassuring, as the physical

infrastructure had been built for subsequent progress, both agricultural and industrial. In spite of many inherent weaknesses and shortcomings in performance targets, the Second Plan had some good elements and made some positive contributions.

Agriculture During the First Plan period, emphasis had been laid on the development of agriculture and the State made efforts to attain self-sufficiency in food-grains. However, adequate attention could not be paid to agricultural research and to schemes of a productive nature, e.g. improvement of seeds, supply of fertilizers, etc. The Second five Year Plan aimed at producing more food-grains, raising cash crops such as fruits and potatoes, and supplementing the income of the people.

Besides research and training programmes, supply schemes and service schemes were taken up. The supply schemes included:

- A fertilizer scheme;
- A seed distribution scheme;
- Grant of loans for planting new orchards;
- Construction of seed stores and sheds;
- Establishment of progeny orchards,
- Seed multiplication farms, and;
- A potato development scheme.

The service schemes taken up were:

- The establishment of mobile squad for pest and disease control in horticulture;
- An agricultural publicity and propaganda scheme;
- A plant protection scheme, and
- An agricultural marketing scheme.

These schemes were incorporated into an integrated programme of agricultural development designed to raise the economic level of the people.

Under the seed distribution scheme, considerable work was done in the selection and multiplication of improved seeds, particularly wheat and potatoes. A programme to

establish progeny orchards and a chain of nurseries was taken up to produce and supply fruit plant material of reliable parentage and guaranteed varieties suitable for different elevational zones.

Under the seed potato production scheme, nucleus seed is produced in seed multiplication stations, established in areas of low disease incidence, and further multiplication is carried out through the help of progressive cultivators.

For a State with an economy that hinges on cash crops (fruits and vegetables), the existence of a highly efficient organization is necessary to keep in check insects, pests, and plant diseases. The Second Plan envisaged the acquisition of a pool of insecticide machinery for each district and a mobile squad for providing quick facilities to farmers when the need arose. A research programme for temperate fruits (apples, pears, etc), sub-tropical fruits (mangoes, litchis, etc) and dry fruits (raisins, grapes, nut, etc) was taken up during the Second Plan period.

Development of irrigation assumes significant importance in the context of increasing crop production. Only a small proportion of land receives perennial and seasonal irrigation, mostly from Kuhls (gravity flow). Snow-fed nullahs provide a huge potential for irrigation. In view of the fact that the cultivated areas of the State are widely scattered at heights ranging from 330 to 4,000 meters above sea level, it has been estimated that it is possible to irrigate only about 40 per cent of this area. The proposed irrigation programmes envisaged improvement on existing Kuhls and the construction of new Kuhls. Most of the existing Kuhls, constructed by the farmers, were structurally unsafe allowing huge wastage of water in transit. Besides, they were subject to damage by landslides and cross drains. The improvements envisaged under the Plan included the strengthening of banks, provision of drainage crossings, blasting, and cutting work on the hillside to ensure safe and permanent working of the channels. Irrigation schemes were treated as public works and thus 50 per cent of the total cost was subsidized by the Government and 50 per cent realized as contributions from the public in easy installments in the form of improvement levies. For all schemes, water rates were charged and these included the cost of maintenance and distribution of water in addition to the contribution by way of

improvement levies. In the case of gravity canals, water rates were charged on an acreage basis and on a volumetric basis for lift schemes.

Progress of development schemes relating to irrigation was not encouraging during the First and Second Plan periods.

Livestock The animal breeders in Himachal Pradesh, in general, are ignorant of the methods of scientific breeding, balanced feeding, etc. In order to provide veterinary aid in time and apprise the breeders of the advantages of judicious breeding, feeding, and disease control, it was thought essential to open more veterinary hospitals equipped with trained staff in the interior of the State. Therefore, 10 more veterinary hospitals (in addition to the existing 31) were opened during the Second Plan. A programme of cross breeding of indigenous cattle with improved strains of bulls, i.e. 'Red Sindhi', cross-breeds of Jersey and Red Sindhi, pure 'jersey' or 'Dexter' was started. 'Murrah Buffalo' bulls were located in various hospitals where the population of buffalo cows was maximum.

2.1.3 Third Five Year Plan Strategy

In the Third Plan (1961-66) of Himachal Pradesh, the objectives of the National Third Five Year Plan were reproduced in such a way that the much needed regional focus for planned development was absent. The Indian Third Plan, it is worth noting, was conceived at a time when it was unfavourable to think in terms of any large-scale development. There was a financial crisis, a foreign exchange crisis, and a food crisis. The main objectives of the Third Plan were growth, self-sufficiency, employment, and equality. The specific aims of the Plan were:

- An increase of over five per cent per year in national income;
- Self-sufficiency in food production;
- Increase in production of other crops to meet the requirement of industries and exports;
- Expansion of basis industries such as steel, chemicals, fuels and power; as well as establishment of machine-building capacity;
- Substantial expansion of employment opportunities and utilization of manpower resources to the fullest possible extent, and

- Reduction of disparities in income and wealth, and a more even distribution of economic power.

The Third Five Year Plan of Himachal Pradesh proposed a total investment of Rs.338.4 million. The break-up of investment in the third, Plan was more or less similar to that in the Second Plan. Transport and communications continued to receive top priority accounting for 35.2 per cent of the Plan allocation. Agriculture and allied services got a 22.7 per cent share and social and community services 21.2 per cent. Cooperation, water and power development, and industries respectively were allotted 10.3, 7.1, and 2.5 per cent of the total Plan outlay.

Agriculture In addition to the National Extension Service and Community Development, which are component subjects of the agriculture and allied services group, horticulture, animal husbandry, and forests, in Himachal Pradesh, contributed more than any other to the high percentage of this group in the share of the Third Plan outlay.

The scheme for popularizing and distributing fertilizers continued with added vigour. Fertilizers were supplied to the cultivators at All India Pool Prices both on cash payment and on short-term recoverable loan. Under the seed multiplication scheme, it was proposed that 9 more seed farms (one in each block where seed farms had not existed previously) should be established; and one hybrid maize seed farm, to obtain single cross seeds and production of double cross seeds on the lands of registered growers, was proposed. Since very little progress could be made during the First and Second Plan in the construction of seed stores, and since great difficulty was experienced in storing seed, the construction of 50 seed stores was proposed so that one to two seed stores would be in each block. A new scheme to distribute 2,500 improved implements to cultivators at a subsidized rate of 50 per cent, with the remainder to be recovered in short-term loans, was also taken up by the Third Plan.

Development programmes in fruit production and seed potato, ginger, and vegetable cultivation continued. One year's training programme for gardeners, with a stipend of Rs. 40 per month, was started. In addition to intensification of research on temperate fruits, about 40 candidates were admitted every year to the Regional fruit Research Station,

Mashobra (near Shimla) where, apart from training in various aspects of orchard cultivation, training in vegetable cultivation and beekeeping was also imparted. At the Fruit Research Station, Dhaulakuan, (Sirmour District) research work on sub-tropical fruits, viz., citrus fruits, mangoes, guavas, etc was intensified with 50 per cent financial support from the Indian Council of Agricultural Research.

Provision has been made for refresher courses to be conducted for Village Level Workers; and training for village artisans and also to farmers. The Agricultural Information Unit set up during the Second Plan was further strengthened to cope with the growing volume of work.

Animal Husbandry Programmes for the development of animal husbandry included

- Continuation of four poultry extension centres and extension of two centres;
- Strengthening of existing sheep and goat breeding farms by appointing more staff and constructing more buildings;
- Establishment of 12 new sheep and wool extension centres;
- Establishment of 10 transit camps to provide shelter to the migratory herd and flock owners at higher attitudes;
- Establishment of a training centre for subordinate staff;
- Introduction of a scheme for mass castration of scrub bulls;
- Opening of 10 new veterinary hospitals and 30 new dispensaries, and
- Ensuring a pure and wholesome milk supply to the inhabitants of Mandi, Bilaspur, and Solan towns, along with a milk supply scheme for these towns.

Soil Conservation Scheme Land without soil is lifeless, barren, and useless. Soil conservation includes proper land use, protection of land, and maintaining and increasing the fertility of the soil. Soil conservation work is needed on agricultural lands as well as forestlands. During the Third Five Year Plan, soil conservation work on agricultural lands, which primarily consisted of bench terracing, was intensified, particularly in the Bhakra Dam catchments. Fifty per cent of the expenditure was treated as a subsidy and 50 per cent as a long-term loan. A new soil conservation scheme on a watershed basis, involving contiguous private and government land, was introduced. Work on private land was

proposed on a self-help basis while the staff of the Land Development Scheme worked on contiguous government land. Soil conservation as a part of river valley projects also continued.

Floods are the indirect result of erosion taking place in the catchments. With continued soil erosion in the catchments, the quantity of runoff and sediment load increases, causing floods in the rivers. Conservation measures are designed to retard the flow of runoff, to minimize soil losses, and consequently the sediment load in the rivers. Causes of erosion are overgrazing, indiscriminate exploitation of forests, and extension of cultivation on high and precipitous slopes, etc. Afforestation, pastures improvement, and check dam construction were carried out with an expenditure of Rs. 1.5 million in the Third Plan.

Since the education of farmers is an essential aspect of the successful soil conservation programme, field demonstrations were conducted representative of a cross section of the problems occurring in a larger area. Hence, Rs.1.0 million were allocated to start five demonstration centres of 1,000 acres each and to maintain three demonstration centres that had been already started in the Second Plan.

2.1.4 Fourth Five Year Plan Strategy

Because of certain developments during the Third Plan, the economic situation of the country was seriously affected (Indo-Chinese conflict of 1962; death of Prime Minister Jawaharlal Nehru, the main architect of planning in India, in 1964; Indo-Pak war in 1965; death of Prime Minister Lalbahadur Shastri in 1966; severe droughts; interruption in external assistance; breakdown of law and order in some pockets of the country; and erosion of political stability). The emergency was of a persistent character. Thus, to prepare a full five year plan for an uncertain situation was not possible and, hence, the Fourth Plan could not be launched as scheduled. Instead, three Annual Plans were made for 1966/67. 1967/68 and 1968/69. Like their predecessors, the Annual Plans laid emphasis on schemes that were continuing and those, which could be completed in a short span.

The striking feature of the Annual Plans (1966 to 1969) of Himachal Pradesh was that a substantial addition in resources allocated for the waterpower development sector was noticed. After the transport and communication sector, which got 34 per cent share of the outlay of the Annual Plans, the second priority was attached to the waterpower development sector which received 27.9 per cent of the outlay of Rs. 397.8 million. Since industrialization was coming into the picture, although on a small-scale, the power generation work had to be given a definite emphasis with focus on power generation for production purpose rather than simply for purposes of illumination.

The Fourth Plan (1969-74) of Himachal Pradesh also did not spell out its underlying objectives following the approach of the National Plan. The core of the Fourth Plan was undoubtedly agriculture. Priority was naturally given to agriculture (allocating 24.1% of the total Plan outlay to it) because the whole development, including industrial development, is to a large extent dependent on what happens in the agricultural sphere. The Fourth Plan document described the role of agriculture as 'crucial'. The outlay on agricultural production, including research and education, increased from earlier plans and new schemes were introduced in the Fourth Plan. The new agricultural strategy hinged on, among other things:

- the use of new varieties of high yielding seeds;
- continued expansion of irrigation facilities;
- increase in the supply of fertilizers; plant protection material, and farm machinery; and
- provision for increased credit through nationalization of commercial banks.

The Fourth Plan attached special importance to the problems of the weaker sections of the community, including the scheduled castes and tribes. The Plan also laid emphasis on removal of regional imbalances. There were differences in the rate of development between States, as also between regions in the same State. This was contrary to the principles of equality and equitable distribution of facilities.

In the field of agriculture, progress had been made over the past 20 years in terms of the abolition of intermediate tenures, reform of the tenancy system, ceiling on land ownership, and consolidation of land holdings. But there were many gaps between

objectives and legislation and between the laws and their implementation. So the Fourth Plan proposed action mainly in the direction of filling some gaps in legislation and of much more effective implementation. One of the important tasks of the fourth Plan was to try and ensure that land reforms became a reality in the village and the field. The nationalization of banking, which occurred during the Fourth Plan period, was expected to lead to some major decisions made with a social purpose over the whole sphere of organised institutional credit.

2.1.5 Fifth Five Year Plan Strategy

Like the Fourth Plan (1969-74), the Fifth five Year Plan (1974-79 of Himachal Pradesh did not spell out its underlying objectives and precise goals of planning altogether. However, in the Plan documents, the planners have admitted that Himachal Pradesh requires a different kind of approach towards its economic and social development and thus it cannot be wholly in common with the rest of the country. The Himachal Pradesh government, in fact, followed the national Plan Policies without modifying them to meet the local needs. The Draft Fifth Plan (1974-79) of India was launched from April 1,1974. The two major objectives of the Draft Fifth Plan were: 'removal of poverty and attainment of self-reliance'. The final Fifth Plan was approved by NDC on 25.9.1976.

The total Plan outlay for the fifth Plan of Himachal Pradesh was Rs.1614.8 million. In its financial resource allocation, the water and power development sector got first priority (26.7% share in the Plan outlay), closely followed by the agriculture and allied services' sector (26.2%) and the Transport and communications' sector (with 24.1%). The Community and Social Services' sector was fifth in rank; it received 16.3% of the Plan outlay.

Keeping in mind the objectives of self-reliance in the fifth Plan, the main task under this Plan was to make the State self-sufficient in food-grains and at the same time bring more and more areas under cash crops. To achieve this goal, some salient features of the Plan in the agricultural sector were.

- to make the State self-sufficient in food-grains through intensive use of optimum doses of improved inputs, multiple cropping and by providing assured irrigation;

- development of cash crops such as potatoes, ginger, and vegetable seeds and production of seeds of high yielding varieties of food-grains, thereby changing he traditional cropping pattern to raise there turns for each unit area;
- efficient use of existing soil and water resources, adoption of soil conservation measures; and
- development of less developed tribal and backward areas by providing special facilities to the farmers.

Horticulture occupies an important place in the economy of Himachal Pradesh, and perhaps, it is through horticulture that the optimum and sustainable use of the available land, utilization of areas otherwise non-arable, and restriction of soil erosion will become possible. The objectives of the fifth Plan regarding horticulture were to consolidate the gains already made through planned programmes and to strive for balanced development, efficient production management, development of marketing infrastructure, and strong research programmes.

Since marketing is a necessary adjunct to production, it received special attention. The marketing responsibility for fruits and vegetables was shared by the State Horticultural Department, in collaboration with the World Bank, the Himachal Pradesh Agro-Industries' Corporation, and the Himachal Pradesh Public Works' department. These agencies, *inter alia*, assisted in establishing cold storages, packinghouses, fruit processing and canning units, and transport infrastructure such as ropeways and roads. Himachal Pradesh Horticultural Produce Marketing corporation (HPMC) was also formed to support fruit and vegetable marketing in the State.

Soil and water conservation in Himachal Pradesh has its own importance both from the point of view of the State and the country. The onus of implementing the soil and water conservation policies in the fifth Plan was laid on the Departments of forest and agriculture. The main schemes executed by the forest Department were protective afforestation, rehabilitation of degraded forests, and soil conservation in river valley projects. The activities of soil conservation on agricultural lands were the main concern of the Agricultural Department. The strategy during the Fifth Five Year Plan of Himachal Pradesh was to discourage erroneous land use; to prepare a proper inventory of land

resources together with their treatment needs; and to intensify afforestation and grass planting through the introduction of three dimensional forest farming (i.e. for fuel, fodder, and timber).

Apart from cattle, Himachal Pradesh is ideally suited for goat and sheep rearing. Efforts were made to convert 'below subsistence' animal husbandry into an economic proposition. More stress was laid on the cross-breeding programme to cover the entire indigenous livestock population so that, in the long run, it would result in adequate milk, meat, and wool production. Thus, most of the animal husbandry schemes during the fifth Five Year Plan were production-oriented to help raise the economic conditions of the rural population, particularly in the tribal and backward areas of Himachal Pradesh.

2.1.6 Sixth Five Year Plan Strategy

The Sixth Plan document of Himachal Pradesh states that "The formulation of the State Sixth Plan for 1980-85 will, by and large, have the badge of objectives within the framework of the objectives of the National Plan with minor adjustments as may be necessitated by local conditions and needs". The National Sixth five Year Plan, 1980-85, visualized accelerated progress towards the elimination of poverty, generation of gainful employment, and technological and economic self-reliance.

The total Plan outlay of the Sixth Plan of Himachal Pradesh was Rs.6556.6 million. Again, in this plan also, the Water and power Development Sector was assigned the highest priority and was allocated a 26.2 per cent share of the Plan outlay. The agriculture and allied services' sector received a 25.1 per cent share and the social and community services sector 24.2 per cent. Transport and communications continued to receive due preference and 17.7 per cent of the Plan outlay was allocated to this sector in the Sixth Plan. The industrial and the cooperation sector received 3.2 and 1.1 per cent respectively.

In Himachal Pradesh, small and marginal farmers predominate. Land holdings are not only small but also fragmented and sloppy; soil erosion is rampant. Adoption of improved packages is hampered due to the hilly terrain and inadequacy of irrigation facilities (only 17% is cropped and irrigated). Nature, although it has imposed problems has also endowed the State with agro-climatic conditions conducive to the production of cash crops

such as fruits and off-season vegetables at a comparative advantage. With a very large number of people depending upon agriculture, there is, naturally, an excessive pressure on land and consequently sub-marginal land is also being brought under, the plough. Under the present situation, except for some scope in the valley areas, there is limited scope for expanding cultivation, and agricultural production can only be increased by intensive methods and scientific cropping patterns.

In order to improve the economic conditions of small and marginal farmers; projects such as the Small Farmer Development Agency and marginal Farmers' and Agricultural Labourers' Programmes were in operation. Besides various other programmes under the Tribal Development Projects, Antyodaya and Integrated rural Development Programme were undertaken to render useful service to the farming community. The State had almost achieved a level of self-sufficiency in food-grains during the year 1975/76, but it received a set-back as a result of sufficiency in food-grains during the year 1975/76, but it received a set-back as a result of continuous drought later on. In order to increase farm production and income per unit area/per unit time, the Sixth Plan of Himachal Pradesh laid emphasis on the following strategies.

- the increase of food-grain production per unit area.
- the cultivation of off-season vegetables;
- the intensified cultivation of potatoes and ginger;
- an emphasis on the production of pulses, especially by intercropping these with maize,
- the encouragement of mixed farming;
- the adoption of dry farming programmes in drought-prone areas by laying special emphasis on sound water-harvesting techniques;
- intensification of extension services for effective and expeditious dissemination of advanced farm technology to the farmers.

Topographically, the cultivated lands in Himachal Pradesh are so varied that cultivation is practised on 2 per cent slopes in the valley areas to 50 per cent slopes in the hills. Therefore, proper layout of the fields with a view to checking erosion and maintaining productivity of the soil is essential. Data on erosion intensity shows that 9 per cent of the total agricultural land is seriously eroded and, on the whole, 29 per cent of the agricultural

land is in need of soil conservation treatment. Soil conservation measures taken on agricultural land in the Sixth Plan were:

- bench terracing;
- leveling of fields for irrigation;
- plantation of orchards on contour strips;
- water use and management, and
- diversion drains for runoff water disposal; these measures were taken on a mini-watershed basis.

Under the animal husbandry programme, development work on cattle, sheep and wool, poultry, and feed and fodder continued with added vigour. Broadly, the following programmes were launched during the sixth Plan.

- encouraging rural youths by providing training and assistance in setting up dairy units in the milkshed areas;
- consolidating the existing city milk supply schemes by augmentating and strengthening existing infrastructure;
- extending facilities for the organized collection of milk to all the areas accessible through all weather roads;
- stressing the sale of milk in fluid form and converting only surplus milk into milk products; and
- organizing training and extension programmes both for ongoing projects ad projects now proposed.

A network of 19 chilling plants was established under milk supply schemes. These plants have a total chilling capacity of 33,500 litres of milk per day. Besides, 61 Primary Milk Producers' Cooperative Societies with a membership of 5,109 persons have been registered.

2.1.7 Seventh Five Year Plan Strategy

The formulation of the Seventh Five Year Plan (1985-90) of Himachal Pradesh, by and large, followed the framework of the objectives of the National Plan.

An analysis of the structure of investment priorities, the Seventh Five Year Plan (1985-90) of Himachal Pradesh, reveals that out of the total Plan outlay of Rs.13.38 billion the water and power development sector was allocated a 32.49 per cent share. Agriculture and allied services was allocated 18.96 per cent of the outlay, transport and communications 18.33 per cent, community and social services 22.23 per cent, and industries, economics, and general services and cooperation 2.86 percent, 4.38 per cent, and 0.75 per cent respectively. Hence, it is clear that the sectoral priorities in the Seventh Plan are the same as in preceding Plans. The Seventh Plan gives highest priority to power development followed by social and community services, agriculture, and transport.

2.1.8 Eighth Five Year Plan

The guiding principles of the 8th plan were also growth, equity and social justice, self-reliance, improved efficiency and productivity. The central theme therefore revolved around the three basic needs viz. employment, housing and productivity.

The eight five year plan (1992-97) of Himachal Pradesh was approved at 2502 crore at 1991-92 prices. This was to finance by way of Rs.685.92 crore state's own resources and Rs.1816.08 crore central assistance. The eighth Plan of the state envisaged a mark up of 138 percent over the originally approved seventh plan (1995-90) outlay of Rs.1050 crore. The state government keeping in view the seventh plan performance of economic growth fixed growth target at 6 per cent for the Eight Plan 1992-97.

Agriculture The Strategy and programme thrust which would be adopted during the course of Eighth Plan has been out lined as under**:-**

i) Making agriculture a more stable and productive occupation through expansion of irrigation and other related facilities;
ii) More equitable access to resources and inputs within the rural society;
iii) Raising the productivity of rainfed agriculture in arid and semi arid tracts as well as in the medium and high rainfall zones;
iv) Remunerative prices to the farmers in general and diversification of agriculture into more remunerative enterprises;
v) Emphasize will be laid on sensitivity to employment, regional dimensions of agricultural growth and modernization and

vi) Ensuring fair rewards and well being of the rural labour.

2.1.9 Ninth Five Year Plan 1997-2002

The central government's approach to the Ninth Five Year Plan 1997-2002 aims at building on the successes of Eight five Year Plan. The problems that have emerged particularly in the areas such as capital formation in agriculture, living standards of the poor, infrastructure, social sectors, regional disparity and fiscal deficit are to be addressed.

Agriculture The following strategies were adopted for agriculture in the state:

i) Diversification towards high income generating crops like off season vegetable seed potato, ginger, development of maize and soyabean in mid-hills for export.
ii) Strengthening of quality control of inputs.
iii) Strengthening of extension network in the State better and efficient use of training needs for human resource development.'
iv) Insurance cover to commercial crops.
v) Greater emphasis on production of pulses and oil seeds.
vi) Strengthening of Soil conservation measures.

Horticulture The following strategies were adopted during 9th Five Year Plan for all round development of horticulture: -

1. Consolidation of the gains made in the development of horticulture during the previous five year plans and optimization of the existing production capacity in the horticulture sector.
2. Removal of regional/intra regional imbalances in the development of horticulture through the optimum exploitation of local horticultural potential.
3. Intensification of horticultural research, development and post harvest management in lower hill areas of the State.
4. Diversification of horticulture through promotion of new fruit varieties and other ancillary horticultural enterprises.
5. Popularization of high tech horticultural technologies like tissue culture, protected cover development, micro-irrigation etc. for the development of horticulture.
6. Introduction of new technologies through demonstration.

7. Ensuring equitable access to the sources and inputs for horticulture development in rural areas.
8. Development of horticulture as an environment friendly enterprise with three-dimensional objectives viz; economic development, environmental conservation and development of tourism.

2.1.10 Tenth Five Year Plan (2002-07)

The state government has to design its own approved and enabling programmes with in overall national objectives in full view the peculiar hilly conditions and policies of the state government. The approach would *interalia*, reflect the aspirations of the people through the proposals of their elected representatives. Sector-wise agricultural strategies framed for Tenth Five Year Plan are:

Agriculture the important areas, which need to be addressed and require highest attention during the Tenth Five Year Plan, are as under;

- To enhance the productivity and quality of crops besides replacement of low productivity varieties of crops towards high yielding varieties.

- Focus would be given to raise the cropping intensity of existing agricultural land for increasing the agricultural production in the State.

- Diversification towards high value crops and projectisation approach for the same.

- Emphasis will be given to increase area under irrigation by tapping all smaller sources of water including rainwater-harvesting structures through people's participation. Due to hilly terrain, the conveyance systems of water should be such that there is no more soil erosion, to check this menance, stress will be given on micro-irrigation.

- Watershed development programme shall be implemented in a projectised manner with full participation of project beneficiaries. This can be achieved by not putting any pressure on the field staff to spend substantial resources by a fixed deadline. This type of pressure does not enable people's capability to develop.

- To provide insurance cover to important crops being grown in the State so that risk of farmers of crop failure is covered.

- Involvement of PRI's in agriculture development programme.

- Women' emancipation through agriculture development.

- To give focus on the increase of productivity of tea and organic tea through private initiatives.

Horticulture Strategies and policies differentiated by agro-climatic regions need to be adopted for horticulture development. Modern technology needs to be harnessed for raising productivity of the existing fruit plantations for increasing the income of the farmers in order to ensure that the quality of live of our farmers is enhanced. Being more labour intensive, horticulture industry and its ancillary activities will be promoted during 10th Five Year Plan, for generating more employment opportunities to the rural population in the State.

Therefore, the main objectives for the development of horticulture in the state during 10th Five Year Plan shall be as under:

1. Implementation of the programme for the improvement of the productivity and quality of fruits and to double the existing average production of fruits at the end of the plan period.
2. Intensification of horticulture development in the presently less developed areas and diversification of horticulture in the already developed area with emphasis on nut fruits and other new fruits having promise for commercial cultivation.
3. Utilization of the environmental friendly practices for horticulture production and marketing.
4. Development of modern post harvest management facilities for reducing post harvest losses, increasing shelf life, standardization of grading and packing and regulation of the flow of fruits to the market.
5. Development of fruits exclusively for processing industry.
6. Increase in use of the frontier technologies like Remote Sensing, Information Technology and Bio Technology in the field horticulture.

Livestock Main objectives/approach and strategy followed for the livestock development are as under: -

1. To provide gainful job opportunities and supplement the income of the rural people.

2. To provide facilities for animal health care at the doorsteps of the farmers to safeguard their livestock against contagious and non-contagious disease.
3. To strengthen the infrastructure of the existing farms to make available quality breeding bulls for production of high genetic semen straws so as to meet the requirement of the various institutions under the livestock development programmes.
4. To get the maximum production from the livestock breeds by upgrading of low yielding non-descript stock with exotic germ plasm.
5. To increase the production and nutritive value of quality fodder seeds/plants by adoption of mixed farming systems with suitable crop rotation.
6. To bring Sheep breeders/poultry Farmers, milk producers and angora breeders within the Co-operative sector and prevent their exploitation by middlemen.

2.2 Priorities and Sectoral Shift in Five Years Plans

Himachal Pradesh have, by and large, followed the framework and objectives of the National Plan and have thus failed to give the much-needed regional focus for planned development in the context of the distinct agro-climatic conditions of the State. The data on resource allocation in various plans presented in Table 1 reveals that there has been a pattern of sectoral priorities in the Five Year Plans of Himachal Pradesh. The highest priority was given to transport and communications up to the fourth Plan. After that, the highest priority was accorded to water and power development during the Fifth, Sixth, and Seventh Plans. By and large, the second position was given to the agriculture and allied services' sector in various Plans of the State. Social and Community services were accorded third position in the first three plans and fourth position later on. Industries and minerals ranked fifth in priorities. The resources allocated to all sectors and agriculture sector are increasing at the compound growth rate 14.03 percent and 13.51 percent respectively annually. The resource allocation in various plans for different sectors of Agriculture has been given in Table 2 and Table 3. In agriculture sector the allocation of resources are relatively more in agriculture than horticulture and animal husbandry. However, annual growth in the resource allocation for horticulture is relatively higher than agriculture and animal husbandry. The annual growth in resource allocation in horticulture is 14.16 percent, in animal husbandry is 13.34 percent and in agriculture is 11.83 percent

during the last ten five year plans. The share of agriculture, horticulture and animal husbandry in total plan outlay during tenth plan is 3.17, 2.58 and 1.84 percent respectively.

2.3 Summing Up

The above survey, of the goals of planning in Himachal Pradesh, clearly shows that the planners in Himachal Pradesh have, by and large, followed the framework and objectives of the National Plan and have thus failed to give the much-needed regional focus for planned development in the context of the distinct physical features and environmental conditions of the State. However, it must be recognized that if the sectoral allocation of resources in the plans is in accordance with the regional resource endowments and the requirements of socio-economic development, the shortcomings involved in not specifying the planned developmental goals might be conveniently overlooked.

The data on resource allocation in various plans reveals that there has been a pattern of sectoral priorities in the Five Year Plans of Himachal Pradesh. The highest priority was given to transport and communications up to the fourth Plan. After that, the highest priority was accorded to water and power development during the Fifth, Sixth, and Seventh Plans. By and large, the second position was given to the agriculture and allied services' sector in various Plans of the State. Social and Community services were accorded third position in the first three plans and fourth position later on. Industries and minerals ranked fifth in priorities. As far as agriculture sector is concerned the allocation of resources were relatively more in agriculture than horticulture and animal husbandry. The share of agriculture, horticulture and animal husbandry in total plan outlay during tenth five year plan is 3.17, 2.58 and 1.84 percent respectively.

Major Thrust Areas in Agriculture During Different Plan Period in Himachal Pradesh.

Five Year Plan	Agriculture	Horticulture	Animal husbandry
Ist Plan	To increase foodgrain production through improved agricultural practices.	Development of Horticulture and emphases on fruit plant research.	Improvement of livestock through scientific breeding and expansion of curative and preventive measures for disease control.
IInd Plan	Emphases on more foodgrain production and raising cash crops for increasing income.	Research programmes for temperate, sub tropical and dry fruit and control of insect and pasts.	The breeding of local cattle with Red Sindhi, cross breed of Jersey and Red Sindhi, pure Jersey or Dexter and improvement of buffalo with Murrah Buffalo.
IIIrd Plan	Training for VLW, village artisans and to farmers and strengthened Agricultural information unit.	Training programme for gardeners, beekeeping, orchard cultivation and intensified fruit research.	Sheep and wool development programme, training to Vet staff, Milk supply scheme.
IVth Plan	Emphases on use of HYVs seeds, increase supply of fertilizers, insecticides /pesticides and farm machinery and credit facilities.	Increase supply of fertilizers, insecticides/pesticides and farm machinery and credit facilities through banks.	Sheep and wool development programme, training to Vet staff, Milk supply scheme.
Vth Plan	Self-sufficiency in food-grains and enhancing cash crops such as potatoes, ginger, and vegetable seeds.	Emphases on development of marketing infrastructure and strong research programmes.	Efforts to convert 'below subsistence' animal husbandry into an economic proposition. More stress on cross-breeding programme.
VIth Plan	To increase yield of crops, cultivation of off-season vegetables, emphasis on sound water-harvesting techniques.	Emphases on development of marketing infrastructure and strong research programmes.	Setting up small dairy units in the milkshed areas, extending facilities for the organized collection of milk, establishing chilling plants.
VIIth Plan	To increase yield of	Emphases on	Setting up small dairy

	crops, cultivation of off-season vegetables, emphasis on sound water-harvesting techniques.	development of marketing infrastructure and strong research programmes.	units in the milkshed areas, extending facilities for the organized collection of milk, establishing chilling plants.
VIIIth Plan	Making agriculture stable through expansion of irrigation and other related facilities. Remunerative prices to the farmers, diversification of agriculture.	Emphases on development of marketing infrastructure and strong research programmes	Setting up small dairy units in the milkshed areas, extending facilities for the organized collection of milk.
XI th Plan	Diversification towards high income generating crops. Insurance cover to commercial crops..	Diversification of horticulture through new fruit varieties and other ancillary horticultural enterprises.	Setting up small dairy units in the milkshed areas, extending facilities for the organized collection of milk.
Xth Plan	To enhance the productivity and quality of crops. Emphasis to increase area under irrigation.	Improvement of the productivity and quality of fruits Intensification of horticulture less developed areas and diversification of horticulture in the already developed area Development of modern post harvest management facilities.	

Table-2: Total Outlay and Outlay for Animal Husbandry, Agriculture and Horticulture in Different Plan Periods.

(Rupees in lakh)

Five Year Plan	Period	Total Outlay	Animal husbandry outlay	Agriculture outlay	Horticulture outlay	Total animal, agri. and horti.
Ist Plan	1951-56	527.25	9.03	36.50	-	45.53
Iind Plan	1956-61	1602.60	33.25	70.41	-	103.66
IIIrd Plan	1961-66	3384.47	70.00	170.00	-	240.00
Annual plan	1966-67	3978.18	43.97	88.25	-	132.22
Annual Plan	1967-68	3978.18	40.00	146.00	-	186.00
Annual plan	1968-69	1550-00	70.00	170.00	-	240.00
IV Plan	1969-74	11342.97	175.00	822.25	278.75	1276.00
V Plan	1974-78	16148.48	650.00	1100.00	776.00	2526.00
Annual plan	1978-79	14755.53	197.00	289.00	251.00	737.00
Annual plan	1979-80	14755.53	175.00	244.00	210.00	629.00
Sixth Plan	1980-85	65566.00	1261.28	2139.00	870.00	4270.28
Seventh Plan	1985-90	132475.75	1114.82	4958.00	2761.00	8833.82
Annual plan	1990-91	37762.93	434.00	1539.10	1199.00	3172.10
Annual plan	1991-92	41000.00	464.75	1805.00	1302.00	3571.75
Eighth Plan	1992-97	348040.00	4713.57	6155.00	6150.00	17018.57
Ninth Plan	1997-02	570000.00	11438.97	15310.00	13995.00	40743.97
Tenth Plan	2002-2007	1030000.00	19012.24	32619.00	26600.15	78231.39
CGR		15.03	15.18	13.51	14.12	14.22

Table- 3: Total outlay and outlay for Animal Husbandry, Agriculture and Horticulture in Different Plan Periods at 1951-52 prices.

(Rupees in lakhs)

Five Year Plan	Period	Total outlay	Animal husbandry	Agriculture	Horticulture	Total animal husbandry agri & horticulture
Ist Plan	1951-56	527.25	9.02	36.49	-	45.51
IInd plan	1956-61	303.95	6.29	13.34	-	19.63
IIIrd plan	1961-66	641.91	13.29	32.22	-	45.51
Annual plan	1966-67	754.51	8.30	16.75	-	25.05
Annual plan	1967-68	754.51	7.55	27.69	-	35.24
Annual plan	1968-69	293.98	13.26	32.22	-	45.80
IVth Plan	1969-74	2151.34	32.73	154.09	52.07	238.89
Vth Plan	1974-78	3062.77	123.12	208.88	147.01	479.01
Annual plan	1978-79	2798.58	37.22	54.57	47.57	139.36
Annual plan	1979-80	2798.58	33.02	46.18	39.74	118.94
Vith plan	1980-85	12422.94	238.52	404.99	163.98	807.49
VII th plan	1985-90	25125.79	211.06	939.70	522.62	1673.38
Annual plan	1990-91	7162.24	82.37	291.50	227.04	600.91
Annual plan	1991-92	7776.19	87.87	342.15	246.51	676.53
VIII th plan	1992-97	66010.43	891.14	1168.38	1168.38	3227.90
IX th plan	1997-02	108108.11	2172.97	2897.30	2648.65	7718.92
X th plan	2002-07	195353.25	3594.50	6192.70	5040.11	14827.31
C. G. R.		14.03	13.34	11.83	14.16	13.51

Table-4: Total Outlay and Outlay for Animal Husbandry, Agriculture and Horticulture in Different Plan Periods.

(% to total)

Five Year Plan	Period	Total Outlay	Animal husbandry outlay	Agriculture outlay	Horticulture outlay	Total animal, agri. and horti.
Ist Plan	1951-56	100.00	1.71	6.92	-	8.63
IInd Plan	1956-61	100.00	2.07	4.39	-	6.46
IIIrd	1961-66	100.00	2.07	5.02	-	7.09
Annual Plan	1966-67	100.00	1.10	2.22	-	3.32
Annual Plan	1967-68	100.00	1.00	3.67	-	4.67
Annual Plan	1968-69	100.00	4.51	10.96	-	15.47
IV Plan	1969-74	100.00	1.54	7.25	2.45	11.24
V Plan	1974-78	100.00	4.02	6.82	4.80	15.67
Annual Plan	1978-79	100.00	1.33	1.95	1.70	4.98
Annual Plan	1979-80	100.00	1.18	1.65	1.42	4.26
Sixth Plan	1980-85	100.00	1.92	3.26	1.32	6.52
Seventh Plan	1985-90	100.00	0.84	3.74	2.08	6.67
Annual Plan	1990-91	100.00	1.15	4.07	3.17	8.40
Annual Plan	1991-92	100.00	1.13	4.40	3.17	8.71
Eighth Plan	1992-97	100.00	1.35	1.77	1.77	4.89
Ninth Plan	1997-02	100.00	2.01	2.68	2.45	7.15
Tenth Plan	2002-2007	100.00	1.84	3.17	2.58	7.59

Chapter 3

AGRICULTURAL DEVELOPMENT SCENARIO OF HIMACHAL PRADESH

3.1 Changes in Overall Economy

Resource allocation patterns have a direct bearing on the growth and structure of the economy. Table-4 shows the percentage distribution of State Domestic product by origin of industry and Table-5 shows the basic indicators of growth in Himachal Pradesh. An analysis of the growth and structure of the Net Domestic Product of Himachal Pradesh shows that the total income of the State grew at the rate of 2.41 per cent (at constant 1970-71 prices). The overall growth rate of the primary sector (agriculture and allied activities) was merely 1.67 per cent per annum. Income from agriculture (including horticulture and animal husbandry) grew at the rate of 2.33 per cent per annum. Growth in income from forestry was negative (this was because of the ban on forest cutting). The secondary (industrial) sector grew at the rate of 3.3 per cent and in electricity, gas, and water supply it was 21.7 per cent. The tertiary (services) sector grew at the rate of 4.7 per cent per annum. The annual growth rate in manufacturing activities was 3.2 per cent and in electricity, gas, and water supply it was 21.7 per cent. The tertiary (services) sector grew at the rate of 4.7 per cent per annum. The growth rate in banking and insurance was 41.9 per cent per annum. Transport and Communications showed a growth rate of 4.9 per cent per annum. The relatively higher growth rate in the secondary and tertiary sectors is due to their small initial base. The growth in income from different sectors at 1993-94 prices is higher than the 1970-71 prices.

The relative contribution of different sectors to the Net State Domestic Product has been changing over time. The share of the primary sector has been declining and that of the secondary and tertiary sectors increasing, as is to be expected in any developing economy. In 1967/68, the primary sector accounted for a 61 per cent share in the Net State Domestic Product, whereas, by 1982/83, its share had declined to 50 per cent and in 2000-01 it decreased to 24.4 percent. During the same period, the share of the secondary

sector increased from 13.8 per cent to 20.7 per cent and 33.1 percent, whereas the share of the tertiary sector increased from 25 per cent to 29 per cent and 42 percent. The primary sector still has a dominant position in the economy. The tertiary sector has mostly been catering to the needs of the secondary sector, because the growth rate of the tertiary sector has been barely keeping pace with that of the secondary sector. Having a low base, the tertiary sector services were, by and large, used up by he secondary sector and thus they could not percolate down to the primary sector and rural areas.

It is observed that the economy of the State has undergone structural changes temporally, in that the relative contributions by the primary sector, secondary sector, and tertiary sector have changed. But it is significant to note that even though the relative share of agriculture (primary sector) in the State Domestic Product has gone down, the percentage of the work force dependant upon this sector has not decreased, since, 71 per cent of working people are still directly dependant on agriculture according to the 2001 census.

There has been some emphasis on industrialization, as reflected by the increase in plan allocation to the manufacturing sector, yet the share of this sector in the State income has not risen much. This indicates that there is a further need to probe into what types of industries are being promoted through State intervention, their forward and backward linkages with the rest of the economy, their impact on employment generation, and the incidence of "sickness" among the promoted industries. For a hilly area like Himachal Pradesh, small-scale agro-industries are best suited to the use of local raw materials and manpower. Small-scale industries can provide employment opportunities at a relatively smaller capital cost. These industries help in the dispersal of industrial activities and thus foster balanced development of all parts of the region.

In a hilly State like Himachal Pradesh, with meager infrastructural facilities (e.g. roads, schools, hospitals etc.), high priority in resource allocation had to be initially accorded to the creation of the prerequisites for development. Heavy allocation of resources for social overheads that provide education, medical facilities, and public health services is also justified. Because of the high priority given to transport and communications, the mileage of motorable roads increased more than four times from 1967 to 2002. During the same

period, the literacy rate more than four times, it was 17 per cent in the 1961 Census and 77 per cent in the 2001 Census. Education is one of the basis needs for economic development in a region. The Himachal Pradesh Government gave due consideration to education and to medical facilities in its Plans. The number of hospitals and dispensaries increased from 480 to 1262 from 1967/68 to 2001-02 (see Table 5).

Table-4: Percentage Distribution to net State Domestic Product of Himachal Pradesh.

Economic activity/sector	**1967-68**	**1972-73**	**1982-83**	**1983-84**	**1990-91**	**2000-2001**	**Annual growth (67-82)**	**Annual growth (83-01)**
1. Agriculture & Animal husbandry	55.45	46.15	45.05	35.75	31.76	19.52	2.33	1.66
2. Forestry	5.09	7.86	4.78	10.65	6.62	4.67	-2.33	3.45
3.fisheries	0.04	0.04	0.14	0.28	0.38	0.21	30.00	3.97
Sub-total	**60.58**	**54.05**	**49.97**	**46.68**	**38.76**	**24.40**	**1.67**	**1.99**
4.Mining & quarrying	0.07	0.22	0.23	0.91	1.49	1.10	1.66	3.35
5.Manufacturing	5.55	5.51	5.61	3.37	6.05	11.23	3.20	14.33
6. Construction	7.38	13.48	13.28	12.02	12.90	15.55	2.57	4.85
7.electricity, gas and water supply	0.86	0.59	1.56	3.28	3.43	5.22	21.71	11.70
Sub-total	**13.86**	**19.80**	**20.68**	**19.58**	**23.87**	**33.10**	**3.34**	**9.31**
8.transport, storage & communication	2.50	2.76	3.59	2.04	1.24	2.41	4.91	5.64
9.Trade,hotels & restaurant	7.35	5.45	3.86	8.78	8.83	8.75	-2.14	31.00
Sub-total	9.85	8.21	7.45	10.82	10.07	11.16	0.17	8.82
10.Banking & insurance	0.56	0.94	3.26	2.14	3.93	4.86	41.93	10.22
11. Real state	2.78	2.97	2.55	6.42	5.50	4.22	1.02	2.83
12.Public administration	5.10	5.70	6.85	6.21	7.86	9.27	4.03	6.26
13.Other services	7.27	8.33	9.24	8.15	10.01	12.99	3.06	7.94
Sub-total	15.71	17.94	21.90	22.92	27.30	31.34	4.70	6.75
Total income	100.00	100.00	100.00	100.00	100.00	100.00	2.41	5.70
Actual income in Rs. lakhs	18300*	23910*	2969*	268181@	391891 @	667155 @		

Source: Department of Economics & Statistics Shimla, H.P.
* At 1970-71 prices
@ At 1993-94 prices

Table-5: Basic Indicators of Growth in Himachal Pradesh.

Sr. No.	Indicators	1967-68	1972-73	1982-83	1992-93	2001-2002
1.	Population(millions)	3.22	3.57	4.28	5.37	6.07
2.	%of population living in rural areas	NA	94.97	92.38	91.31	90.28
3.	Population density/sq.km.	57.8	64.5	77.0	93.0	109
4.	Net state domestic product(Rs. in million)	1830	2391	2960	3578	10310
5.	Per capita income(Rs./yr.)					
	a. at current prices	528	769	1658	5979	21368
	b. at 1970-71 prices	568	669	686	1278	10942*
6.	Literacy rate	21.24	31.96	42.48	63.90	77.13
7.	No. of doctors per million of population	21.8	203	296	204	268
8.	No. of hospital beds per million of population	1440	1270	1355	1482	1783
9.	No. of hospitals & dispensaries	480	590	830	1031	1262
10.	%of villages electrified	6.15	24.83	75.63	100.00	100.00
11.	Per capita domestic consumption of electricity (KWH)	3.1	5.6	75.63	52.72	109.45
12.	Electricity generated (million KWH)	3.7	162.6	540.5	1087383	1149.5
13.	Mileage of roads (km.)	4308	7609	13600	22780	27217
	a. Per 100km of area (km.)	8.72	16.85	24.44	40.91	48.87
	b. Per thousand of population	1.51	2.61	3.18	4.24	4.48

*At the price of 1993-94

Source: Statistical Outline of Himachal Pradesh (Various issues) Shimla;
Directorate of Economics and Statistics, Himachal Pradesh.

In a hilly region with sufficient rainfall and vast hydro-electric potential, the power sector should not be considered to be a mere component of infrastructural facilities; rather it should be counted as a commodity production sector and as a source of income. In Himachal Pradesh, during 1967-68, the electricity generated was only 3.7 million kwh and by 2001-02 it rose to 1149.5 million kwh, out of which about 50 per cent of the power (which was surplus) was sold to the neighboring States, thus providing a good source of income for the State.

3.2 Changes in the Agricultural Sector

Since the agricultural sector accounts for the lion's share in the Net State domestic Product and employs more than two-thirds of the working population, its growth is vital for the growth of the State economy and, consequently, the socio-economic upliftment of the rural masses. From this perspective, it is interesting to make a critical appraisal of the changing profile of agriculture in Himachal Pradesh.

3.2.1 Broad Land Use The advantage of extensive cultivation cannot be taken because of a variety of reasons. The analysis of the land use pattern over time, therefore, assumes great importance in developing a future strategy regarding reallocation of resources to different crops. The land use data are presented in Table-6. The total geographical area reported by the professional survey was 5,567,300 hectares while the cadastrally surveyed area (by village papers) during 1999-2000 was only 4,531,800 hectares. The rest of the area was under snow and was inaccessible. The reported area (by village papers) was considered for analysis of the land use-pattern, the forest area had increased from 21.8 to 24.1 per cent of the total reported area during the thirty years since 1970-71. However, an increase of 19 per cent in barren and uncultivable wasteland is unfortunate. This could be attributed to soil erosion, which is a disturbing phenomenon. The land put to non-agricultural uses, such as roads, etc also increased from 5.9 per cent to 6.66 percent during this period. The area under cultivable waste, i.e. land once cultivated and then not cultivated for five years in succession, showed a welcome decline from 5.7 percent to 2.63 percent of total area. Permanent pastures and other grazing lands accounted for 32.47 per cent of the reported area during 2001-02, indicating that the State has good potential for

supporting animal husbandry programmes. The percentage of land under current fallows and other fallow land also declined from 2.1 to 1.6 percent. However, the net area sown increased from 546,400 hectares to 551,500 hectares during the study period while the cropping intensity had increased only slightly from 166.9 to 173.5 during this period.

Table-6: Changes in Land Use in Himachal Pradesh.

(Area in 000, hectares)

Land use	**1970-71**		**1980-81**		**1990-91**		**1999-2000**	
	Area	Percent to total	Area	Percent to total	Area	Percent to total	Area	Percent to total
1.Total geographic area								
a. By professional survey	5565.8	-	5567.3	-	5567.3	-	5567.3	
b. Reporting area for land utilization purpose	2932.5	100.00	2985.2	100.00	3367.6	100.00	4531.8	100.00
2.Forests	638.2	21.8	806.8	27.03	1039.0	30.85	1094.2	24.14
3.Barren & uncultivable	118.8	4.0	141.4	4.74	183.8	5.45	856.9	18.90
4.Land put to non-agricultural uses	172.10	5.9	161.9	5.42	193.2	5.73	302.2	6.66
5.Cultivable waste	167.7	5.7	223.7	7.49	125.1	3.71	119.4	2.63
6.Permanent pastures and other grazing lands	1188.0	40.5	985.9	33.02	1135.4	33.72	1471.5	32.47
7.Land under misc. tree crops not included in area sown	40.8	1.4	39.4	1.31	48.2	1.43	64.2	1.42
8.Current fallows	58.3	2.0	41.4	1.38	44.7	1.33	56.2	1.24
9.Other fallow land	2.3	0.10	12.6	0.42	15.4	0.45	15.7	0.35
10.Net area sown	546.4	18.6	572.1	19.16	582.8	17.31	551.5	12.17
11.Cropping intensity	166.9	-	165.4		168.7		173.5	3.83

3.2.2 Farm Size Structure There had been an increase in the number of land holdings from 6,09,000 in 1970-71 to 8,63,437 in 1995-96, indicating rapid fragmentation of medium and large holdings due to succession; as well as allotment of land to the landless by the State. The percentage number of marginal and small operational holdings had gone upto 84.5 in 1995-96 while they owned only 47.2 per cent of the total of the number of holdings. The medium and large farmers, who constituted only 15 and 0.5 per cent, owned 45 and 7.8 per cent of the farmed land in the State. The land resources are thus highly skewed in distribution and, with the increase in population, the land-man ratio has gone down and the average size of holdings in Himachal Pradesh has declined from 1.53 ha in 1970-71 to 1.16 ha in 1995-96. This works out to a 25 per cent decline in two and half decades.

3.2.3 Cropping Patterns A change in cropping patterns has been taking place in the State as elsewhere in the country. The shift in cropping systems is normally advantageous and indicates a dynamic economy. The change depends upon the crops involved and the multifarious stimuli such as the changing economic, technological, and institutional factors. The data shown in Table-7 give a broad crop-group-wise changing crop pattern in the State. Food crops include cereals, pulses, vegetables, fruit crops, and spices and these together accounted for about 96 per cent of the total cropped area while the remaining was shared by non-food crops. The area under fruit crops registered the highest increase i.e. 1.3 percent in 1970-71 to 6.03 percent in 1999-2000, followed by wheat, total vegetables, maize, and total spices. However, the area under two principal cereal crops, i.e. paddy and barley, total pulses, and total oilseeds, decreased. Pulses suffered a maximum decline, followed by barley, paddy, total non-food crops, and total oilseeds during the reference period. The decrease in area under pulses and oilseeds might not be immediately disadvantageous to the farmers because of the present low-level output-input ratios of these crops, but, nevertheless, it has national repercussions.

3.2.4 Production and Productivity of Principal Crops The data presented in Table 8 show the trends in area, production, and productivity of the four principal cereal crops and the three important cash crops in the State. Nationally, the water, fertilizer, and seed (HYV) technology has markedly increased the productivity of wheat from 1,307 kg during 1970-73 to 2,778 kg/ha during 1999-2000 but, in Himachal Pradesh, the impact of the

'green revolution' is not noticeable in wheat as its yield increased from 1,030 to 1513 kg/ha even though the wheat cultivated area was nearly 83.5 per cent saturated

Table-7: Change in Cropping Pattern in Himachal Pradesh.

(Area in hectares)

Crop/crops group	1970-71		1980-81		1990-91		1999-2000	
	Area	% to total	Area	% to total	Area	% to total	Area	% to total
Wheat	317672	34.8	350800	34.75	376278	38.25	370587	38.73
Maize	257255	28.2	285900	2832	319111	32.14	299906	31.34
Paddy	103869	11.4	93300	9.24	84939	8.63	79221	8.28
Barley	40387	4.4	36600	3.62	29295	2.98	25901	2.70
Total cereals	764439	83.8	801100	79.35	831583	84.54	791957	82.77
Total pulses	71721	7.9	55500	5.49	39982	4.06	32556	3.40
Total food grains	836163	91.7	856600	84.85	871565	88.61	824513	86.17
Total fruits	11953	1.3	28766	2.84	43671	4.44	57722	6.03
Total vegetables	20546	2.3	21321	2.10	29010	2.95	34675	3.62
Total spices	2665	0.3	3000	0.29	2968	0.30	3995	0.41
Total food crops	875630	96.0	979500	97.03	949752	96.56	923939	96.57
Total oilseeds	22219	2.4	20200	2.00	21235	2.16	18857	1.97
Total non-food crops	36111	4.0	30017	2.97	33847	3.44	32828	3.43
Total crop area	911741	100.0	1009517	100.00	983599	100.00	956767	100.00

Source: Directorate of Land Records, Himachal Pradesh, Shimla.

Table-8: Trends in Area, Production and Productivity of Selected Principal Crops of Himachal Pradesh.

Crops	Area(`000 ha.)			Production(`000MT)			Productivity(kg./ha.)		
	1970-73	1998-00	%change	1970-73	1998-00	%change	1970-73	1998-00	%change
Maize	257.3	304.2	18.22	402.9	654.8	62.52	1566	2154	37.54
Paddy	99.8	82.5	-17.33	104.7	135.9	29.79	1049	1440	37.27
Wheat	319.8	375.9	17.54	328.9	568.6	72.87	1030	1513	46.89
Barley	41.2	26.8	-34.95	53.0	33.8	-36.22	1286	1261	-1.94
Potato	15.1	14.3	5.29	67.9	152.8	125.03	4497	11167	148.32
Apple	28.7	85.8	198.95	86.0	225.7	162.44	2997	2630	-12.24
Ginger	2.1	1.8	-14.28	1.3	2.8	115.38	619	1404	126.81

Source: 1. Directorate of Land Records, Himachal Pradesh, Shimla.
2. Directorate of Horticulture, Himachal Pradesh, Shimla.

with HYVs of this crop. The two important reasons are sub-optimal use of fertilizers and scanty irrigation facilities. Further, the 50 years of research work conducted by the Regional station of the Indian Agricultural Research Institute, at Shimla, indicate that the northern hill region suffers from innate typical agronomic unsuitability for production of wheat and barley. Apart from this, the menace of rust diseases also causes loss of about 10 per cent in yield. However, the wheat-cultivated area appeared to have gained at the cost of barley and also due to additional areas brought under the plough. This change is perhaps a corollary to a similar change in the food habits of the people in the State. The increase in the productivity of paddy, which had a 56 per cent area under irrigation and almost a hundred per cent area under HYVs, was comparatively noteworthy. The average yield levels in the State were 1049 and 1449 kg/ha as against the All India figures of 1,123 and 1,552 kg/ha during 1970-71 and 1999/2000 respectively. But still there has been a marginal shift in area from paddy to other crops. However, in the case of maize, the Himachal farmers have acquitted themselves very well and the productivity levels even exceeded the national average.

As for principal cash crops, the saga of the revolutionary strides in apple production and the increase in area is widely recognized. Apple cropped areas and production registered the notable increases of 199 and 162 per cent respectively. But ginger cultivation recorded a decrease in all respects and the data in Table 8 show a similar trend for potatoes as well. The latter is, however, not accurate as the production figures of the Directorate of Land Records and the Directorate of Agriculture of Himachal Pradesh differ widely. The figures of the directorate of Agriculture are much higher and also more reliable.

3.2.5 Growth in Milk, Meat and Wool Production The state has registered a progressive increase in milk production during the last three decades. The total milk production was estimated to be 240.13 thousand tonnes in 1974, which has increased to 760.41 thousand tonnes in 2000-01. The overall percent increase in milk production with in a time span of about three decades is very encouraging and confirms the soundness of policy adopted for the development of cattle. The per capita availability of milk has also increased from 184 ml in 1974 to 343 ml in 2000-01 showing an increase of 125 per cent

during this period. The wool production in the state was 628.7 tones in 1962-63, which has increased to 1582 tones in 2000-01. Similarly, total meat production was 1738 tones in 1967-68, which has increased to 3526 tonnes in 2000-01. The wool production over 1962-63 has increased by 154 per cent and meat production by 108 per cent during 1962-63 to 2000-01.

3.2.6 Share of Sub-sectors in Agricultural Output Value Agriculture is the main constituent of the primary sector which is composed of (i) agriculture (ii) forestry and logging (iii) fishing, and (iv) mining and quarrying. The relative contribution of field crops, plantation (fruit) crops, and animal husbandry to the total value of agricultural output in Himachal Pradesh is presented in Table-9. The table reveals that from 1971 to 1986, at constant 1970-71 prices, the total value of agricultural output grew at the rate of 2.6 per cent per annum. Among the different constituents of the agricultural sector, the highest growth rate was recorded in the case of fruit crops, followed by livestock production; their respective outputs increased at the rates of 6.8 per cent and 4.2 per cent per annum. During the same period (i.e. 1971 to 1986) relatively slow growth (1.5 per cent per annum) was reported in the case of output from the field crop.

Because of faster growth in the fruit production and animal husbandry, their relative shares in the total value of agricultural output were increasing and thus the relative share of field crops was declining. In 1971-72 the share of field crops was 68.6 per cent in the total agricultural output of the State, and this declined to 49.3 per cent by 2000-2001. The respective shares of plantation crops and animal husbandry in the total agricultural output were 8.0 and 23.4 per cent in 1971/72, which respectively increased to 14.17 and 36.52 per cent by 2000-01. This is a healthy trend because ecologically sound development of hilly areas requires that more and more land should be diverted away from field crops to tree crops and grasses so that disturbance of the topsoil is reduced.

The Agricultural output from 1986 to 2001, at constant 1980-81 prices has increasing at the rate of 13.49 percent. The highest growth rate was in case of field crops followed by livestock output and field crops. The higher rate in growth of field crops may be due to increase in area and production of cash crops like off-season vegetables, ginger, etc in the state.

Table-9: Percent Contribution of Agriculture, Horticulture and Animal Husbandry to the value of total Agricultural output in Himachal Pradesh.

Years	Agriculture	Horticulture	Animal Husbandry	Value of total Agricultural output
1971-74	68.6	8.0	23.4	1448.7
1974-77	69.0	8.5	22.5	1516.9
1977-80	65.0	8.4	26.6	1625.1
1980-83	62.5	10.9	26.6	1822.3
1983-86	62.1	10.8	27.1	1996.9
Annual growth	1.5	6.8	4.2	2.6
1986-89	48.02	18.52	33.46	6497.9
1989-92	49.86	18.40	31.74	10260.3
1992-95	49.12	15.02	35.86	15024.3
1995-98	52.68	12.19	35.12	21680.7
1998-2001	52.71	11.39	35.90	30348.3
Annual growth	14.32	7.82	16.49	13.49

* State Domestic Product of Himachal Pradesh 1988-89
** State Domestic Product New series 1998-99 to 2000-01
Source: Department of Economics & Statistics, Govt. of Himachal Pradesh.

3.3 Summing Up

Fairly heavy allocation of resources (above 20% of the total outlay) to the agriculture and allied services, on which about three-fourths of population depends for a livelihood, is also justified. However, the main emphasis in agriculture should shift from 'self-sufficiency in foodgrains' to maximization of farm income through cash crops (fruits and vegetables) that are highly remunerative and for which the region has comparative advantages (due to climate and other factors). In 1971-72 the share of field crops was 68.6 per cent in the total agricultural output of the State, and this declined to 49.3 per cent by 2000-2001. The respective shares of plantation crops and animal husbandry in the total agricultural output were 8.0 and 23.4 per cent in 1971/72, which respectively increased to 14.17 and 36.52 per cent by 2000-01. The land use data of the State reveals that the area under barren and uncultivable land is increasing over time, mainly due to an increase in the human and livestock population, which resulted in marginal land being brought under the plough and in overgrazing of pastures. Hence, the process of land degradation in the State needs to be contained and it is necessary to examine sustainable approaches to agricultural development. The livestock population has been increasing at the rate of 0.59 per cent

per annum and fodder resources have been shrinking. Livestock numbers need to be contained/curtailed and their quality improved to increase income from livestock sources. In the animal husbandry programmes, attention to livestock diseases alone is not sufficient. Programmes for better breeding and feeding should also be popularised and form part of the programme for improving the livestock productivity. In a region where livestock owners heavily depend upon common pastures and grazing lands (whose conditions are deteriorating due to excess livestock pressure), some collective action, with financial and technical support from the Government, is very necessary to improve the forage productivity of the common pasture lands, which are currently ignored by animal husbandry programmes.

Chapter 4

MAJOR INITIATIVES IN AGRICULTURAL DEVELOPMENT IN HIMACHAL PRADESH

4.1 Agricultural Development Programmes

The Department of Agriculture in Himachal Pradesh was established in the year 1948, but it was merged in the Forest Department in the year, 1950. This arrangement continued till 1952. Thereafter, Agriculture Department in Himachal Pradesh started functioning independently and it was assigned the responsibilities of Agricultural Development, Agricultural Research and Agricultural Extension. At that time, the Horticulture was also a part of the Agriculture Department. In the year, 1970, the Government of Himachal Pradesh made Horticulture Department independent. Since then, in order to serve the farming community, the Department of Agriculture has been implementing different Agriculture Development Programmes in the State. The programmes, Schemes implemented by the Agriculture Department in the state are given below:

4.1.1 Quality Seed Multiplication and Distribution: Department owns 25 Seed Multiplication Farms where Foundation Seeds of Kharif and Rabi crops are produced. Annually about 3500 to 4000 Qtls. Seed of Cereals, Pulses and Vegetables are produced. Further about 1,00,000 quintals of Certified Seeds of various crops are distributed to the farmers in the State.

4.1.2 Soil Testing: Department has 11 Soil Testing Labs besides 2 Mobile Soil Testing Labs to provide free soil testing facilities to the farmers. About 1,00,000 samples are analyzed annually. Besides this, Government has decided to issue Soil Health Cards to the farmers and during 2003-2004, 1 lac. Cards shall be provided.

4.1.3 Crop Protection: The Department exercise vigil on Pest situation .To overcome this, about 600 M.T of pesticides through 991 Sale Centers are being supplied to the farmers. For quality control pesticide testing laboratory is also being set up with an analysing capacity of 150 to 500 samples per year. One Bio Control Laboratory has been

established at Palampur where various aspects like pest situation conservation augmentation, training of extension staff and farmers is being taken care of.

4.1.4 Seed Potato Development: The Department owns 14 Potato Development Stations where Foundation Seed Potato is produced. Due to Seed Potato Plot Technique in the plains, the potatoes of plains are causing tough competition in marketing of Seed Potato from Himachal Pradesh. Therefore, a policy has been devised to diversify the area under potato towards cash crops, market maximum potato as table produce only that much seed potato which can easily be marketed outside the State.

4.1.5 Vegetables Development Project: Annually about 6.25 lac tonnes of fresh vegetables are produced. Intensification is done through project approach. Presently 100 projects with an area 1,000 hectares have been taken up .The Department own four Vegetable Seed Farms where Quality Seed is produced.

4.1.6 Ginger Development: For production of disease free Ginger, the Department is providing Training, Demonstrations and Quality Seed. Annually about 35,000 tones of Green Ginger is produced which is marketed to the neighbouring States.

4.1.7 Agricultural Marketing: This is regulated in the State through H.P Agricultural Produce Market Act 1969. Under this Act H.P Marketing Board has been set up. At present, 10 Market Committees are functioning so far 29 are Functional Agricultural Markets and 7 numbers are under construction.

4.1.8 Farmers Trainings & Education: The Department runs two Training Centers one at, Mashobra, District Shimla and other at Sundernagar, District Mandi. Besides this farmers training camps are organized at Village, Block and District level.

4.1.9 Tea Development: Total area under Tea is 2,300 hectares with a production level of 17 m.lac Kgs. To boost this venture, it is proposed to cover 3,000 hectares additional area under Tea in Chamba, Kangra and Mandi District. Private Sector participation is being encouraged in this regard.

4.1.10 Rashtriya Krishi Bima Yojna (RKBY): The State Government has introduced this Scheme from Rabi 1999-2000 season. Crops covered are Wheat, Barley, Maize, Paddy and Potato. Subsidy in premium is allowed to Small and Marginal Farmers. The scheme is compulsory for loanee farmers and optional for non-loanee farmers. The scheme provides comprehensive risks insurance against yield losses viz. Drought, Hailstorm, Floods, Pests Disease etc. The General Insurance Corporation of India (GIC) is implementing the scheme.

4.1.11 Accelerated Maize Development Programme**:** This programme has been launched for increasing productivity of Maize. Our productivity is 2.2 tonnes per hectare, which is quite good. The programme is 75:25 Centre State Share bases and every year about Rs. 40 lacs are spent in this programme. The main components include Demonstrations of Technology, Training of Farmers, Promotion of Mechanisation, Integrated Pest Management in Maize and Publicity/ Programme.

4.2 Horticultural Development Programmes

The planned development of Horticulture in Himachal Pradesh is only of the recent origin and more so a post independence phenomenon. During the pre-independence period, there had been practically no or very little development of Horticulture, Pioneering efforts were, however, made by a few European and American Missionaries by way of introduction of the different varieties of temperate fruits, particularly apples. Similarly, some princely states also made efforts for the introduction of fruit cultivation and particular mention in this regard may be made of the Maharaja of Patiala State who made commendable efforts in introducing stone fruits cultivation in the Mid Hill region of the present Solan District. However, the lack of communication facilities and also lack of interaction between the people, rule's and the ruled in the different princely states, people knew nothing about the transformation that can be brought about in the economy of the rural people if they took to horticulture. Whatever, efforts were made by the then British Government were limited only to the development of resorts as a summer escapes from the summer heat of the plains, but in them too, horticulture did not find any significant place.

During the year, 1950-51, the total area under all kinds of fruits was 792 hectares with and annual production of 1200 tonnes. In the initial years of development, stress was laid on the variable trials, development of technologies plant propagation with the main aim of initiating fruit full plantation activities. However, the programme was in one way lop-sided since it did not take account of the integrated development of all sectors of Horticulture. The Horticulture Development Programmes undertaken by the Department in the State are discussed below:

4.2.1 Development of Horticultural Infrastructure**:** In the growth and marketing of agriculture/horticultural commodities, infrastructure development is essential. In this context the state took a number of policy initiatives for the development of infrastructure facilities relating to horticulture. These can be broadly divided into three categories: (i) production and fertilizers, (ii) disposal facilities, i.e., grading, packing, transportation, storage, etc., (iii) institutional facilities, i.e. Himachal Pradesh Processing and Marketing Corporation (HPMC), cooperatives, etc.

The state has set up 113 nurseries for supply of fruit plants of different varieties, besides registering 736 private nurseries for this purpose. A network of 209 distribution centres under the control of Department of Horticulture, HPMC, Himachal Pradesh Agro-Industries Corporation and Himachal Pradesh Marketing Federation (HIMFED) supply the insecticides and pesticides to the farmers. The fertilizers are supplied from various outlets by the cooperatives under subsidized rates.

Various measures have been taken in the state for augmenting the infrastructure facilities for grading, packing, transportation, storage, processing, etc. In this regard the state has set up five cold storages with a capacity of 8,000 tonnes within the state and three cold storages outside Himachal Pradesh having a capacity of 8256 tonnes. At present there are four grading houses with a capacity of 15,000 tonnes and five grading-cum-packing houses having a capacity of 5,000 tonnes. Processing plants with a capacity of 40,000 tonnes have also been set up in the state.

The HPMC was established in 1975 for providing facilities to orchardists. The main functions of this organization are: (i) Marketing advance in cash, (ii) packing material

(cash/kind), (iii) forwarding assistance and transit warehouse, (iv) cold storage facilities, and (v) Market intelligence (Azad et al., 1988). A corrugated fiberboard carton manufacturing plant has been set up at Gumma in Shimla district. The state government is also providing incentives for the development of horticulture. The rate of subsidy under the scheme for incentives for weaker sections vary from 25 per cent for small farmers, and 33.3 per cent for marginal farmers to 50 per cent for scheduled caste/scheduled tribe farmers, backward area and IRDP farmers for fruit plantations subject to a maximum limit of subsidy being Rs. 3000 per family. However, for garden colonies the subsidy limit is up to Rs. 18,000 for a group of five members or more under common fencing. Incentives are also provided to the fruit growers for adopting the modern technology for horticulture. For the purpose of establishment of small nurseries in the private sector, 50 per cent subsidy subject to a maximum of Rs.20,000 for an area of 2 to 5 acres per beneficiary is given. Use of plastic in horticulture for drip irrigation, greenhouses and plastic mulch also attracts subsidies. The subsidy on drip irrigation is 70-90 per cent subject to maximum of Rs.25,000 per hectare and there is no limit on subsidy per individual. The subsidy is fixed at the rate of 10-50 per cent subject to a maximum of 500 sq. meters per individual for construction of greenhouses. The maximum limit of subsidy per individual is Rs.31,250 for low cost greenhouses and Rs.1 lakh for medium/high cost greenhouses. The subsidy is given at the rate of 50 per cent subject to a maximum of Rs.5,000 per hectare per individual for plastic mulch. These subsidy rates are effective from 1996-97 while these were fixed at lower levels earlier. Subsidies for the development of commercial floriculture, popularizing of substitute packing cases and transport subsidy on wooden logs for manufacturing packing boxes are also provided. Credit facilities for plantation of orchards, nursery production and floriculture with a repayment period of 4-15 years are extended to the orchardists.

4.2.2 Horticultural Price Policy: The horticultural crops hold great promise and potential in ushering an area of rapid socio-economic transformation. In retrospect, it is observed that the state announced the support policy for potatoes way back in 1972 and it has been implemented in an ad-hoc manner over the years. As for apples, the price support scheme was extended to this crop in 1981 and other fruit crops subsequently. However, the price support was not implemented during 1991-92 to 1993-94 due to politico-economic considerations. This policy was reversed during 1994 and during 1996-97 the

government increased the procurement price to Rs.3.50 per kg apples. The state is handicapped in implementing the price support policy for horticultural crops because of (i) non-availability of scientific data generated through scientific studies, and (ii) requisite support from the government of India in this regard

4.3 Livestock Development Programmes

When this state came into existence in 1948 the Animal Husbandry Department did not exist and consequently there were no concerted efforts for the improvement of livestock industry. After the creation of state of Himachal Pradesh, it was realized that next to horticulture, livestock could play a significant role towards improvement of farmer's economy in the state and the Department of Animal Husbandry was established in 1949 so that concerted efforts could be made to improve livestock industry. The entire livestock population at that time was non-descript, low producing and uneconomical, which presented a very dismal picture. Improvement in livestock condition, to a point where the animals could contribute their due share towards state's economy called for a Herculean effort.

4.3.1 Cattle Development Programme**:** Cattle Development Schemes were introduced in the First Five Year Plan. In 1951 an up grading programme of cows was started under the All India Key Village Scheme and two key village centres at Kotgarh and Solan were started, where Red Sindhi bulls were located for cross-breeding programme. The impact of this programme was quite encouraging but the coverage was very limited. Subsequently, artificial insemination programme was started in 1954-55 by transporting jersey semen by air from Bangalore to Himachal Pradesh. With the advent of the Indo-Germen Agriculture Programme, launched in Mandi district during 1962, a small herd of German Highland spotted breed of cattle, i.e. Flecvich was brought in and kept at a Central Cattle Breeding Farm at Bhangrotu in Mandi district. This breed did not prove suitable for the hills and this was replaced by jersey cattle imported from Denmark. During this period, a new Cattle Breeding Farm was started at Kothipura in Bilaspur district and jersey cattle received from Denmark were maintained at this farm where their performance was quite encouraging. The real break-through in the cattle-breeding programme was achieved with the implementation of the Indo-New Zealand Livestock Improvement Project. Under this project 175 pure Jersey cattle were brought from New Zealand in 1974, which formed the

nucleus foundation stock of Jersey herd at Palampur in the University campus. Apart from this, the Frozen Semen Laboratory was also established in collaboration with the New Zealand Govt. and another with the assistance of the West Germany Govt. at Bhangrotu during 1974. Both these Laboratories acted as a pace setter for intensifying the Artificial Insemination Programme in the state. Simultaneously, staff members of the Animal Husbandry Department, and Agricultural University were trained at New Zealand and West Germany in handling deep frozen semen technology.

New turn to cattle breeding policy was given consequent upon the deliberations of the "High Powered Cattle Breeding Committee" of Indo-New Zealand Livestock Improvement Programme (SNLIP) held at Palampur in 1978. The expert opinion favoured exploitation of continuous hybrid vigor with Jersey as the exotic breed and step-wise substitution of non-descript inheritance with Jersey and Sindhi in the lower hills. For high altitudes, use of Jersey and selected Jersey crossbreed bulls with indigenous cows was prescribed. Jersey was selected out of the exotic breeds for the following reasons: (a) It is a small sized breed and is suitable for producing smaller animals, which can graze well under mountainous terrain; (b) Its feed requirements in terms of maintenance ration are less than larger breeds. (Its feed conversion/utilization per unit kg of body weight is much efficient than other breeds); (c) It has a moderate yield and therefore, matches hill resources, and (d) It has higher butter fat percentage in milk.

Keeping these advantages in view, Jersey bulls and cows were imported from Australia, New Zealand, Denmark etc. under various schemes. These herds have been serving as distribution centres of superior germplasm for grading up of local cattle. The main thrust had been to improve genetic potentials of cattle through: - Hill Cattle Development Scheme, (ii) Intensive Cattle Development Project, (iii) Key Village Schemes, (iv) Indo-New Zealand Livestock Improvement Project, and (v) Indo-German Dhauladhar Project. These projects aim at making intensive efforts towards livestock improvement programme and express a change in approach from the usual schematic to project oriented efforts, so that a perceptible impact could be witnessed in selected areas. Presently nearly 1.5 lakh cows are inseminated every year in Himachal Pradesh.

Indo-German Dhauladhar Project (IGDP) on the other hand has adopted an integrated approach on livestock improvement using frozen semen technique as a mean rather than an end in itself. Realizing the importance of balanced nutrition during pregnancy, subsidized feed is being made available as late pregnancy ration. The calf is given calf-starter at subsidized rates till the development of rumen takes place and this intensive care is continued till the heifers are bred and begin to yield milk. This project effort has yielded amazing results by achieving good conception rates, better birth weight, faster calf growth and very low calf mortality rate.

The Intensive Cattle Development Project (ICDP) adopts similar approach by providing inputs on breeding, feeding and disease control in the project area. The total number of artificial insemination performed in H.P. annually was 1.5 lakh in 1996-97.

4.3.2 Buffalo Breeding Programmes: The importance of buffalo as milk producer with higher butterfat content is widely appreciated by the farmers and efforts are afoot to improve this species. The work on buffalo breeding was initiated in a few pockets in 1980. Because of lack of technical know-how in the preservation of buffalo semen, breeding was performed through natural service by locating 92 Murrah bulls at different places in the state. However, new successful preservation of buffalo semen in frozen state has also been confirmed by the researches conducted at Palampur Laboratory. This technique has now gained popularity and the demand for Murrah semen straws exceeds the production, which was started as experiment. Artificial Insemination facility in buffalo has now been extended to 190 centres in four districts covered in Intensive Livestock Improvement Programme and during 1991-92 year 75 thousand buffaloes were inseminated with the semen processed at the Palampur Laboratory.

4.3.3 Sheep Development Programmes: In Himachal Pradesh nomadic and semi-nomadic people of tribal region generally own sheep. Due to lack of adequate grazing facilities they are compelled to resort to the practice of migration from high hills to low hills during winters and vice-versa during summer season. These nomadic shepherds are generally illiterate and are un-aware of the modern improved scientific technology in the sheep and wool production.

Various experiments were carried out by the Animal Husbandry Department of Himachal Pradesh to improve the indigenous non-descript type of sheep. Some exotic breeds were tried for crossbreeding purposes under different agro-climatic conditions of the state. In 1956-57 241 sheep of Polwarth breed were imported from Australia. The other exotic breeds of sheep imported; were Scottish black face from U.K. in 1960-61, Spanish Merino from Spain in 1961-62, German Merino from West Germany in 1963-64, Soviet Merino from USSR in 1965-66, Corriedales and South Down from Australia in 1968-69, and Rambouillet breed from the USA in 1980-81. The distribution of sheep of exotic breeds to the interested breeders was also undertaken from different sheep breeding farms in the state. After various crossbreeding trials, it has been found that the progeny born of Rambouillet are better than the progeny born out of Soviet or other Merinos. After conducting series of crossbreeding experiments at the research farms, which have now been converted into pure exotic farms, where only Soviet Merinos and Rambouillet sheep are maintained. Annually more than 500 pure bred exotic male hoggets are distributed to the farmers for further breeding.

4.3.4 Goat Development Programmes: White Himalayan breed of goat, which possesses long hairy protective coat and generally reared for meat purposes is the main breed kept by the farmers of Himachal Pradesh. In lower hills, mixed breed of milch type goat, mainly derived from Beetal, Barbari, Jamanapari and Alwari, are maintained. These milch goats are the mixture of all types, which are generally brought from the plains. In high hill dry zone, shepherds are rearing Pashmina goats. The wool traders have mainly brought in these goats from Tibet, which are thermal sensitive and can thrive only in extreme cold and dry climatic conditions.

4.3.5 Marketing of Milk and Wool: With the implementation of various cattle improvement programmes, it was essential to make necessary arrangements for marketing of surplus milk so that the farmers could get cash returns for their efforts of cattle breeding programmes. Realizing this, the state government started two milk supply schemes one at Mandi and other at Nahan during 1961-62. These milk supply schemes were started with the initial daily milk collection of 100 litres on one route, which rose to approximately 5000 litres per day in course of time. During 1972-73 a modern dairy plant was set up at Mandi to process 10000 litres of milk in one shift in collaboration with the

West Germany Government. Two more milk supply schemes were also started, one at Shimla during 1972-73 and other at Kangra in 1973-74. Presently there are 9 milk Supply Schemes operating in different parts of the State.

The entire structure of milk marketing is managed by the H.P. State Cooperative Milk Producers Federation Ltd. (Milkfed). The procurement of milk under milkfed is done through a network of village dairy cooperatives, at village level.

Marketing of wool in the state had been solely in the hands of private traders. To bring the marketing system of wool in an organized form, in 1988 the State government under the guidance of government of India, established "The Himachal Pradesh State Cooperative Wool Procurement and Marketing Federation Limited". After concerted efforts of raising the infrastructure, the organization came into full operation during 1991-93 and is providing good marketing channel to the shepherds.

4.4 Experiences and impact of various development programmes/interventions

Agriculture**:** Various programmes and schemes implemented by the state department of Agriculture in the state have increased production and productivity of crops. The seed multiplication and distribution by the state department of Agriculture has significant impact on production. This has ensured supply of quality seeds to the farmers, which ultimately resulted in increased production. The food grain production has increased from 2 lakh tonnes during 1951-52 to 16 lakh tonnes during the year 2001-2002. Vegetable production has increased from 0.25 lakh tonnes during 1951-52 to 6.27 lakh tonnes during 2001-2002. Soil testing of farmer's field is being done in the soil testing labs. The farmers have become aware of fertility status of their soils. Fertilizer consumption in nutrients has increased from 29,227 MT during 1994-95 to 40,139 MT in the year, 2001-2002. With the functioning of quality control pesticide-testing laboratory at Shimla quality pesticides are being ensured to the farmers. Integrated pest management is being given consideration. Potato seeds retained by the farmers out of their produce perish in quality after 2-3 generation and yields drastically reduced. Potato Development Stations are used to multiply breeder, foundation seeds potato and supply to the farmers to maintain higher

yields. Vegetable seeds farms are catering to the requirements of improved seeds to the farmers. Because of diverse agro-climatic conditions, off-season vegetables cultivation is given priority. The state is earning about Rs.450 crores out of this preposition raising socio economic conditions of the farmers. The department of Agriculture is providing disease free seed of ginger to the growers, which helps in getting remunerative prices. The facilities of market yards provided by the Marketing Board enable the growers to produce commercial crops. The farmers are getting easy market access and remunerative prices of their produce. The farmers have become receptive to improved agricultural technology through Farmers Training and Education Programme. The tea gardeners are being supplied planting materials. Neglected tea gardens are being rejuvenated. Training is being imparted to tea planters on improved technology. This has increased productivity and total production of tea in the state. The Crop Insurance scheme is proving a boon to the farmers. More crops are required to be brought within this scheme. About 35 per cent area earlier under local/composite varieties of maize has been replaced by high yielding hybrids under the Accelerated Maize Development Programme. As a result, the productivity has increased to a level of 25.18 quintals as compared to national level of 16.85 quintals per hectare.

Horticulture**:** It has been a matter of pride that among hilly states, Himachal Pradesh has made gigantic strides in the production of horticultural crops during the past, particularly after the establishment of a separate Directorate of Horticulture, and University of Horticulture and Forestry in the state. This has resulted in increased farm income and ultimately a better level of living of the masses. In order to harness the full advantage of the existing agro-climatic conditions, the farmers are being encouraged through various programmes and schemes to grow new fruits like Kiwi, Olive, ber, fig, aonla, hazelnut, etc., and exotic vegetables like asparagus, celery, parsley, broccoli, leek, Brussel's Sprout, etc,. The programmes implemented by the Government induced farmers to shift their lands towards horticulture. The marketing infrastructure such as grading and packing houses, cold storages, market yards, processing plants, Cartons manufacturing plants created by the government helped the orchardists in getting remunerative prices of their produce and better income and stabilizing of prices.

Animal husbandry: The popularity gained by Jersey and Jersey cross-bred animals is the result of use of latest technology on one hand and about 200 per cent increase in milk yield in first generation cross-bred on the other. The milk production in local cow is 450 kg per year and 3000 kgs in Jersey cow. The first generation giving an average 4.5 kg per day as recorded under the Cattle development programmes. This factor alone acted as a big booster to the cross breeding programme. Due to the efforts of the Animal husbandry Department and adoption of Artificial Insemination Programme by the livestock owners, the milk production has increased from 178 thousand tones in 1961-62 to 760 thousand tones in 2000-2001. The Department estimated that crossbred animals constitute about 18 per cent of total cattle population in H.P. After various crossbreeding trials in sheep, it has been found that the progeny born of Rambouillet are better than the progeny born out of Soviet or other Merinos. The crossbred sheep have adapted very well to the local conditions and the average yield of the crossbred is more than double to that of indigenous sheep. The total wool production in the state has increased from 1118 thousand kgs in 1977-78 to 1586 thousand kgs in 2001-2002.

4.5 Summing Up

It is observed that the state government implemented various programmes and scheme for the development of agriculture. The state has great potential for the production of Off-season vegetables, ginger, potato, tea and maize. Keeping in view the potential of these crops in the state the Department of Agriculture implemented various programmes such as Accelerated Maize Development Programme, Accelerated Maize Development Programme, Vegetables Development Project, Ginger Development, Tea Development. Under these programmes the government provided material inputs and technical know how to the farmers for increasing area and productivity of these crops. The agro-climatic conditions prevailing in Himachal Pradesh have vast potential for the development of horticultural crops like fresh fruits, floriculture, mushroom, temperate vegetables, etc. Consequently, state government created needed infrastructure facilities like grading, packing, processing, transportation, credit facilities, besides various inventive schemes for the development of horticulture in the state. But fruit farming is bedeviled by sharp fluctuations in the production due to frequent attacks of several diseases and various other problems that could be attributed to weak extension efforts at educating the farmers and lack of timely input supplies of plant protection material.

During the last four decades of planed development, a base for future cattle improvement has been built up. There is growing consciousness amongst the farmers to own and rear crossbred Jersey animals and they are prepared to buy good milch cattle of this breed at any cost. The Animal Husbandry Department of Himachal Pradesh is providing facilities of artificial insemination, disease control, milk collection and even distribution of agricultural inputs. The Department estimated that crossbred animals constitute about 18 per cent of total cattle population in H.P. Artificial Insemination facility in buffalo has been extended to 190 centres in four districts covered in Intensive Livestock Improvement Programme and during 1991-92 year 75 thousand buffaloes were inseminated with the semen processed at the Palampur Laboratory. After various crossbreeding trials, it has been found that the progeny born of Rambouillet are better than the progeny born out of Soviet or other Merinos. Annually more than 500 pure bred exotic male hoggets are distributed to the farmers for further breeding. The total wool production increased by one hundred per cent during the past 26 years. The crossbred sheep have adapted very well to the local conditions and the average yield of the crossbred is more than double to that of indigenous sheep. The entire structure of milk marketing is managed by the H.P. State Cooperative Milk Producers Federation Ltd. (Milkfed). To bring the marketing system of wool in an organized form, in 1988 the State government under the guidance of government of India, established “The Himachal Pradesh State Cooperative Wool Procurement and Marketing Federation Limited”.

Chapter 5

THE CONSTRAINT ANALYSIS OF AGRICULTURAL DEVELOPMENT IN HIMACHAL PRADESH

5.1 Constraints in Agricultural Sector

Himachal Pradesh is one of the states, which could not be much benefited through new farm technology. This has been mainly due to poor production base in term of irrigation facilities, mountainous topography, non-suitability of available farm technology to prevailing environment/production base etc. consequently the growth in agriculture sector remained almost stagnant, and the state had to depend heavily on food grain imports from other states to feed its ever increasing population. Stagnancy in net area sown and cropping intensity may also be attributed to the limited alternative uses of land due to rainfall conditions. The major constraints moving around the small size tiny land holdings, irrigation, fertilizer and infrastructure etc.

5.1.1 Farming on Tiny and Terraced Holdings: Due of sub-division of land holdings, numbers of marginal and small farmers are increasing in Himachal Pradesh. The number of marginal and small farmers together, which accounted for 78 per cent of total farms in 1971, is further increasing and accounted for 84 percent of total land holdings in 1991 Census of Agriculture. Overall average holding size in the region decreased from 1.53 hectares to 1.21 hectares during this period. Not only the land holdings are small, they are fragmented and terraced because of the hilly terrain of the region.

5.1.2 Lack of Irrigation: Farming is mostly done under rainfed conditions. Thus the crop yields are low and highly variable. Under traditional farming system most of the land holding are not economically viable to support the household income needs. In Himachal Pradesh only 18 per cent of the net area is irrigated and the state agriculture is mostly dependent on rains. But where rainfall is inadequate or erratic yields are poor.

5.1.3 Low Consumption of Chemical Fertilizer: In Himachal Pradesh fertilizer use is very low. There exist a significance gap between recommended and existing use of

fertilizer in various crops. The consumption of chemical fertilizers in the state was 67.7 kg per hectare of net sown area during 1999-2000.

5.1.4 Lack of Road Infrastructure: In the absence of any other suitable and viable modes of communication like railway and waterways, roads play a vital role in the boosting the economy of the hilly state like Himachal Pradesh. Till December 31, 2002, State Govt. has constructed 27, 737 kms of motor able roads. The roads should be dependable and all weather.

5.2 Constraints in Horticulture Sector

5.2.1 Production constraints: There are many factors, which are responsible for poor production of horticultural crop. Important of these are: poor quality planting material including seed and root stocks; poor layout of orchards; lack of appropriate polynizer in the orchard, lack of proper training and pruning of the fruit trees; inadequate plant nutrition and organic matters; lack adequate use of plant protection materials; poor over all management of orchards.

5.2.2 Post harvest handling, marketing and processing**:** Post harvest quality controls almost non-existent resulting in considerable wastage and damage. The post harvest losses at farmer's and trader's level are 24 percent in apples, 25 percent in mango, 18 percent in peach and 24 percent in citrus. The markets for horticultural produce are out side the state. About 70 percent of the production of horticultural crops is being sold out side the state for which farmers incurred large amount of money in marketing. The producer's share in consumer price ranges between 34 percent in citrus fruits to 49 percent in apples. Absence of pre cooling and cold storage is major problems for horticultural produce. Processing facilities are limited (66.5 tonnes/annum capacity). At present only about 4 percent of fruits and vegetables are being processed in the state.

5.3 Constraints in Livestock Sector

5.3.1 Poor breed of Animals: Most of the animals are short statured and are of nondescript types. Only 14 percent of total livestock population is cross bred/improved bred in the state.

5.3.2 Lack of fodder and feed: Cultivation of fodder crops on farms is insignificant. More than 50 % of total fodder is being obtained from CPRs and rest from the owned land. Scarcity of green fodder in winter and summer seasons, poor productivity of private grassland, degradation of CPRs and waste of fodder in absence of chaffing are the major constraints. The production of cattle feed in the state is very low. Most of the farmers are not aware about the balanced feeding of concentrates to animals. The cattle feed available in the market is poor but prices are high

5.3.3 Poor yield: The average milk yield of cow in the state is 2.343 lit/day, which is 1.57 lit/day in local cow, and 3.23 lit/day in cross breed cow. The annual milk yield of buffalo is 3.175 lit/day. The wool yield is 1.113 kg/annum, which is significantly lesser than that of exotic breed sheep**.**

5.3.4 Poor production traits: On an average, crossbred heifers have its first calving at the age of 39-45 months, whereas for local cow heifers it is 54-59 months. The calving interval of crossbreed cow is 350-390 days and in local cow is 420-450 days. The dry period of crossbred cow ranges between 115-135 days and in local cows it is 180-210 days. Milk yield of crossbred cow is 4-12 litres per day while in local cow it is only 0.5-2 litres per day. In case of buffaloes the production traits are relatively more efficient among Murrah graded than that of non-descript buffaloes.

5.3.5 Lack of veterinary services: Foot and mouth disease, skin diseases, indigestion, milk fever, problems in udder and teat, cyst formation in ovary, retention of placenta are the common diseases found in the area. Milk fever and cyst formation in ovary was reported in crossbred cows where jersey inheritance stands to 50%. Lack of vet facilities and medicines are the major problem in the state. AI is the common method of breeding in crossbred cows while N. S. is the major method of breeding in local cows and buffaloes. The conception rate is 55% in AI. In most of the areas dairy farmers lack awareness about the right time of AI and also in identification of heat period of animal. The AI facility is also not available at the time when animals are in heat. This is the main reason of higher calving interval in milch animals. Sometimes the desired semen is not available and farmers have to wait for few days for AI.

5.3.6 Lack of Marketing and processing facilities for livestock output: During 1997-98, 120 million litres of milk was marketed which constituted 17% of the total milk production in the state. The disposal of milk through private milk traders was predominant accounting for 65 % of total marketed surplus followed by self-marketing 27.7% and the rest 7.65% procured by H. P. Milkfed. The reasons for largest share of private traders were observed to be inaccessibility of producing areas and low price offered by H. P. Milkfed. In remote areas of the state there is considerable quantity of milk available for sale but cannot be disposed off, as there are no marketing facilities. In some areas where traders operate, the prices offered are low. The dairy farmers located in such areas do not have the knowledge of co-operative milk marketing.

Commercial milk processing in Milkshed areas is almost non-existent. Only H. P. Milkfed does the milk processing for commercial purpose. The Milkfed is engaged in milk procurement, processing and distributions in the urban centres. The Milkfed has 3 processing plants having capacity of 40,000 litres milk per day and 22 chilling plants with capacity of 61,000 litres per day. The capacity utilisation of processing plant ranges between 61 to 90% while average capacity utilisation of chilling plant is 17% only. Due to low procurement, poor quality of milk and high transportation cost, the Milkfed incurred losses every year.

5.4 Constraints and Areas of Intervention in Agriculture in Himachal Pradesh

Constraints	Intervention	Target group	Future gains
Farming on tiny and terraced holdings	Consolidation of holdings, contour cultivation and support for construction of retaining walls.	Marginal and small farmers.	Check soil erosion, increase production
Lack of irrigation	Modern irrigation systems like sprinkler, drip irrigation systems through technical and financial support.	Marginal and small farmers.	Increase productivity and cultivation of cash crops.
Low consumption of chemical fertilizers	Increase availability and subsidy on fertilizers.	Marginal and small farmers.	Increase productivity.
Lack of road infrastructure	Construction of rural roads and ropeways.	Inaccessible villages.	Easy and cheap transportation of inputs and output.

5.5 Constraints and Areas of Intervention in Horticulture in Himachal Pradesh

Constraints	Intervention	Target group	Future gains
Production constraints	-Providing good quality rootstock of fruit plants. -Popularizing high-density plantation. -Extension services and training for proper management of orchards. -Integrated pest management	All orchardists	Production of good quality fruit and increase in income.
Post harvest handling, marketing and processing	**-**Grading and packinghouses, Cold storages in producing areas, pre-cool chain for transportation to distant markets, processing plants.	All orchardists	Reduction in post harvest losses, increase in producer's share in consumer rupee, good quality of produce to the consumer

5.6 Constraints and Areas of Intervention in Animal husbandry in Himachal Pradesh

Constraints	Intervention	Target group	Future gains
Poor breed of animals	-Implementation of cross-breed programmes at large scale -Up gradation of non-descript animals with graded breed	Marginal and small farmers and land less households	-Increase in yield and total production and income of farmers -Reduction in unproductive or less productive animals
Lack of fodder and feed	*Proper management of CPR/ Natural resources through encouraging participatory management * Controlled grazing and rational grass cutting / tree lopping * Need for increase in cultivated fodder by providing technical know-how and inputs *Need for encouraging use of chaff cutter and manger	All rural households	- Increased quantity and quality of fodder - Reduce degradation of CPR and environments - Reduction in dependence on purchased grass -Increased availability of green fodder - Save fodder
Poor yield	Improvement in breed and feed	All rural households	Reduction in cost and increase income
Poor production traits	-Need for enhancing production traits efficiency through improvements in breed and feed	All rural households	-Increased production, decrease in cost of production and enhanced farmers income
Lack of veterinary services	-Cover all animal under vaccination -Provide medicines and vet facilities -Encourage local knowledge in treatment of minor diseases -Provide training to local people in treating sick animals -Encourage private vet doctors	Marginal and small farmers and land less households	-Reduction in mortality of animals -Protect health and production
Lack of marketing and processing facilities for livestock output	-Need for organizing cooperatives in villages and help in efficient management of cooperative.	Marginal and small farmers and land less households	*Increase in market-oriented livestock enterprises *Increase in income from livestock rearing

5.7 Summing Up

The process of agricultural transformation is taking place in Himachal Pradesh wherein the traditional cereal crops based subsistence farming system is giving way to high value cash

crops (fruits and vegetables). This process will further intensify, as the process of commercialization of agriculture will further spread to those areas where presently infrastructure facilities, such as rural roads, marketing and credit are lacking. The main problems the hill agriculture is facing are small size of land holdings, lack irrigation facilities, Low consumption of chemical fertilizers, Lack of road infrastructure. The roads should be dependable and all weather.

Constraints in Horticulture Sector are poor quality planting material including seed and root stocks; poor layout of orchards; lack of appropriate polynizer in the orchard, lack of proper training and pruning of the fruit trees; inadequate plant nutrition and organic matters; lack adequate use of plant protection materials; poor over all management of orchards. Post harvest quality controls almost non-existent resulting in considerable wastage and damage. Absence of pre cooling and cold storage is major problems for horticultural produce. Processing facilities are limited. At present only about 4 percent of fruits and vegetables are being processed in the state.

Most of the animals are short statured and are of nondescript types. Only 14 percent of total livestock population is cross bred/improved bred in the state. Cultivation of fodder crops on farms is insignificant. More than 50 % of total fodder is being obtained from CPRs and rest from the owned land. Scarcity of green fodder in winter and summer seasons, poor productivity of private grassland, degradation of CPRs and waste of fodder in absence of chaffing are the major constraints. Poor yield. Poor production traits such as more first calving age more calving interval longer dry period and shorter lactation period. Foot and mouth disease, skin diseases, indigestion, milk fever, problems in udder and teat, cyst formation in ovary, retention of placenta are the common diseases found in the area. The conception rate is 55% in AI. The disposal of milk through private milk traders was predominant. The reasons for largest share of private traders were observed to be inaccessibility of producing areas and low price offered by H. P. Milkfed.

Chapter 6

TOWARDS AGRICULTURAL POLICY FOR THE STATE

6.1 Future Strategy for Agricultural Development

The future strategy for development of agriculture and for the well being of farmers has to be based on the existing agro-climatic conditions, resource base etc. These prerequisites are reflected to a large extent in the activities already adopted by farmers or have not yet been adopted but are recommended by scientists and are in a processes of adoption. Sometimes it is observed that a particular activity may be very successful under controlled experimental conditions but is not so successful under uncontrolled field conditions. This happens due to many factors like, improper extension, low use of inputs, other deficiencies in pre and post harvest management. Many of these factors can be adequately tackled through appropriate policy measures.

This section envisages to highlight the specific areas for further boosting these activities as there still exists a lot of untapped potential in terms of productivities, adoption levels, area allocation etc. This has to be achieved through appropriate policy measures. It is in this context the specific recommendations are being made separately for each activity. The reflection of these recommendations in policy document is bound to have desired results.

6.1.1 Apple and other Fruit Cultivation

- Do not stress on increase in area as it is resulting in encroachment of orchards to forest areas having usual negative impact on ecology.
- Popularize high-density plantations by making available the appropriate rootstock of dwarf varieties.
- Stress on replacement of wooden cartons for packing apples by corrugated fiber board (cfb) cartons. This will ease the pressure on forests. Also these packs are more attractive and can accommodate larger information about the product packed. This is important in the era of liberalization when the apple of the state has to compete with apple of other origins (J&K, U.P. Hills etc.). This pack is more

attractive and can be important tool for motivating the consumers. The same holds true for other fruits as well.

- Facilitate adoption of apiculture by orchardists. This will ensure better pollination and hence higher productivity.
- Boost the research in the field of the natural control of diseases and pests, e.g. Integrated Pest Management. This may bring down the cost of production and save the environment from pollution by sprays. Till this alternative becomes feasible easy availability of plant protection chemicals and equipment should be assured.
- The policy should also aim at breaking down the monopoly of Delhi as a fruit market. Either the possibility of new markets can be explored or farmers can be encouraged to send their produce to other markets of India. For this, exact information on prevailing market prices, present and future demand and supply positions etc. is prerequisite.

Another area which needs due emphasis is export promotion. In past the exports have been nonexistent. The export of fruits requires not only the assured quality but also the role of packaging is still more important. In this regard it is required that the fruit pack should be highly attractive and should prominently display the information about the product. It should be made mandatory that the fruit pack should have following information.

Place of origin
Date of plucking
Date before which the fruit should be consumed
Variety
Quality grade
Size grade
Information about insecticides/pesticides sprayed

About 20 per cent of fruit is culled fruit and is not marketable in its original form. This fruit can only be utilized in processed form. Thus, the policy document should incorporate measures to facilitate the fruit processing in the State.

6.1.2 Off Season Vegetables

- Take suitable measures to augment the irrigated area. The irrigated area in the state is stagnant at 17 per cent for the last many years and it is basic prerequisite for vegetable cultivation.
- The machinery for extension should be geared up for providing latest technology, inputs and market information. The agro-climatic conditions in various pockets of the state are conducive for the cultivation of various exotic vegetables like broccoli etc. These have vast export potential, which can be and should be exploited.
- Various pockets in the State, although suitable for the vegetable cultivation cannot undertake this activity only due to lack of roads. This problem should be looked into.
- The research for making possible the vegetable cultivation in hitherto new areas for this activity should be facilitated. This should also aim at finding out new cropping pattern, crop combinations etc.

6.1.3 Floriculture

- As this is a new activity for farmers of the State, extension services need to be strengthened. The provision for planting material (seeds, seedlings, bulbs etc.) of assured quality and in desired quantity is essential.
- This activity despite having large export potential has not been adopted by majority of potential cultivators. Thus, they need motivation and their fear about risk and uncertainty in production and most importantly marketing of this highly perishable product needs to be allayed. Presently, each farmer has low volume of product, which he has to market in Delhi the nearest market of big size. For this provisions can be created in State Transport Buses, which can transport the flower overnight to Delhi.
- The big companies dealing in flowers and having tested production technology, which can make their own marketing arrangements within the country and abroad should be facilitated. Presently a few companies are operating in the State but it needs further boost so that scale of operation becomes larger.

6.1.4 Mushroom Cultivation

- Being highly perishable product, it calls for efficient transportation system, preferably refrigerated. In its absence full benefits of the enterprise cannot be reaped.
- Presently the only source of reliable inputs and production technology is Mushroom Centre at Solan. This Centre is not able to co-op with demands being put to it. Thus, the task can be shifted to such private firms, which could supply critical inputs and technology. Some incentives should be given to such firms.

6.1.5 Rabbit Husbandry: Most critical inputs for this enterprise emerge to be the professional skill. Thus, policy should emphasize on holding training programmes for developing professional skill in this regard. This is a very important enterprise, which has low capital requirements and has low gestation period. The returns are also very remunerative and the demand for good staple angora wool is ever increasing. Hence, this can be very profitably taken up by small and marginal farmer.

6.1.6 General: One of the common recommendations for all the profitable enterprises is the requirement of good infrastructure. The roads should be dependable and all weather. This is very crucial for taking benefit of agro-climatic conditions of the State and to avoid wastage, as almost all products are fragile and perishable. Simultaneously good telecommunication network is also a prerequisite for taking advantage of favourable market situations. The continuous inputs from research institutions are mandatory for maintaining the competitiveness of Himachal agriculture. The input delivery system needs streamlining and a strong vigil is necessary to avoid marketing of spurious inputs especially insecticide/pesticides.

6.2 Horticultural Exports

The advent of liberalization and a new era of openness in Indian trade have served t instill a sense of optimism and expectation amongst national and international trading community. Trade policy reforms undertaken since 1991, have recognized exports as an engine of growth. The EXIM policy has emphasized that enhanced trading activity would catalyse the expansion and diversification of the production base in the economy. The

policy *inter alia* has also sought to rationalize and restructure export promotion and give a new fillip to certain sector specific exports.

As far as export of fresh fruits, vegetables and flowers from Himachal Pradesh is concerned, it is almost negligible but is witnessing a major upswing in case of apples and potatoes.

6.2.1 Export of Apple: Apple is produced mainly in three states of the country, namely, Jammu and Kashmir (57%), Himachal Pradesh (24%) and Uttar Pradesh Hills (18%). The total production of apple has been recorded at 11.68 lakh tonnes (as per 1993 estimates) registering 15.1% share in the world's production. The total exports, however, sum up to less than 10,000 tonnes. Apples from India are mainly exported to Bangladesh and Sri Lanka, the two countries together account for about 99% of total Indian exports. Other importing countries are UAE, Bahrain, Maldives, Nepal, Saudi Arabia, Singapore, U.K. and Germany with meager quantities.

It is expected that the production of apples would reach more than 21.62 lakhs tonnes by 2206-07, i.e. almost double of the present production level it may be noted that the present productivity level of apple in India is about one-third of the world average and there is a scope to upgrade the same.

It has been estimated that India could easily export up to 25,000 tonnes of apple by 2001-02 and 50,000 tonnes by 2006-07. The major importing countries identified are Bangladesh, Nepal, Pakistan, Sri Lanka and the Gulf. The share of Himachal Pradesh shall account for about 20% of total Indian exports of apple provided the produce meet the international standards particularly in size, colour and spotless look.

6.2.2 Export of Potato: Potato is the most ubiquitous vegetable of the country. With a cultivated area of 10 lakh hectares and annual production of around 180 lakh tonnes in the year 1994-95, India ranks fourth in area under cultivation and fifth in production of potato in the world. The country's productivity is comparable with the world average.

Fresh potato has a lot of export potential. The export from India, however, is very meager at just over 5,500 tonnes in 1992-93. It is expected that by 2006-07, potato export should rise to 25,000 tonnes or even more, predominantly to SAARC countries. The area under potato in Himachal Pradesh is 1,62,000 hectares and production 1,40,000 tonnes of which 1.0 lakh tonnes is marketable surplus. The state is known for the production of disease free seed potatoes in the country.

6.2.3 Export of Flowers: The post harvest management (PHM) issues relating to floriculture assume added importance due to tendencies of flowers, which are rather high priced horticulture produce. Cut flowers with long stems have to be produced under protected controlled environment and improvements are required in the functional areas of PHM in order to maintain and expand exports to the international market. Disinfections, during growth as well as in post-harvest stages are often necessary to encourage exports. World-class flowers could be produced only if pests and diseases are controlled and eliminated by ensuring that required chemicals are available in the country. Some of the more important PHM issues are:

(i) Rapid handling of flowers must be ensured by introducing conveyor belts and wheeled troughs instead of buckets.
(ii) Proper cooling facilities should be developed to preserve the quality of flowers at 98% RH, if necessary, by importing the cooling apparatus initially.
(iii) Packaging standards should be suitably upgraded to help easier handling and movement in conveyors.
(iv) Transportation is a critical element while transporting flowers, either for domestic use or for exports. The important issues in this respect are:

- Cooling and dehydration;
- Treatment with preservatives;
- Prior application of fungicides for long distance movement;
- Adequate packaging for proper protection and insulation; and
- Quick transportation at low temperature.

6.3 WTO and Agriculture in Himachal Pradesh

It has been observed from the time series data on foodgrain production that there is no major break-through in the state in production of foodgrains that is hovering around 16 lakhs tonnes per annum for the last two decades (Tables-10). Himachal Pradesh is

surplus in Maize and deficit in Rice, Wheat and Pulses. Overall still H.P. is not self-sufficient in foodgrains (Table-11).

Comparing Pre-WTO and Post-WTO growth rates of area, production and yield of foodgrains and other agricultural commodities of India show that the trends of production and productivity have slowed down during the Post-WTO period. Our domestic prices are much less than the international prices of the agricultural commodities and this is a favourable indicator for India to harvest the benefit of WTO.

The data on fertilizer consumption show that very low fertilizer nutrient intake that led to low productivity of foodgrains as compared to that of world averages (Tables-12). The growth rates percent per annum of fertilizer consumption in India reveal that trends in consumption of fertilizers have slowed down from 8.9 (during the Pre-WTO period) to 3.9 in the Post-WTO period. This has affected the growth of production and yield of foodgrains, pulses and oilseeds in the country, which may be attributed to the higher prices of fertilizers in the post-WTO period.

Negative balance of trade and share of agricultural export to total export that is stagnant around 18%. It is not favourable situation for the development of a country. It indicates that import of the country is more than the export of agricultural commodities; thereby resulting into negative term of trade that needs special attention of the policy makers of the country.

Out of the total export value of agriculture and horticultural products, the agriculture and horti-products account for around 85 and 15 percent respectively for the last three years (1996-97 to 1998-99).

India and China are the competing countries in fruit production (Table-13), whereas the percent share of apple production of India to the world apple production is around 2.5.

It is pertinent to mention that hop industry in Lahaul suffered adversely after the economic reforms implemented in 1991 due to lowering of countervailing duty on imported hop pallets from 120% to 40%, due to which the breweries started importing hop pallets from other countries at cheaper

rates and the hop produced by Lahaul farmers was not lifted and ultimately the hop growers had to curtail their production. Resultantly, the Lahaul farmers had to destroy their huge infrastructural network of hop cultivation so as to shift from hop production to other commercial crops like pea and potato, thereby causing great loss to the hop producers (Table-14).

6.4 Future emerging areas in Himachal Pradesh

- High value and low volume crops (Kalazeera, Saffron, Kuth, etc).
- Off-season vegetables (Pea, Cabbage, Capsicum, Cauliflower, Tomato, French beans).
- Forest-based products - medicinal and aromatic plants (MAPs) like Salam Panja, Patish, Karu, Rattanjot, Somlata, etc.
- Quality Apple.
- Niche-based agricultural crops (Tea, Potato).
- Organic Manure-Based Agricultural Products

6.5 SWOT analysis of Agriculture Sectors

The existing status of Horticulture Industry in Himachal Pradesh exhibits a scenario of strengths, weaknesses, risks (threats) as also opportunities in view of the changes that are rapidly taking place in the field of production technologies and marketing opportunities.

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Agriculture Sector

Strengths	Weaknesses	Opportunities	Threats (Risks)
1.Comparative advantage of the production of almost all kinds of crops-Temperate of sub-Tropical-due to diverse agro-climatic conditions available in the State. 2.Comparative advantages in the production of vegetables, seed potato, ginger. These crops are marketed when there is no local supply in the markets of plain area. 3.Vast domestic market for the hill vegetables and other crops due to limited availability of areas for the production of such crops in the country. 4.Fairly well developed institutional framework for the development of agriculture in the form of research, extension, credit, marketing, processing and	1. Lack of irrigation facilities due to scarce availability of water resources. 2. Small, scattered land holdings and sparsely located population. 3. Lack of micro climatic approach for the development of vegetables and other crops in different areas. 4. Wide spread natural vagaries like drought, hail storms, frost, etc. 5. Serious gaps in the application of modern technologies for increasing production and improving quality and productivity. 6. Lack of scope for the mechanization of the agriculture for timely execution of various operations and savings in labour costs. 7. Difficulty in technology	1.Ample opportunities for the diversification of agriculture through introduction of high value low volume crops which have so far remained un-exploited due to different constraints, e.g., Kalazeera, Saffron, Kuth, etc.Off-season vegetables (Pea, Cabbage, Capsicum, Cauliflower, Tomato, French beans).Niche-based agricultural crops (Tea, Potato). Organic Manure-Based Agricultural Products 2.Opportunities for the improvement of productivity and quality of crops already under cultivation by induction of standardized technologies. 3.Although in the foreseeable future, the domestic market will continue to be the main plank of agriculture of H.P., yet opportunities do exist for exploring the market in the adjoining countries of SAARC, West Asian region and Middle East countries for the export of Himachal	1.Likely increase in the competition from the foreign producers in the agriculture trade even in the domestic market after the World Trade Order becomes fully effective. 2.Likely increase in the inter state competition for the marketing of agricultural produce due to increasing interest in other Hilly States for the development of agriculture. 3.Likely change in the policy of the Central/State Governments for reduction in import duties and subsidies/support price for agricultural produce as a sequel to the globalize trading regime.

communication infrastructure. 5.Nearness to the main distributing wholesale market at Delhi and other markets in the plain.	dissemination due to difficult terrain, hostile climate, poor communication facilities and sparsely located population. 8. High cost of marketing mainly due to high cost of transportation. 9. Lack of organised system of marketing through co-operatives. 10. Lack of bargaining power with the individual growers due to small volume of produce. 11. Inadequate availability of market intelligence to the farmers resulting in imbalance in distribution of produce in different markets. 12. Concentration of currents efforts for the commercial production of only a few crops like potato, ginger, tomato, cauliflower, cabbage.	agricultural produce in the future. 4.As the levels of pesticide use in Himachal agriculture is quite minimal as compared to other countries, opportunities exist for developing organic production of crops in suitable areas for export marketing by affecting some changes in existing production technologies. 5.Opportunities exist for the value addition in the agriculture produce through adoption of improved post harvest management, packing and storage technologies for improving shelf life, reducing losses and increasing the marketing season/period in the year.	

Horticulture Sector

Strengths	Weaknesses	Opportunities	Threats (Risks)
1.Comparative advantage of the production of almost all kinds of horticultural crops-Temperate of sub-Tropical-due to diverse agro-climatic conditions available in the State. 2.Comparative advantage in the production of some horticultural crops specially sub tropical fruit crops for off season marketing, as due to cooler climate, the maturity of many fruits is delayed by about a month as compared to similar fruits produced in the plains. 3.Vast domestic market due to limited availability of areas for the production of such fruits in the country. 4.Well developed institutional framework for the development of horticulture in the form	1.Lack of irrigation facilities due to scarce availability of water resources. 2.Small, scattered land holdings and sparsely located population. 3.Pproduction is done mainly on marginal land with low soil productivity. 4.Lack of micro climatic approach for the development of fruit plantations of various fruit species/varieties in different areas. 5.Wide spread natural vagaries like drought, hail storms, frost, etc. 6.Serious gaps in the application of advanced horticultural technologies for increasing horticultural production and improving quality and productivity. 7.High pressure on land use for different purposes like cereal crop production, fodder production, etc., due to low per capital land availability. 8.Lack of scope for the mechanization of the horticulture industry for timely execution of various operations and savings in labour costs. 9.Difficulty in technology dissemination due to difficult terrain, hostile climate, poor communication facilities and sparsely located population. 10.Lack of consuming markets within the State resulting in dependence upon distant markets of the country. 11.High post harvest losses due to: • Lack of modern post harvest	1.Ample opportunities for the diversification of horticulture industry through introduction of high value fruit crops which have so far remained un-exploited due to different constraints, e.g., nut crops(walnut, pecan nut, hazelnut), cherry, red strains of pear, kiwi fruit, small fruits (barriers), oil yielding fruit crops like olive and aonla, pomegranate, fig. Etc. 2.Opportunities for the accelerated production of fruit crops in the dry land, rain fed areas by employing newly adapted technologies like “in situ” plantation of mango in the low hill regions. 3.Opportunities for the improvement of productivity and quality of fruit crops already under cultivation by induction of standardized technologies. 4.although in the foreseeable future, the domestic market will continue to be the main plank of Horticulture industry of H.P., yet opportunities do exist for exploring the market in the adjoining countries of SAARC, West Asian region and Middle East countries for the export of Himachal fruits in the future. 5.levels of pesticide use in Himachal fruit industry is quite minimal as compared to other countries, opportunities exist for developing organic production of fruits in suitable areas for export marketing by affecting some changes in existing production technologies. 6.The general increase in the income levels and improvement in the standard of living of population in the country; increasing	1.Likely increase in the competition from the foreign producers in the fruit trade even in the domestic market after the World Trade Order becomes fully effective in the year 2002. 2.Likely increase in the inter state competition for the marketing of horticulture produce due to increasing interest in other Hilly States for the development of horticulture. 3.likely change in the policy of the Central/State Governments for reduction in import duties and subsidies/support price for horticultural produce as a

of research, extension, credit, marketing, processing and communication infrastructure. 5.Nearness to the main distributing wholesale market at Delhi.	management system. • Very high temperature differentials in the producing areas and the consuming markets, specially for temperate fruits. • High perishable nature of most temperate fruits resulting in high post harvest losses during transport. • Distantly located orchards from the main roads necessitating manual/animal transportation of the produce. 12.High cost marketing mainly due to high cost of transportation. 13.Lack of organised system of marketing through co-operatives. 14.Lack of bargaining power with the individual growers due to small volume of produce. 15.Inadequate availability of market intelligence to the farmers resulting in imbalance in distribution of produce in different markets. 16.Lack of media support to the horticulture industry for increasing the demand and consumption of fresh and processed fruits of Himachal origin in the consuming markets. 17.Lack of reliable database in respect of horticultural production and marketing. 18.Concentration of currents efforts for the commercial production of only a few fruit crops like apple, peach, plum, mango, citrus. 19.Concentration on domestic markets resulting in lack of quality consciousness amongst the growers.	awareness about the nutritional value of fruits as protective foods and increasing foreign tourist traffic into the country has resulted in increase in the demand for fruits. This trend is likely to continue in the foreseeable future there-by expanding the market demands for hill fruits. 7.There is a wide scope for the value addition of horticultural commodities produced in Himachal Pradesh, through diversification of the existing processing industry due to the availability of wide range of fruits and vegetables for processing. 8.There are opportunities for industry linked horticulture production through suitable forward and backward linkages like production for processing both for the domestic and export markets. 9.Opportunities exist for the value addition in the horticulture industry through adoption of improved post harvest management, packing and storage technologies for improving shelf life, reducing losses and increasing the marketing season/period in the year.	sequel to the globalize trading regime. 4.Increased demand on the country's forest resources for horticultural packaging due to increased horticultural production, in case alternative systems of packaging are not immediately developed. 5.Likely adverse effect on the horticulture industry due to changing environment as a result of global warming and green house effect.

Livestock Sector

Strength	Weakness	Opportunities	Threats (Risks)
1.Large number of various species of livestock in Himachal Pradesh. 2.Vast area under permanent pasture and grazing land in the state for providing fodder and grazing to the livestock. 3.Fairly well developed institutional frame work for the development of animal husbandry in the form of research, extension, credit, marketing, processing and communication infrastructure. 4.Good domestic demand for livestock products like milk, meat, wool and eggs in the state	1. Lack of fodder and feed for livestock. The livestock in the state depends on fodder from CPRs. The cultivated fodder is very limited. 2. Poor quality breed of livestock having poor production traits and yield. 3. Lack of micro climatic approach for the development of livestock in different areas. 4. Lack of veterinary facilities in remote areas. 5. Serious gaps in the application of modern technologies for increasing production and improving quality and productivity. 6. Difficulty in technology dissemination due to difficult terrain, hostile climate, poor communication facilities and sparsely located population. 8. High cost of marketing mainly due to high cost of transportation. 9. Lack of organised system of marketing through co-operatives. 10. Lack of bargaining power with the individual growers due to small volume of produce. 11. Inadequate facilities of processing of	1.Opportunities for the diversification of animal husbandry through rearing of crossbreed animals which have higher yield e.g., Jersey, Holstein breed of cow, Marino, Rambouillet breed of Sheep, Murrah breed of buffalo, etc. 2.Opportunities for the accelerated production of fruit crops in the dry land, rain fed areas by employing newly adapted technologies like “in situ” plantation of mango in the low hill regions. 3.Opportunities for the improvement of productivity and quality of livestock products through proper feeding and breeding. 4.Opportunity in increasing the production of milk as per capita availability of milk in the state is higher than that of national average 5.The general increase in the income levels and improvement in the standard of living of population in the state; increasing awareness about the nutritional value of milk, meat and eggs has resulted in increase in the	1.Likely increase in the competition from the foreign producers in the livestock products trade even in the domestic market after the World Trade Order becomes fully effective. 2.likely change in the policy of the Central/State Governments for reduction in import duties and subsidies/support price for livestock products as a sequel to the globalise trading regime. 3.Increased pressure on forest and pasture due to increased livestock population, as the cultivated

	livestock products like milk and wool.	demand for livestock products. 6.There is a wide scope for the value addition of livestock products produced in Himachal Pradesh, through diversification of the existing processing industry.	fodder production is very limited.

6.6 Summing Up

The future strategy for development of agriculture and for the well being of farmers has to be based on the existing agro-climatic conditions, resource base etc. Future emerging areas in mountain states like Himachal Pradesh are: High value and low volume crops (Kalazeera, Saffron, Kuth, etc). Off-season vegetables (Pea, Cabbage, Capsicum, Cauliflower, Tomato, French beans). Forest-based products - medicinal and aromatic plants (MAPs) like Salam Panja, Patish, Karu, Rattanjot, Somlata, etc. Quality Apple. Niche-based agricultural crops (Tea, Potato). Organic manure-based agricultural products. There is potential for export of apples, off season vegetables, potato and flowers from Himachal Pradesh. To meet the challenges of new economic policy and WTO there is great need to develop production and marketing infrastructure in the state.

Table-10: Production of Foodgrains and other Agricultural Commodities in Himachal Pradesh (Lakh Tonnes).

Years	Foodgrains	Vegetables	Fruits		Milk Production
			Apple	Total fruits	
1950-51	5.37	0.09	0.05	0.11	1.32
1960-61	6.13	0.25	0.12	0.19	1.78
1970-71	9.11	0.64	1.03	1.48	2.48
1980-81	11.57	0.83	1.18	1.39	3.15
1989-90	13.69	3.70	3.95	4.60	5.23
1990-91	14.33	3.65	3.42	3.86	5.72
1991-92	13.44	3.68	3.01	3.42	5.96
1992-93	13.12	3.74	2.79	3.24	6.10
1993-94	12.19	3.85	2.94	3.25	6.53
1994-95	14.09	4.00	1.22	1.70	6.62
1995-96	13.63	4.25	2.76	3.11	6.76
1996-97	13.16	4.50	2.88	3.51	6.98
1997-98	14.48	4.65	2.34	2.80	7.13
1998-99	16.00	5.00	3.93	4.47	7.30
1999-2000	14.70(18)* 16.31	5.40 -	0.49 3.72	0.90 4.14	7.50 -
2001-2002					

Source: Statistical Outline, Himachal Pradesh.

Table-11: Demand and Supply Projections of Foodgrains in Himachal Pradesh.

(Quantity in Lakh Tonnes)

Particulars	1992-93	1995-96	2000	2005
MAIZE				
Demand	3.52	3.75	4.07	4.51
Supply	5.45	5.77	6.34	6.97
Gap(+/-)	(+)1.93	(+)2.02	(+)2.27	(+)2.46
(Percent)	(+)35.41	(+)35.01	(+)35.80	(+)35.29
RICE				
Demand	2.39	2.54	2.74	3.02
Supply	0.63	0.61	0.58	0.56
Gap(+/-)	(-)1.96	(-)1.93	(-)2.16	(-)2.46
Percent	(-)311.11	(-)316.39	(-)372.41	(-)439.28
WHEAT				
Demand	5.37	5.66	6.16	6.79
Supply	4.28	4.70	5.54	6.56
Gap(+/-)	(-)1.09	(-)0.96	(-)0.62	(-)0.23
Percent	(-)25.47	(-)20.42	(-)11.23	(-)3.51
PULSES				
Demand	0.61	0.64	0.70	0.77
Supply	0.11	0.08	0.05	0.03
Gap(+/-)	(-)0.50	(-)0.56	(-)0.65	(-)0.74
Percent	(-)454.54	(-)700.00	(-)1300.00	(-)2466.67
FOODGRAINS				
Demand	11.97	12.65	13.71	15.11
Supply	10.82	11.46	12.60	14.35
Gap(+/-)	(-)1.15	(-)1.19	(-)1.11	(-)0.76
Percent	(-)10.63	(-)10.38	(-)8.81	(-)5.30

** Source : Sharma, et al, Department of Agricultural Economics, HPKVV, Palampur (1998)*

(+) implies surplus and (-) implies deficit

Table-12: Fertilizer Nutrient ($N+P_2o_5+K_2o$) Consumption (Kg/Ha) and Productivity (Qtl/Ha) of Principal Foodgrain Crops.

Countries	Nutrients	Productivity		
		Paddy	Wheat	Maize
Egypt	337.2	88.79	63.47	70.56
USA	110.5	66.22	28.72	83.98
Mexico	62.5	48.16	48.09	25.36
Canada	58.0	-----	25.91	79.74
China	256.7	63.34	39.69	48.79
Japan	289.5	64.14	34.54	24.00
Netherlands	494.2	-----	72.99	82.66
Korea (Rep.)	457.60	68.68	50.00	41.00
Pakistan	111.7	28.75	21.62	13.64
World	90.9	38.45	27.11	43.13
India	99.10	29.29	25.83	16.67
Himachal Pradesh	41.00	14.23	17.00	22.01

Source : Fertilizer Statistics, 1999-2000.

Table-13: Major World Producers of Apple

Name of Country	Production (In 000' Mt)				%Share In World Production
	1989-91	1996	1997	1998	
WORLD	40107	56136	56529	56060	100.0
India	1148	1308	1321	1380	2.46
China	4469	17056	17227	17508F	31.23
USA	4434	4709	4683	4964	8.85
France	2113	2446	2445	2500F	4.46
Turkey	1883	2200	2350	2500*	4.46
Italy	1935	2071	1835	2115	3.77
Germany	1957	2162	1602	2154	3.84
Poland	1090	1952	2098	1687	3.01
Russian Fed	-	1800	1500	1200F	2.14
Iran	1378	1925	1998	2000F	3.57
Others	-	-	-	-	32.21

Table-14: Impact of Globalisation on the Economic Feasibility of Hop in Himachal Pradesh.

Feasibility Indicator	Pre- WTO	Post- WTO
Project Life Span(Years)	25	25
Present Value Of Benefits (Rs/Ha)	11,22,007	7,70,028
Present Value Of Costs (Rs/Ha)	4,71,934	4,84,151
Net Present Value (Rs/Ha)	6,50,073	2,85,877
Benefit Cost Ratio (BCR)	2.38	1.59
Internal Rate Of Return (%)	43.91	22.06
Pay-Back Period (Years)	5^{th} Year	7^{th} Year
Break-Even Output (Quintals)	8.52	19.96
Cost Per Quintals of Green Hop	2117	2586
Price Per Quintal of Green Hop	5100	3500
World Price (C.I.F. Rs/Q)	37308	31500
Import Duty (Per Cent)	120	40
Import Prices In India (Rs/Q)	82078	44100
Price Parity/Terms Of Trade (5/2)	1.19	0.58

Source: PawanKumar,1998(Ph.D Thesis, Department of Agricultural Economics, HPKVV, Palampur).

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Annexure - I

1 Title of the Draft Study Report Examined Agricultural Policy in Himachal Pradesh: A Policy Matrix in A Federal System

2 Date of receipt of Draft Report February 6, 2004

3 Date of dispatch of Comments February 10, 2004

4 Comments on the objectives of the study

The report has come out very well and it can be seen that the authors have taken cure to include all important points. The Study covers broadly first three objectives very clearly, whereas it does not provide sufficient evidence to verify whether objective no. 6 has been properly dealt in the study. It would be beneficial if the authors bring out the finer points dealing with objective no. 6.

While analysing the development across the Plan periods across time, one gets an impression of very hurried look through the Plan documents. In order to overcome this lacunae, it will be better if the authors give a table in which they can bring out the major thrust areas across all the Plans up to now in Himachal Pradesh. The data in table 2 on page 27 may be indicated at constant prices (if it is not so). The authors can also compute the growth rates for these components and provide a discussion on sectoral shifts.

The interventions analysed in Chapter-IV need to be analysed with care. It will be essential to indicate the experience and impact of these interventions at least in a few paragraphs. The analysis of the constraints has been quite well done and hence I suggest elaboration on the areas of intervention (across crops, regions and social groups) if feasible in a tabular format. Similarly, the required investment and impact of such interventions needs to be highlighted.

5. Comments on the Methodology:

The author has followed appropriate methodology keeping in view of the objectives.

6. Comments on Presentation and Getup etc.

The presentation of the report is quite satisfactory.

7. Overall view on Acceptability of Report:

The report is acceptable if the above comments are taken care of.

Annexure - II

Action Taken Report

1	**Title of the Draft Report Examined :**	Agricultural Policy in Himachal Pradesh: A Policy Matrix in A Federal System
2	**Date of receipt of comments on the Draft Report :**	February 16, 2004
3	**Date of dispatch of the final report :**	April 23, 2004
4	**Comments on the objectives of the study :**	Action has been taken in accordance with the comments. Objective no. 6 has been dealt in second part of the report.
5	**Comments on the methodology :**	No action required
6	**Comments on presentation and getup :**	No action required
7	**Overall view on acceptability of the report :**	Report has been revised as per comments and is being submitted for acceptance

(Dr Ranveer Singh)