



Uttarakhand Development Report



सत्यमेव जयते

PLANNING COMMISSION
GOVERNMENT OF INDIA
NEW DELHI

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Core Committee

The Core Committee constituted on 1st January 2002 under the chairmanship of Shri N.K.Singh was as follows:

| | | |
|---|----------------------------------------|----------|
| 1 | Member (N.K. Singh) | Chairman |
| 2 | Principal Adviser (SP) | Member |
| 3 | Planning Secretary, Uttarakhand | Member |
| 4 | Joint Secretary (SP) | Member |
| 5 | Representative of other Partner Agency | Member |
| 6 | Director (SP) | Convener |

The Core Committee which was later reconstituted on 6th August, 2004 under the chairmanship of Dr. Kirit S. Parikh is as follows (page 37 ante F/; B')

| | | |
|---|-----------------------------------------------------|----------|
| 1 | Shri Kirit S. Parikh | Chairman |
| 2 | Principal Adviser/Adviser (In-charge of Uttarkhand) | Member |
| 3 | Planning Secretary, Government of Uttarakhand | Member |
| 4 | Representative of Partner Agencies | Member |
| 5 | Director (SP) Planning Commission | Convener |

Project Team

National Council of Applied Economic Research

- Dr. Kanhaiya Singh (Project Leader and Editor)
- Dr. P.K. Joshi
- Dr. P.S. BIRTHAL
- Mr. S.K. Nair
- Dr. Lakshmi Joshi
- Dr. D.B. Gupta
- Dr. Pradeep Srivastava
- Ms. Y. Venkatramana
- Dr. C.S. Rao
- Dr. Rupinder Kaur
- Mr. S.K. Mondal
- Ms. Rachna Sharma
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- Mr. Rakesh Srivastava



सत्यमेव जयते

एम. एस. आहलुवालिया

MONTEK SINGH AHLUWALIA



उपाध्यक्ष

योजना आयोग

भारत

DEPUTY CHAIRMAN

PLANNING COMMISSION

INDIA

FOREWORD

India has grown at an unprecedented rate of 9 per cent and more for the last three years. However, the performance has been uneven across sectors and a number of people have been excluded from benefits of this process. Geographically too, the disparities are increasing and leading to concentrated pockets of deprivation across the country. At the same time, consensus is emerging across the world, that a one size fit all development policy will not engender development universally. There is a need for context specific policies. The success of policy and programme interventions too, is heavily dependent on the settings in which these are implemented.

The present exercise was undertaken in recognition of the fact that an identical developmental strategy for all the states, regardless of the specific circumstances and binding constraints is unlikely to be effective. The Planning Commission took the important initiative of sponsoring the preparation of State Development Reports during the 10th Plan. The report has been prepared with the help of reputed national level institutions to ensure the necessary analytical rigour required. The main objective was to produce a high quality document, focusing on development and related issues at both the micro and macro levels.

The Uttarakhand Development Report does address these issues and highlights aspects crucial for the State's development needs in the coming years. I hope its publication will stimulate debate on growth strategies appropriate for Uttarakhand and it will be of immense benefit to practitioners, administrators, academicians and the larger public in general.

I am sure the road map indicated in the report will create a broader awareness of the critical policy issues facing the state, result in better policies and enable the State to move on a higher growth trajectory on a sustainable basis.

A handwritten signature in black ink, appearing to read 'Montek Singh Ahluwalia', written in a cursive style.

(Montek Singh Ahluwalia)

Major General

Bhuwan Chandra Khanduri,
AVSM (Retd.)



CHIEF MINISTER,
UTTARAKHAND

**Secretariat Annexe,
DEHRADUN - 248001**

Message

I am pleased to introduce 'Uttarakhand Development Report' prepared at the behest of Planning Commission, Government of India. We appreciate and acknowledge the efforts of the Planning Commission and the Partner Agency, the National Council of Applied Economic Research, New Delhi for producing such a comprehensive document. The National Council of Applied Economic Research has documented in great detail development story of the State since its formation, recognising its progressive outlook and achievements. The macroeconomic analysis relating to various aspects of economic development of the State presented in the report will go a long way in choosing proper strategies and initiating corrective measures in the process of development. The recommendations for development of the various sectors are based on an in-depth analysis.

The State has been generally acclaimed for its achievements in social development and recent initiatives of the State Government in meeting fiscal discipline. The report has brought out critical issues the state is facing. It has also sought to present solutions. The State Government is committed to ensure an accelerated development of the State, and in this process, the recommendations made in the report would be very valuable.

I take this opportunity to thank the members of the Core Group in the Planning Commissions of Government of India for extending technical and financial support for the preparations of this report. I believe that this document which is an outcome of sincere and continuous efforts of scholars, experts and institutions, will provide valuable information for policy planning, academic research and governance.

I appreciate the endeavour.

(Bhuwan Chandra Khanduri)

डॉ. किरिट एस. परीख
Dr. Kirit Parikh



सदस्य
योजना आयोग
योजना भवन
नई दिल्ली-110 001
MEMBER
PLANNING COMMISSION
YOJANA BHAWAN
NEW DELHI-110 001

July 30, 2008

Message

The Planning Commission keeping in view the Central Plan Scheme “50th Year Initiative for Planning” has been sponsoring preparation of the State Development Reports (SDR) for all states. These SDRs are an attempt to compile quality reference documents on the profile and strategy for accelerating the pace of development in respective states.

The Uttarakhand Development Report has been prepared by Planning Commission with the assistance of National Council of Applied Economic Research (NCAER) in partnership with the Govt. of Uttarakhand. Some initial material was prepared by partner agencies such as Dhan Foundation, Wapcos, Development Corporation for Handicrafts, IDFC, IHD, NCAEPR, NIPFP, etc., whose contribution is also acknowledged. A core committee review the major issues and helped chalk out the scope and coverage of the SDR for Uttarakhand.

This report will serve as a resource material not only for the central and state government but also for the non-governmental organisations working for Uttarakhand.

I would sincerely like to thank everyone from the Planning Commission and to record my appreciation of the work done by various partner agencies for their effective contribution in preparing the report. The efforts made by NCAER in coordinating and preparing the final report deserves to be specially noted. I am thankful to the Govt. of Uttarakhand for rendering full cooperation and support to the partner agencies involved in preparation of the report. The efforts done by State Plan Advisor, Shri Harish Chandra in liaising with State Govt. and partner agencies is noteworthy. I look forward to Uttarakhand, with its vigour and enterprise, attaining the high level of prosperity and human welfare which will follow in the wake of its realising its true potential.

Kirit Parikh
(Kirit Parikh)



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Executive Summary

SECTION A

OVERVIEW AND MACROECONOMIC ANALYSIS

1. Overview

Uttarakhand is one of the most recent states on the political map of India (November 2000) and due to its geographic and strategic location, it has been given 'Special Category Status' by Union of India. Uttarakhand borders China in the north-east and Nepal to the south-east, while its neighbouring states are Himachal Pradesh and Uttar Pradesh. The topography of Uttarakhand is characterised by hilly terrain, rugged and rocky mountains, deep valleys, high peaks, sharp stream and rivulets, rapid soil erosion, frequent landslides and widely scattered habitation. The natural vegetation is mixed broad-level forest with oak and pine predominating. Climate varies from subtropical in the valleys to temperate on the higher slopes with a summer monsoon. The temperature ranges from 16°C to 40°C but it drops below freezing point in many parts of high mountain areas of the region during winter (Census 2001, Uttarakhand).

The high Himalayan ranges and glaciers form most of the northern parts of the state while the lower reaches are densely forested with rich habitat of wild animals. Two of India's mightiest rivers, the Ganga and the Yamuna take birth in the glaciers of Uttarakhand.

Uttarakhand has traditionally been divided into two parts, the western half known as Garhwal Mandal and the eastern region going by the name of Kumaon Mandal. The state comprises of 13 districts namely, Almora, Bageshwar, Chamoli, Champawat, Dehradun, Haridwar, Nainital, Pauri Garhwal, Pithoragarh, Rudraprayag, Tehri Garhwal, Udham Singh Nagar and Uttarkashi. There are 78 *tehsils* in the state and 95

developmental blocks. The state has a total of 16,826 villages, of which 15,761 are inhabited (excluding forest settlements) as per the 2001 census. Uttarakhand is very rich in forest. It has 35,392 sq km of forest area as of 2002 of which nearly 55 per cent is concentrated in Uttarkashi, Chamoli, Pauri Garhwal and Tehri Garhwal. 2001 Census estimated total population of Uttarakhand as 8.48 million with 963 females per 1000 males. It is a young state with 38 per cent of total population in active age group of 20-50 years.

1.1 Good Social Indicators

The literacy rate in Uttarakhand is 72 per cent (Census 2001), which is much better than the all-India level of literacy rate. Yet, it ranks 14th in the total literacy rate. Female literacy is 60 per cent and it ranks 15th among all the states in India. Within Uttarakhand, Dehradun has the highest literacy rate for the total population, while Haridwar has the lowest literacy rates at 64. Differences in literacy rates across districts are mainly reflection of differences in the availability of infrastructure across regions. The number of junior basic schools per lakh population was 437.6 for Dehradun, which was the highest for all the districts in Uttarakhand. Haridwar had only 105.6 junior basic schools per lakh population in 2001-02.

The crude birth rate, death rate and IMR for Uttarakhand in 2002 were 17, 6.4 and 41 per thousand live births. This is a much better achievement as compared to all India average and neighbouring Uttar Pradesh and Himachal Pradesh. However, again, there is wide discrepancy in health infrastructure across the districts of Uttarakhand.

1.2 Average Physical and Financial Infrastructure

There are several issues related to infrastructure

development in Uttarakhand. These include connectivity in civil aviation, power, surface transport, communication and finance. However, any plan for an international airport requires adequate traffic. In this context, international airports at Haridwar and Pantnagar, which can be a feasible proposition, are much needed to improve long distance connectivity.

Power consumption in the state is about 824 kWh per person per year, which is far above the all-India average of 592 kWh, and that of Uttar Pradesh 300 kWh and Himachal Pradesh 794 kWh. But, the household access to power is just about 60.2 per cent just about the national average of 56 per cent. Clearly, the power position in Uttarakhand is better than several other states but it is in no way comparable with the performance of the best states given the availability of natural resources for generating power, particularly, hydro-power. Even in districts with 100 per cent electrification, the rate of access was less than 70 per cent.

Almost 40 per cent of the villages in Uttarakhand have no access to a road and the population living there relies on tracking for all the livelihood needs. The surfaced road length is estimated to have increased from 10,730 km in 2001-02 to 12,579 km in 2003-04, yet, Uttarakhand being a hilly state, the need for surfaced (all weather) road cannot be overemphasised. Compared to other hill or/and border states like Himachal Pradesh, Mizoram, Nagaland, the access to surfaced road in Uttarakhand is much less.

Despite being the rising ground of the Yamuna and the Ganga, the problem of drinking water is acute. In the villages, the sources of natural water are fast drying up and dependence on traditional methods of water conservation is increasing.

The operations of scheduled commercial banks in the state are an indicator of its financial development. Uttarakhand had 7.71 public sector commercial banks per 100,000 persons as against a national average of 4.51 public sector commercial banks during 2004. This is one of the highest concentrations of banks. However, the credit to deposit ratio for the state is one of the poorest at 0.19 as against a national average of 0.54. Total deposits formed about 1.49 per cent of all-India commercial bank deposits, while credit was 0.53 per cent. Importantly, almost 57 per cent of the credit in Uttarakhand goes to priority sector, while in the progressive states such as Maharashtra, Gujarat, lending to the priority sector constitutes about 26 and 34 per cent share. This is not surprising given the low level of industrialisation in Uttarakhand.

1.3 Encouraging Economic Performance

Since its formation the economic development of the state has taken a new turn. Growing at one of the fastest rates, Uttarakhand is poised to bridge the gap in per capita income from the average of all India to become part of the leading states in the country. The results of the Economic Census 2005 indicate Uttarakhand has performed better than the all-India average in terms of growth of employment as well as growth in enterprises.

There has been a clear shift in the sector wise contribution to GSDP growth of Uttarakhand from primary to secondary and services sector. During 2002-2003, the secondary and tertiary sectors contributed 27 per cent and 42 per cent to GSDP, while primary sector contributed 31 per cent. This structure was comparable to the agriculture dominant states. However, from 2003-04 the structure started changing quickly. During 2003-04, the gross state domestic product of Uttarakhand was INR 98,992 lakh at 1993-94 prices. The share of the primary sector in the total GSDP was 30.79 per cent (INR 3,08,827 lakh), the share of the secondary sector was 25.94 per cent (INR 2,56,815 lakh) and that of the tertiary sector was 43.27 per cent (INR 4,28,353 lakh). Within the main sub-sectors, agriculture accounted for the most among the individual sectors. The share of agriculture in the total state GSDP was 27.21 per cent. Manufacturing had a share at 10.2 per cent. However, by 2005-06 the share of primary sector slipped to 26.02 per cent, while shares of secondary and tertiary sectors increased to 29.27 and 44.01 per cent respectively. The share of manufacturing is estimated to have increased to 11.2 per cent. Tourism is also a potential driver of the economy with output multiplier 2.17 for the state economy.

Though the recent performance of Uttarakhand has helped in narrowing the gap with national average, poverty remains a serious cause of concern, particularly in rural areas. Despite relatively better per capita income during 2004-05, the incidence of poverty, at 39.6 per cent head count ratio is much higher compared to Uttar Pradesh (32.8 per cent). A closer neighbour, Himachal Pradesh with just 40 per cent higher per capita income, has much lower poverty ratio at 10 per cent. Almost 74 per cent of poor in Uttarakhand remain in villages.

According to the Census 2001, the total workers in the state were 31.34 lakh. Of these, about 25 lakh were in the rural areas and 6.35 lakh in the urban areas. Uttarakhand had 37 per cent of its population in work force as against 39 per cent at the national level. The

total main and marginal workers in Uttarakhand were distributed in the ratio of 74 per cent and 26 per cent as against a distribution of 78 per cent and 22 per cent at the all-India level. On the contrary, Himachal Pradesh has its 49 per cent of population in the workforce, but a relatively larger proportion (34 per cent) as marginal workers. Yet, the per capita income of Himachal Pradesh is better than that of Uttarakhand. Clearly, what matters at the first instance is to get an opportunity to work and then seek regular and permanent work. Within Uttarakhand the distribution of labour can be summarised as follows:

1. Around 50 per cent of the total (main + marginal) workers in the state are cultivators and other workers accounting for 39 per cent.
2. Around 79 per cent of the total workers were in the rural areas as cultivators and other workers.
3. Female participation was of the order of 57 per cent.
4. Share of main workers is more than the marginal workers in all districts.
5. Within the main workers, around 45 per cent are cultivators and another 45 per cent are other workers.
6. Household industry workers constitute a small percentage of the main workers.
7. Within the marginal workers, cultivators account for 61 per cent and other workers, 20 per cent.
8. Across districts, Haridwar has just about 29 per cent of its population in the work force, while Bageshwar had 48 per population in work force.
9. Share of industrial and services sector (other workers) is maximum 64 per cent in Dehradun and minimum of 16 per cent in Bageshwar.

1.4 Low Yield, High Cost and Fragmented Agriculture

Uttarakhand has strong agricultural base. However, in terms of per capita production and yield per hectare, Uttarakhand is an average state, but much better than neighbouring Himachal Pradesh (HP) in terms of yields in food grains. The Green Revolution of Punjab, Haryana and parts of other states could not effectively spread across Uttarakhand. Agriculture is not yet market-oriented in Uttarakhand as it is the case with Punjab and Haryana. In the case of Uttarakhand, as of 1995-96, almost 72 per cent of the land holdings were

of the size less than one hectare, and such holding together account for 27 per cent of the total area. Five per cent of the cultivated area had large size land holdings (10 hectare or more), which formed about 0.2 per cent of the total number of land holdings. 50.5 per cent of the cultivated area had holdings of size between 1-4 hectares, which accounted for 25 per cent of the total number of holdings. Only around 44 per cent of the total cultivated area in Uttarakhand is irrigated. Of the total net irrigated area, 56 per cent is irrigated by tubewells, 29.7 per cent by canals, 2.4 per cent by wells and 12 per cent by the other sources. In absence of adequate electrification of farm area, most of the tube wells are diesel powered, which is costly. In addition, absence of surface irrigation creates problem in replenishment of groundwater making farming sensitive to rainfall.

1.5 Skewed and Low Level Industrialisation

The situation of manufacturing sector in Uttarakhand is much below than national figures. As a percentage of all India output, contribution of Uttarakhand is merely 0.54 per cent and it adds only 0.56 per cent to GVA at national level. Though contribution in factory sector output is just 0.75 per cent, Uttarakhand participates in 78 per cent of two-digit sectors of country. Uttarakhand revealed strong comparative advantage in nine of factory sectors at two-digit in 2002-03 and these sectors constitute 25.6 per cent of all-India factory GVA. Most of the industrialisation in Uttarakhand is concentrated in Udham Singh Nagar, Haridwar, Dehradun and Nainital only. The contribution of unorganised sector in terms of labour force and units is higher in Uttarakhand than HP but with lower value of output and GVA. The average emolument obtained by an average worker in Uttarakhand is almost half of her counterpart in HP which implies higher rate of profits for firms per unit of output. The share of Uttarakhand in working small-scale industries of India is 1.01 per cent out of which registered SSI sector constitutes around 14.4 per cent of all SSI units and 60.9 per cent of them are in rural areas. This compares better than all-India level but lower than HP. Moreover, Uttarakhand has more number of registered units as compared to HP with almost five times fixed assets, 80 per cent more value added and 67 per cent more employment. Also, registered units contribute almost ten times export as compared to HP. However, the prevalence of sickness and closure of SSI sector has been a serious cause of concern and raise questions about the reliability of SSI-based development

agenda. In case of Uttarakhand, it has high closure rate than sickness rate. Yet when both sickness and closure rates are considered, the situation in Uttarakhand is not as bad as in Maharashtra, Tamil Nadu and Karnataka. In Uttarakhand 25 per cent of output of registered SSI sector originates in clusters of more than 100 units in one place. In case of unorganised sector, 77 per cent of output originates from clusters having more than 500 units. However, the third Census published by Central Ministry of SSI doesn't indicate existence of any cluster in unregistered sector of Uttarakhand. Given the fact that, Uttarakhand has received a status of Special Category State (SCS) with 100 per cent exemption on excise duty for new industries for 10 years, the industrial sector enjoys good opportunities.

1.6 Rivalry and Synergy between Organised and Unorganised Manufacturing Sector

The pattern of the comparative advantage across sectors indicate that Uttarakhand has only two sectors, namely food products and beverages, and wood and wood products, where both organised as well as unorganised sectors reveal comparative advantage. These are traditional sectors, the former constituting mostly of *gur*, *khandsari* and the latter constituting wooden furniture. The consumption pattern of these products would reveal little substitutability of unorganised manufacturing with that of organised manufacturing in the rural areas. And, even if these products are manufactured in the organised sector, the labour intensity is likely to remain unaltered.

There is large segment of sectors revealing comparative advantage under unorganised sector. Several of them such as manufacturing of data processing machines demonstrate underlying capability of promoting organised sector in these areas without losing jobs. Similarly, wearing-apparels is a labour intensive work and large-scale activities will support the unorganised sector through vertical integration.

1.7 A Constrained Tourism Sector

The output multiplier of this sector is 0.65 in tourism sector and 2.17 in economy. The direct and indirect income multiplier for tourism is 0.736 and direct and indirect employment multiplier is 1.126 for tourism sector. All of these variables clearly explain the kind of role played and in future to be played by tourism sector in Uttarakhand. Uttarakhand has a maximum number of tourist destinations (178 in 2003-2004) including holiest Hindu shrines and pleasure

destinations. However, major contribution in tourism sector is purely from domestic tourists. The share of foreign tourists have been more in HP, which is helped by better availability of infrastructure and hospitality services in most of the tourist destinations. Issues like surface roads, civil aviation and basic amenities like adequate drinking water, hotel industry are actually major bottlenecks to develop Uttarakhand as the most favoured tourist destination for foreign tourist arrivals.

2. Growth, Macroeconomic Structure and Development Strategy

Beginning 2002-03, Uttarakhand has recorded double digit growth. This is a much better performance even in comparison with Himachal Pradesh, as also with all other special category states. However, Uttarakhand is still an agriculture dominant economy. Uttarakhand reveals comparative advantage (RCA) in both primary as well as secondary sector and slackness in tertiary sector at the aggregate level. At a more disaggregated level the analysis indicates the following:

- The revealed comparative advantage of Uttarakhand in primary sector is widely spread across major components of agriculture, forestry and mining. This is clear advantage in terms of self-sufficiency in food production and consumption, but the per capita production is not enough to export to other regions in large quantities. However, the sluggish growth rate of less than 2 per cent in almost all components of primary sector including agriculture, which constitutes 81 per cent of primary sector, is more alarming. Only forestry and logging has growth rate above national average. In contrast, the growth rates in Himachal Pradesh and all India have been 7.8 per cent and 2.5 per cent, respectively.
- The state revealed advantage in the secondary sector mainly due to high contribution of two components, namely construction and electricity, and gas and water supply. Uttarakhand has great potential to enhance its advantage in producing and selling electricity given vast resources of hydropower.
- Registered as well as unregistered manufacturing sectors have very low base in the state as compared to the national economy, Himachal Pradesh and Uttar Pradesh. However, during the recent years, the registered sector has contributed heavily to the economy due to high growth rate.

If such growth continues, the state could shortly convert its disadvantage in to advantage.

- In the tertiary sector, Uttarakhand reveals clear advantage in community and social services, possibly due to high expenditure on account of public administration. But, as noted earlier, it lacks in critical areas such as trade, hotel and restaurant, transport and communication. Growths have also been poorer in these sectors in comparison to the national average.

2.1 Investment and Growth Linkage

Investment is an important factor in the growth process of all the sectors. However, contribution of investment in growth process is conditional to other factors, and characteristics of economy. It is obvious that an industrial investment made in more developed areas with better infrastructure are expected to yield a superior outcome compared to the same investment made in a highly backward area. Private investments in general, are driven by the availability of human and physical infrastructure, enabling factors, governance issues and incentives.

Considering an ICOR of 3.85, Uttarakhand will need an investment of more than INR 73,000 crore at 2006-2007 prices during the Eleventh Plan Period in order to maintain real growth rate of about 11 per cent. Out of this, roughly, the private sector would be required to contribute INR 45,000 crore, and the contributions of central government and the state government are likely to be restricted to INR 16,000 crore and INR 11,000 crore respectively. These are high targets but not impossible, given the performance of the past years, and the incentive extended to private sector in both primary as well as secondary sector size from the Planning Commission.

In its XIth Five-Year Plan Proposal, Uttarakhand government has proposed to spend Rs. 42,012.19 crore during the XIth Plan Period (2007-2012), which is 2.57 times higher than the actual expenditure incurred by the state during the Xth Plan Period. This appears to be too ambitious, while Plan document itself, is conspicuously silent on the sources of funding. There is more emphasis on agriculture and transport.

Tenth Plan Investment

During the Tenth Five Year Plan (TFYP), Uttarakhand has demonstrated dynamism in securing and utilising the plan outlays. In fact, the approved plan outlay for Uttarakhand was increased by about

34.5 per cent and all of that was spent in addition to the original outlays. The total expenditure during the TFYP was of the order of INR 10,263 crore at 2001-02 prices. During the TFYP period there has been major shifts in allocation and utilisation across sectors, which have affected the growth of the respective sectors.

- Expenditures planned for soil and water conservation, water supply and sanitation, energy, education and health were withdrawn in favour of other sectors. These withdrawals are reflected in lower growth of the agriculture sector. For agriculture, soil and water conservation are as critical as irrigation, seed and fertiliser. Such withdrawals need to be compensated during the XIth Plan Period.
- Plan expenditure on forestry, rural development, irrigation and flood control, industry, welfare of SC/ST/OBC and urban development were increased significantly.
- Across the major sectors, maximum allocation was done for the social sector. Nearly 37 per cent of the outlay was allocated but finally it constituted about 35 per cent of the utilised outlay.

Road transportation appears to be the single most preferred sector with almost 14 per cent of the TFYP utilisation going to it. In fact, this is one sector where no change has taken place in shares of allocation and utilisation. Given this situation, the GSDP growth of the construction sector is not surprising.

Investment by the Private Sector

Analysis of Annual Survey of Industries (ASI) data, the proposed/implemented Industrial Entrepreneurs Memorandum (IEM) for Investment in the de-licensed sector by the domestic private sector and FDI approvals indicate important factors affecting growth.

During the early years of 2000s, Uttarakhand has attracted attention of domestic investors at a large scale. The shares of investment proposals for Uttarakhand have increased systematically over time but, when it comes to implementation of the proposals, Uttarakhand appears to lag far behind Himachal Pradesh. This problem is also reflected in the inability of Uttarakhand to attract Foreign Direct Investment (FDI) proposals.

2.2 SWOT Analysis

Uttarakhand is a landlocked state, which creates

disadvantage in competing with other states, particularly in exportable goods. Its rural mass has fragmented land with small landholding generating negligible or no surplus, leading to constrained use of innovative methods. On top of that, village and town level industrialisation is very poor. In such an underdeveloped democratic society, political compulsions and doubts about reforms are obstacles to implementation of progressive policies. It is often argued that the distinct geographical features of Uttarakhand with mountain, Bhabar and Terai regions, it is uniquely suitable to grow varieties of horticultural and cash rich crops. However, it is difficult to shift from traditional farming to new farming quickly. Moreover, technological changes if not monitored properly, could lead to farmers' suicides being experienced in several parts of the country these days.

Rural population demonstrates slower growth rate as compared to the urban population, indicating large-scale migration from farm sector to the non-farm sector creating pressure on cities and towns and leading to increasing slum population.

One of the preferred agriculture-based industries of the state is the sugar industry but that too is faced with a challenging situation due to the competition from other states, complex pricing mechanism and political sensitivity. There are also issues related to permission to produce ethanol and adapting technologies to facilitate co-generation of energy.

Thus, even with cash rich agro-industries, the development strategy primarily based on dominant primary sector has limitations, specifically due to poor terms of trade. It is therefore, difficult to ignore the importance of fast and diversified industrialisation in order to absorb the surplus labour. In this context, private sector participation is crucial as they are better placed to effect changes.

With high literacy rate, and congenial environment for learning and research, the potential for developing educational centres, high-end information technology centres, could also be a sustainable plan.

Poverty reduction and equitable distribution needs to be the natural outcome of economic development. It has to be more than simple trickle-down effects. While infrastructure facilities to feed industrial centres are important, provisioning of connectivity to rural mass and facilitation to get them market access and better prices cannot be ignored.

The most important threat to the state's economy would be financial management of the state. Second SFC report has commended Uttarakhand government on enacting FRBM legislation, thereby targeting for 'Nil' revenue deficit, 3 per cent fiscal deficit by 2008-09 and reduction of total outstanding liabilities to 25 per cent of GSDP by 2014-15. Despite the above steps undertaken, it would be premature to loud performance given the level of interest payments and outstanding debts of Uttarakhand.

Uttarakhand is also threatened by regional disparities. This has severely impacted the per capita income and social imbalance in Uttarakhand. The geographical divide of hills *versus* plains, concentration of industrialisation, services and infrastructure along with education and health facilities in certain districts of plains, is affecting the overall development of the state. Therefore, the development strategy needs to concentrate on bridging this gap and regional disparity.

A structured approach is, therefore, required to address the development problems depending upon the strengths and weaknesses of the region. The need for rapid industrialisation, sustainable tourism and the need to improve yields of agriculture products cannot be overemphasised. The solution lies in better investment climate, public-private partnerships, involvement of local bodies to a greater degree, a change in attitude of the administration, increasing education and health facilities, modernising the cities and improving the connectivity, power supply and communication. A sense of competition among the bureaucrats and leadership against other states must continue.

2.3 Development Strategies

Given the strengths and weaknesses of the state, Uttarakhand has a number of options to pursue. And, in fact, various documents of the state government consider tourism, agriculture and horticulture, medicinal plants/herbal wealth, generation of hydro energy, information technology and biotechnology as the key GDP drivers of Uttarakhand and hence thrust areas. However, one has to be careful from being overwhelmed by certain fixed ideas and at the same time there should be clear differentiation between driver and enablers. For example, Uttarakhand has tourism potential but from the analysis of sector-wise growth performance there is nothing to suggest that this sector is driving the economy and could change the

destiny of the state any quickly. Similar is the case of hydropower, which, at this stage should be developed as essential component of enabler rather than main driver of the GDP. The access to power and per capita consumption of electricity has to increase further to the level of richer states as Uttarakhand strives to increase its per capita GSDP. The state has rightly come out with policy on hydropower favouring private sector privatisation and has already identified 47 small hydro sites with less than or equal to 25 megawatts capacity.

On the other hand manufacturing, construction and agriculture keep contributing half of the growth. Nevertheless, potential avenues of growth must be part of the focus area programme. There are a number of recommendations on sector-specific problems in respective chapters of this report. Only a broad classification and discussion of some of the selected issues is presented here.

Focus Area Programme

- (1) Support system for fragmented farming towards improving yield and price.
- (2) Rapid industrialisation.
- (3) Sustainable mountain tourism with strict adherence to master plan based mountain urbanisation and exclusion of sacred locations.
- (4) Research and high-end information and bio technology hubs.
- (5) Governance.

Wider Area Programmes

- (1) Reorientation to poverty and inequality assessment and antipoverty programmes.
- (2) Urban and rural infrastructure development under integrated master plans.
- (3) Application of public-private partnership mode.
- (4) Application of concepts of growth centres to rural development.
- (5) Control on primary deficit.
- (6) Development of urban local bodies and Panchayati Raj Institutions for efficient and intensive participation.
- (7) Hydro-power development and export.
- (8) Research and high-end information and biotechnology hubs.

2.3.1 Support System for Fragmented Farming

Three aspects of agriculture sectors need to be factored in overall development strategy. First, and as noted earlier, the agriculture yield and the terms of trade are poor and in fact appear to be deteriorating over time. Second, with growing urbanisation the prime farmland is getting diverted for non-farm purposes. These two factors will put enormous pressure on food security and poverty alleviation programmes. With increasing income, demand for food will also increase. This means, every unit of available arable land will have to produce more food and other agricultural products. But, ever increasing fragmentation of agriculture land is likely to worsen the situation and make it more daunting. Therefore, the future strategy for the agriculture sector needs to be directed towards increasing productivity of the marginal farm as much as the large farms. Simultaneous efforts are also needed to create mechanisms of *de facto* consolidation of the farming operations to harness economies of scale. It may be noted, only households with landholding of four ha and above have a surplus of income over expenditure (Kisan-Ayog 2006, Fifth Report of the Farmers' Commission 2006). In the case of Uttarakhand, only 22.3 per cent of the areas of agriculture farm, which constitutes about 3.1 per cent of the farm holding, have farm size above 4 ha. Therefore, a majority of farmers in Uttarakhand needs support system to enhance farm productivity and income.

The agricultural sector continues to depend heavily on rainfall. The main reason appears to lie in management of water resources and technology choices for irrigation. Irrigation in Uttarakhand is dominated by privately owned tubewells as against canal-based irrigation in several other states. With predominant use of tubewells, replenishment of groundwater is critically dependent upon rain, which is not the case with canal-based irrigation. Canals also help in replenishing ground water utilised by the tubewells. Thus, a strategy of optimal combination of tubewells and canals may reduce dependence on regional rain. It is in this context that contribution from the governments (Centre as well as state) is lacking compared to several other agriculture dominant states. In addition, currently most of the tubewells in the state are diesel powered, which need to be replaced by electric or solar power in order to increase profitability of the farmers. However, this requires fast and efficient rural electrification.

Thus, the key areas of policy intervention include the following:

- Well laid down and farmer-friendly cooperative and contract farming legislation;
- Facilities for soil testing and estimation of status of micronutrients at block level;
- Facilities of low cost refrigeration for perishable commodities and small but secure storage silos at the block level;
- Promotion of efficient irrigation systems at the farm level;
- Ease of access to market (*mandis*) at block level;
- Creation of agriculture price stabilisation fund;
- Bio-parks to convert available biomass into economic products, including energy and manure;
- Advisory service cooperatives at block level covering technology dissemination and crop selection;
- Monitoring and regulating implementation of new technology through establishment of a National Biotechnology Regulatory Authority;
- Promotion of application of information technology for knowledge dissemination and market intelligence services;
- Promotion of micro-financing in a productive way;
- Crop insurance to cover weather and market risks.

The Uttarakhand government has already set up Krishi Vigyan Kendras at district level. They could be extended to block level given the connectivity problems in hilly areas. Initiatives are also undertaken to promote agro-industries and increase value addition by launching a litchi export-processing zone at Ramnagar, a proposed Floriculture Park in Dhakrani (Dehradun), a Biotechnology Park near Pantnagar and a Medicinal and Aromatic Plants Export Zone covering seven districts. The state has constituted a High Level Biotechnology Board and State Medicinal and Aromatic Plant Board to provide policy guidelines. There are high expectations and it would be interesting to see how far these organisations are able to solve the basic problems of the small farmers and increase their income, which is the ultimate goal.

2.3.2 Sustainable Mountain Tourism

In several parts of the world, the mountain regions have greatly benefited from the rise of tourism. With increasing demand or increasing potential demand for tourism, such regions acquire modern connectivity and new technologies. Tourism being highly labour intensive with a range of career options, helps in increasing the income of the local people. And, if the area happens to produce traditional goods of cultural importance, the marketing problems are greatly resolved with promotion of tourism, which brings the market to the doorstep of manufacturers.

However, it is often argued that tourism exhibits tendency to destroy the basic foundation on which it was developed during the initial phase and in absence of checks and balances lead to highly distorted state of the local culture and value system, the landscape and the environment at large. A badly planned tourism development could lead to undue pressure on land use, water resources, electricity supply, forests, native plants, leading to ecological disruptions. The increasing urban population also leads to excessive generation of waste water discharge, garbage, air/water and visual pollution. It may be noted that tourists generate many times more waste, consume many times more water and electricity than the local residents.

There are plenty of tourism options for Uttarakhand as discussed in Chapter 11 of this report, and all of them should be encouraged. However, in order to avoid adverse effects of rapidly growing tourism it is important that certain normative principles on command and control and market-based instruments are fixed sooner than later to cover at least the following aspects of local area development.

- Integrated time scaled master plan covering long term future demand assessment, design and provisioning of futuristic facilities such as transport, water, electricity, communication, building layout, open space requirements, market layout.
- Protection of green belts, forests, plantation and ecosystem.
- Legislative provisioning to ensure recycling as integral part of development process, application of resource efficient appliances and disposal of garbage.
- Sustainable management of natural resources including limits on resource use.

- Gradual change giving balanced consideration to the needs of the local population and the interests of tourists.
- Appropriate taxation/resource use charges to be used exclusively for sustainability of tourism industry.
- Prohibited activities and prohibited areas to maintain sanctity of sacred places, places of worship and religious conglomerations and to preserve ecosystem.
- Adequate incentives for best practices and commensurate/stringent penalties against defaulters.

The state government has already constituted autonomous institutions such as the Uttarakhand Tourism Development Board, Special Committee for Pilgrimage, and Adventure Tourism Committee. It is expected that these institutions work towards a common goal to provide sustainability to the tourism and attractiveness of the region in long term. The state government has hired consultants to frame master plans for eco-tourism. Given the intensity of risks, it would be a prudent idea to discuss such plans in open forum and also get them vetted by alternative agencies, possibly academicians or semi-academic organisations to ensure that above objectives are adequately incorporated.

2.3.3 Rapid Industrialisation

Abundance of natural resources is not a guarantee of growth unless there is significant value addition. In the case of India too, states with a higher industrial orientation have grown faster because industrial growth absorbs more direct and indirect employment and raises the consumption level of products from other sectors of economy. This is particularly true during the process of economic liberalisation. The effects of reforms in external and financial sectors are more likely to transmit through the industrial sector. Industrial growth also motivates growth in services and helps in the cost-efficient mechanisation of agriculture and food processing.

Any strategy of industrialisation could be good if it can sustain itself under competing environment without much of state intervention during the post promotion phase. The failure of SSI-based strategy in most case could be traced to their inherent fragility requiring persistent state support. However, this does not mean that states have not been responsible for the failure. The shortages of essential infrastructure,

namely power, water and road and exploitative attitude of administration and poor governance practices are also equally responsible. In such a situation, industrialisation through Special Economic Zones (SEZ) and technology/industrial parks is considered to be effective ways to grow industry. SEZ, technology/industrial parks could be planned even in the backward areas, with special incentives and provisioning of adequate transport and communication facilities. Uttarakhand has already planned one SEZ at Pantnagar and two integrated industrial estates (IIE), one each at Haridwar and Pantnagar. Other parks linked to biotechnology, medicinal plants and horticulture are also under consideration/development.

There is problem of identification and acquisition of land for SEZ and parks. In this context the state may like to work out a model in which as an alternative strategy, the farmers are made permanent stakeholders through equity participation in the total developmental investment. Such equity should be transferable from generation to generation just like land holding. This will provide them a source of perpetual income until they sell their rights. In yet another possible model, the government could work as facilitator where the landholder themselves became joint developers of the SEZ with clear contracts and lease provisioning.

Mega Projects and Diversified Production

With large-scale industrialisation, the area develops faster and many small industries find it attractive to open for business with or without incentives. Clearly, more the number of lines a district has, the more likely it is to contribute a higher share in manufactured output. This means that it is more important to promote diverse industries, with multiple product lines. Such industrial activities are invariably associated with mega projects and develop quickly in the local area. In order to target mega investors under a strategic plan the state should identify a competent and skillful advisor to the Chief Minister, and assign growth targets to key officials. Possibly, hire an agency to market the strengths of Uttarakhand and mobilise mega projects. Mega projects could be given special packages if they agree to locate in industrially backward areas.

Assign Targets to Investment Promotion Boards

In most states, bureaucrats, with no implicit or explicit targets and incentives, head the investment promotion boards. One possible way to ensure the performance of these boards is to utilise the dual measures of actual investment and the ratio of

investment implemented to the investment proposed. The latter is a measure of follow up action and commitment. Good performers need to be compensated through performance-linked payment.

Modernise Industrial Clusters

Modernisation of the existing small-scale clusters along with scientifically planned urbanisation can also be equally helpful. The problem with clusters is low wage syndrome. The middlemen siphon out most of the margins, while the actual worker remains hand to mouth. In this context, development of industrial corridors and modernisation of existing clusters for better quality and scale benefits and organised system of production may be extremely helpful in increasing the labour income. However, given that the investment potential of aspiring members in the clusters could be highly limited, the efforts have also to be made to translate such aspiration in to more dynamic stage of manufacturing. It is here, that the government interventions are important in the form of provisioning of high-end parks with required infrastructure support for the products being manufactured in the clusters concerned.

Recently, the Government of India has announced a scheme for establishment of high-tech weaving parks involving modernised power-looms through assistance under three existing schemes for power-looms namely, Technology Up-gradation Fund (TUFS), the Group Work Shed Scheme (GWSS), and the Textiles Centre Infrastructure Development Scheme (TCIDS). Five such high-tech parks are already approved, one in Karnataka, and two each in Tamil Nadu and Andhra Pradesh. This should set a good example for Uttarakhand to follow in terms of modernisation of its own clusters, particularly those in the textiles sector in order to remain competitive in the international market and reap the benefits arising out of abolition of quota regime in textiles and increasing influence of World Trade Organisations (WTO) commitments. Uttarakhand is developing three large industrial clusters at Pantnagar, Haridwar and Sitarganj. However, there is need to consider areas such as Uttarkashi, Nainital, Pauri Garhwal and Dehradun also, where large employment in registered or unregistered SSI exists.

Promote Human Capital and Intellectual Development

Human capital is the composite effect of human development and intellectual disposition, both of which are essential for attracting investment and achieving faster growth. Therefore, the strategy of accumulating

human capital should concentrate on health, hygiene, nutrition as well as intellectual development. Some states have built up a reputation for their skilled workers. Uttarakhand has good record in literacy rate and health indicators but when it comes to facilities for higher and technical education, there are serious deficiencies. The state has recently embarked upon raising the output of IT professionals to 12,000 (MCA equivalent) per annum by 2006. Along with this it is important to create a human capital to support manufacturing and other services as stated above. In this context example of Karnataka is worth noting, which has been developing a network of Centres for Entrepreneurship Development of Karnataka (CEDOK) and a chain of Rural Development and Self-Employment Training Institutes (RUDSETIs), with the direct involvement of industry and communities. CEDOK utilises the creative capabilities of the local community, particularly in less industrialised districts. Uttarakhand could do better by creating such centres with extended facility of training in business management, information technology and also using them as source of critical information and dissemination.

Re-orient the Rural Manufacturing through the Concept of Growth Centres

Uttarakhand has relatively high share of small scale manufacturing in rural sector as compared to the urban sector. However, this potential of rural entrepreneurship has not been fully exploited because of a very low level of operations. The State could formulate policies for village level enterprises according to prevailing specialisation to increase scale of operation based on the Chinese models of village and town level enterprises. However, the government should not indulge itself in managing such activities. Instead, the management should be in the hands of private or duly formed self-help groups.

Choosing between Incentives and Enablers

Andhra Pradesh, which attracted almost five per cent of FDI during 1991-2001, is known to offer some of the largest fiscal and infrastructure incentives for investment. On the other hand, states such as Karnataka do not mention any tax-based incentives in their policy document and prefers to focus on enabling factors. The government of Karnataka has withdrawn all exemptions on stamp duties and standardised the rates. Uttarakhand has come up with incentives for the IT industry like exemption on electricity duty on generator sets, stamp duty concessions and rationalisation of land use and conversion charges.

Of late, Andhra Pradesh also is moving away from tax-based incentives to enablers in the large and medium scale segment. Enablers are more sustainable than incentives. Once a facility is created it will continue to exist but incentives are likely to be withdrawn under fiscal pressure. In that case it is not guaranteed that the investors would keep tied to the location. Therefore, incentive schemes must be designed carefully. However, the case of mega projects where investment is long-term, the basis for considering incentives can be different.

Review Incentives to Small Scale Industries

Several products are still reserved for SSI and even if a sector is taken out of reserved list, the barrier arising out of differential treatment between an SSI unit and a non-SSI unit in the same sector continues. This effectively blocks the expansion of scale of operation. Therefore, it is important that scale of SSI operations be raised sufficiently. Alternatively, the concept of SSI could be abolished altogether leaving behind only tiny industries for preferential treatment such as preferential purchases and governments help in marketing tiny sector products through equity participation in agencies constituted for the purpose.

It is argued that deferral and exemption of interest rates, taxes and duties are inherently less sustainable policies. Instead, SSI should be freed from procedural hassles and permitted to develop competitively. A preferential purchase policy reduces the pressure on SSIs to maintain quality.

Improve Drivers of Investment Decision

Investment in social, physical and financial infrastructure, both in urban and rural areas are critical to industrial development. Studies on factors affecting investment decision indicate that availability of skilled labour, infrastructure, supplier base, presence of metropolitan cities, perception about governance and fiscal/non-fiscal incentives are important considerations for the private investors. These factors are essential for both small as well as large industries, only the scale of demand vary. In fact, it is the larger investors, who are better equipped to differentiate between locations, are more concerned about higher level of attainments to match the stakes.

Infrastructure Development

Growth in infrastructure is clear indication of states' resolve for long-term growth plans. Development of airport, water supply, power, roads, educational

institutions, communication (earth stations, fibre cable and exchanges) and financial institutions should get priority in developmental expenditure and the strategy should be such as to reduce government's involvement in operating such programme. Connectivity is extremely important. One of the possible reasons for faster growth of Gurgaon and Noida is the proximity to international airport and a market as large as Delhi. However, any plan for an international airport requires adequate traffic. In this context, international airports at Dehradun and Pantnagar are distant possibilities. However, upgradation to allow frequent domestic flights is essential. Similarly, more airstrips need to be planned and constructed to allow high altitude tourism by airways.

Despite significant increase in investment in road sector and IT related infrastructure such as STPI Earth Station at Dehradun, Roorkee and Pantnagar, WIMAX computer network system, Uttarakhand keeps lagging in both basic urban infrastructure. Agriculture infrastructure and rural connectivity also needs to be brought to equitable level across all the blocks. All this requires large finances.

State may need to set up Infrastructure Development Fund like those by other states *viz.*, Andhra Pradesh and Gujarat and strike BOT and PPP contracts. However, the success of PPP model depends on pragmatism and long-term approach. A long-term planning approach would suggest roads to be made for longer life cycle, which ultimately require selection of cement, concrete as the building material. A PPP with such long term contract would ensure application of scientific and better technology for road construction.

Financial Infrastructure

The financial infrastructure is closely related to all economic industrial and trade activities, which require extensive support in terms of financial markets. It includes not only the development of commercial and rural banks, but also, clearing houses, commodity exchanges, trade centres, world exposition centres and exhibition parks, particularly suitable to showcase strengths of Uttarakhand in yoga, biotechnology, medicinal and herbal plants, tourism and higher learning. State should plan such financial and commercial complexes at Dehradun and Pantnagar with modern amenities, connectivity and research facilities through public private participation. This will help attract major corporate houses to the city.

Credit to the small and tiny sector has been a chronic problem. This needs to be solved through the

mechanisms of self-help groups and incentives to local bodies for developing successful arrangements with rural banks.

Ensuring adequate and high quality human capital to take on the challenges of managing modern capital is vital. It is a truism that physical capital can be better utilised with better human capital. Private investors factor literacy rate into their investment function.

Growth of cities cannot be avoided, in fact there are several virtues in developing cities. Transport, storage, communication, hotel, restaurants, banking, insurance, real estate, dwellings, business services, public administration and other services components grow faster in and around metropolitan cities. The influence of a large city on employment opportunities and lifestyle aspirations goes well beyond city limits and extends into surrounding areas. This suggests that Uttarakhand should concentrate on building a few large business centres, one of them possibly at Gairsen to reduce regional disparity in the state.

It is heartening to note that the state has recently taken up initiative to prepare master plans for some of the urban areas and the Central government has selected Dehradun, Haridwar and Nainital to be considered under Jawahar Lal Nehru Urban Renewal Mission (JLNURM). It is expected, implementation of these schemes would bring long term-solutions, instead of short-term patchwork.

State's Initiatives: Towards Improved Facilitation

The state government has recognised the importance of facilitation and promotion. Udyog Mitra has been set up in the state under the Chairmanship of the Chief Minister for providing a forum for continuous interaction with the industry associations and to enable timely policy interventions and other measures as may be necessary. Single Window Clearance facility is available with a provision for deemed/on-line clearances and approvals. The single window contract facility would be available at the District Industrial Centres (DICs) at the district level and State Industrial Development Corporation of Uttarakhand (SIDCUL) at the state level.

However, there is no legal backing to the single window programme as is the case in Andhra Pradesh. Nevertheless, if the system is efficient without legal binding, it could be still better, provided it remained so. Apart from providing information and escort services to the entrepreneurs, the Centres will also be maintaining a data bank. An NRI and NRU (Non-

Resident Uttarakhandi) investment cell has also been formed in the state to foster investment and single window access.

2.3.4 Institutions

There is ample literature to support the view that institutional development and long-term growth are positively correlated. However, institutions are known by their quality of work, delivery system and human resources manning them. Therefore, a proper environment is necessary to attract the right people to the right place. Private investment in education and institutional development, ranging from basic education to R&D, needs to be encouraged.

The need for institutional development has been recognised by most state governments, but Maharashtra and Karnataka are frontrunners in this respect. Maharashtra is providing land in industrial areas for institutes for higher learning, including business schools, at nominal or subsidised rates.

There are many areas such as banking, legal system and constitutional matters where states have supportive roles in implementing central reforms. However, subjects such as business rules, law and order, state finances, state financial institutions, industrial development, rural development, statistics, education system, local-body programmes, academic research, economic analysis, which are at the heart of development, fall entirely under states' purview. These institutions need to evolve continuously because of a changing economic environment and new challenges.

Develop Centres of Excellence

Centres of excellence help build the image of the state as an attractive investment destination. The focus should be on promoting original research, and attracting the best staff. These should be merit-based and free from bureaucratic interference. Uttarakhand already has some of the important learning centres such as Roorkee Engineering University, and Pantnagar University, while new centres of excellence housing IBM, Microsoft, Oracle and D-Link academies is underway at Nainital. Uttarakhand has great opportunity to slowly build a chain of centres of excellence and learning due to advantage of climatic conditions and proximity to Delhi including a research centre for biotechnology. State should be generous in this endeavour, as it will definitely pay back in long term.

Strengthen Statistical Analysis

Good decisions are helped by good analysis and

high-quality data is the backbone of any meaningful analysis. If economic research is to be improved, special emphasis must be given to collection and analysis of data. States are moving to estimate district level domestic product. Karnataka, through its institutions has also initiated a process of building extensive and credible databases on WTO matters, and its implications for various sectors, to be disseminated throughout the industry for awareness. Uttarakhand is in the process of creating a fiscal database with the help of USAID and NCAER. However, the usefulness of this exercise lies in implementation and continuance of the analysis and the database.

2.3.5 Governance

The goal of good governance is to make citizens' life more peaceful, trustful, secure and efficient by enforcing property rights, preventing crime, corruption and complacency in government as well as corporate sector and thereby helping in creating efficiency of private business functions as well as implementation of government plans and programmes. Therefore, it is argued that dilemma between commitment and accountability is central theme of all governance related problems. Even the most down-to-earth and essential programmes of poverty alleviation suffer from poor governance. Governance is outcome of composite behaviour of the complete chain of government or corporate machinery. A recent study by the World Bank has brought out a comparative analysis of India's regulatory environment with that present in China. Procedures in India are more complex, more numerous, and cause greater delays.

Empower People with Information and Right to Information

Empowering people with information and the right to information could be the most effective way of improving governance. However, the moot question is about the mechanism to get information and justice against offences. The legal system is so slow and non-transparent that it is almost impossible to secure redress.

One way to get some reprieve is to involve local bodies in development activity effectively. The provisions of the 73rd and 74th amendments must be implemented to reform management of revenue and expenditure. The First State Finance Commission had made a number of recommendations regarding financial power to local bodies. The state government needs to pursue the recommendations of the SFC aggressively

and give autonomy to Urban and Rural Local Bodies (ULBs). Transparency can be achieved through:

- Public disclosures of the revenue and expenditure statements at the local body level.
- Involve media and independent NGOs in dissemination of information about policies and programmes of the government so that the lapses at the middle level can be brought to public knowledge.
- Wider dissemination of citizens' rights.

Institute Focused Advisory Committees

It may be helpful to rely on focused advisory committees comprising top class professionals, industrialists, social scientists and journalists, instead of a bureaucracy-loaded system, to get advice on industrial/scientific/social developments. If governance through committees is to be successful then advice of the expert bodies should be made binding by the law unless refuted with convincing reasons. It may be noted that in today's time getting best of the professional advice requires compensation and therefore, the state needs to make such provisions for advisory bodies and ask them to produce significant opinion. It should not be a decorative exercise by some renowned people.

Introduce Comprehensive Computerisation

Extensive use of IT can bring about transparency and accountability in all areas including online clearances of projects, taxation, information dissemination, land record, statistical data on all issues of development. The "India: E-Readiness Assessment Report 2004" (Department of Information Technology, Government of India) has shown no improvement in the State's ranking in e-readiness over 2003 when Uttarakhand was placed among the group of 'below average achievers'. The government has made efforts to create a conducive environment by formulating laws, initiating IT-related projects and equipping schools with hardware but that is not adequate compared to what other states are doing in popularising the application of IT through projects such as e-Choupal and Community Information Centres (CIC). Uttarakhand was a late starter in computerisation of land records. However, the Dev Bhoomi Project, initiated in 2005 was completed in nine months and won an e-governance award in 2005. With this possibly, the 2005 ranking of the state in e-readiness would improve.

The state could do better by adopting some of the innovative programmes undertaken in various states.

These include: CARD (Computer-Aided Administration of Registration Department); e-seva, a one-stop-shop for citizen services providing a wide spectrum of services under one roof like payment of public utilities bills, tax payments, issue of certificates, licences/permits, reservations; FAST (Fully Automated System for Transport); and RASI, which facilitates dissemination of all kinds of useful information to the villagers at a low cost, enabling the villagers to obtain crop-related help from agricultural universities, and use of tele-medicine to treat rural patients.

The efficiency of implementation could be improved by manning the Information Technology Authority with top quality IT professionals with clear vision of the systems needed, and the freedom to plan and execute these systems. The state machinery should be assigned the job of a facilitator. Such programme should be directly under the Chief Minister for efficient and quick execution.

Simplify the System in all Spheres of Administration

Simplification of procedures and reduction of red tape barriers can go a long way in reducing corruption. For example, Karnataka has already passed a Karnataka Industry Facilitation Bill, focused on simplifying procedures and reducing bureaucratic controls. Choice of factories for inspection will be through random numbers and all inspections will be joint inspections so that factory inspectors, boiler inspectors, excise inspectors, or whoever is required to inspect, will go together and finish the inspection at the same time. Similarly, the multiplicity of application forms is to be replaced by a Combined Application Form (CAF) in order to simplify the business operations. The focus of the programmes is not only to compete with the other Indian states, but also to compete globally. Therefore, quality, delivery, services and product all are getting due consideration in the policy design.

Legislate to Reduce Moral Hazards

Recently, the Indian Parliament has passed a bill that permits fund raising from private corporate sector for election under specified procedures. This is a good example of arriving at better policies by legalising the illegal. Recently, the Prime Minister has echoed similar idea to formulate system to include middlemen in the defence purchases, as it appears difficult to avoid them. To consider another example, if driving licences are provided smoothly just on the recommendation of recognised motor training institutes with proper recording system, then monitoring the quality of

driving will become far simpler. The police just have to record driving licence numbers into monitoring system while penalising the defaulters. This information can be used for de-listing institutes from which more defaulters graduate. Thus, the risk of getting de-recognised will ensure that institutes do not illegally sell licences. Technology needs to be used in order to make this possible.

3. State Finances

3.1.1 Overview

As of March 2006, the period of analysis in this chapter, Uttarakhand has presented six full-fledged budgets since its birth, and out of these four have undergone financial audit. Subsequently, two more budgets have been presented in quick succession. The initial trend have been mixed. While there is clear evidence that the state has priority towards developmental capital expenditure, the revenue expenditure had been going out of bounds creating unsustainable liabilities. The primary deficit as well as the gross fiscal deficit have been increasing up to 2004-2005.

During 2001-02 and 2004-05, the fiscal deficit increased from 4.6 per cent of GSDP to 8.4 per cent of GSDP and as a consequence the debt burden of the state has gone up from 26.4 per cent of GSDP in 2000-2001 to 50.84 per cent of GSDP during 2004-05. The revenue deficit increased from 2.5 per cent of GSP during 2001-02 to 4.7 per cent of GSDP in 2004-05. However, the state government has demonstrated more commitment towards reducing revenue deficit as reflected in the subsequent budget proposals and revised estimates. In fact the latest budget documents for the years 2007-08 and 2008-09 presented in quick succession recently indicate almost complete turnaround with an achievement of revenue surplus.

The approximately estimated liability of Uttarakhand as of 31 March 2006 was INR 12,805 crore. Within a short period of four years between 31 March 2002 and 31 March 2006, Uttarakhand has increased its liability by about INR 7,880 crore, which was equivalent to 21 per cent of its estimated GSDP for 2005-06. This is one of the highest growths in liabilities among all the states including Special Category Status (SCS) states.

As of end March 2006 (BE), internal debt constituted almost 70 per cent of the total liability in Uttarakhand as against 52.75 per cent for all the states and 48.2 per cent for the SCS states. Incidentally, Uttarakhand has

one of the lowest shares of loans and advances from the Central government. The developmental expenditure (social and economic services) as percentage of GSDP is, in general, high in the SCS states. In Uttarakhand however, the average ratio of Development Expenditure to GSDP for the years 2001-02 to 2003-04 was 17.27 per cent, which increased to 19.7 per cent in 2004-05 and 2006-07BE estimates are targeting to achieve more than 22 per cent. The latter is comparable to the average developmental expenditure (as percentage of GSDP) in SCS states.

In terms of share of total expenditure, the developmental expenditure has marginally increased from 63.3 per cent in 2001-02 to 64.3 per cent in 2004-2005. For 2006-07 BE, the state has targeted to spend 69.7 per cent of total expenditure in development activities. Clearly, funds are not directed towards increasing social infrastructure such as schools, colleges, hospitals, housing, sanitation etc., rather most of it is going to maintain the existing facilities and pay salaries and other expenses. Similarly, the non-developmental expenditure also is mostly in the form of revenue expenditure.

The second SFC report has, however, complimented the Uttarakhand government for enacting FRBM legislation, which aims at targeting 'nil' revenue deficit and 3 per cent fiscal deficit by 2008-09 and promises reduction of total outstanding liabilities to 25 per cent of GSDP by 2014-15. Acting in this direction, most recently the state government presented a revenue surplus budget for 2007-08.

There are issues with respect to increasing number of loss-making state public sector undertakings (SPUs), and high growth in salary and pension bills. However, Twelfth Finance Commission Report (FC12) recommendations together with the state level reforms with legal binding can go a long way in improving the fiscal performance without much compromise with developmental capital expenditure.

3.2 Recommendations

Implementation of Fiscal Responsibility Legislation (FRL).

The objective of FRL has been to provide legal and institutional framework for fiscal reforms. Some states have also realised that without a bailout package from central government or a loan from a multilateral agency they may not be able to come out of the fiscal crisis. A typical reform package aims at:

- Downsizing of the government by eliminating unproductive staff, improving efficiency in government, transfer of non-essential functions to the private sector and tenure-based government jobs.
- Removing inefficient subsidies and diverting funds to enable areas such as infrastructure and education.
- Encouraging private investment in all possible areas.
- Levying appropriate and dynamic user charges for services such as water supply, road use and electricity.
- Improving tax collection and compliance.
- Discouraging populist programmes, which are otherwise economically unviable.
- Applying technology to improve overall efficiency.

Revenue Augmentation

Revenue augmentation is the key to fiscal improvement in view of the fact that there are significant rigidities in revenue expenditure due to fixed commitments. The share of the industrial sector in Uttarakhand is about 27 per cent, which is at the all-India average level. This provides with reasonable potential tax base for VAT regime. However, full benefits of VAT can be harnessed only through scientific analysis of the products, relationship between input and output and price sensitivity.

Another important source of revenue could be the services tax, presently being collected by the Central government and distributed among states as per the finance commission formulae. However, Uttarakhand, with about 42 per cent share of services in its GSDP, with good tourism potential, stands to gain in augmenting its revenue by identifying new areas and carry out sensitivity analysis about the potential gains.

Non-tax Revenues, Implicit Subsidies and User Charges

Uttarakhand has very rich forests, mines and mineral and other natural resources but there is limited scope of exploitation of such resources as exploitation of the same conflicts with the environmental goals of maintaining ecological balance. However, development of eco-tourism with professional management could increase the revenue without tempering with the ecological balance. Non-tax revenue collections in most

states have also been low because of poor returns on government investment. This results into implicit subsidy given to some consumers who may or may not be the targeted beneficiaries. Therefore, all subsidies (including explicit and implicit) should be re-assessed for social cost and benefits.

User Charges

Six areas namely education, health, agriculture, irrigation, power and transport are under the focus of user charges. However, in absence of a regulatory body, the charges are neither monitored nor they are based on transparent and scientific methods. Raising user charges is often refrained due to possible resistance and political costs. However, the 'willingness to pay' studies indicate that consumers do demonstrate willingness to pay higher than existing rates if there is an improvement in the quality of these services. This is because in most cases the cost of coping up with poor quality of services/supply is very high. An initiative can be taken by the state electricity supply. Uttarakhand has enough capacity to supply uninterrupted power. It should take the challenge of declaring a premium price for genuinely uninterrupted supply to customers in industrial zones and urban clusters to start with, and extendable to rural areas. Similar challenges can be taken for user charges with top class roads, hygienic water supply and wildlife parks and forest resorts. Moreover, a legislation-backed mechanism should be put in place for automatic upward revision of user charges linked to price index of inputs. There is also a need of ERC type regulatory commission to look after the service quality and pricing of the services under consideration. User charges must be implemented with firm conviction. The policy of raising user charges without an improvement in quality of service is less likely to be successful.

Municipal Bonds

The Uttarakhand state also needs to explore possibility of raising revenue through municipal and *panchayat* bonds through private placement, commercial banks, public sector corporations and domestic financial institutions by escrowing its potential of tourism related taxes, property tax, water charges and entry taxes on goods and services. The proceeds of such bonds must be invested to raise the level of facilities to tourists, and the local people alike in a professional and commercial way.

Pension Reforms

Pension is a promise of the government to pay in future an amount of the money not explicitly known at

the time of making the promise. It becomes an unobserved, unending liability capable of bringing the state in to a situation of debt trap. Therefore, it is important to reform the pension schemes. Generally, the pension reforms yield benefits only in the long-term and therefore, state governments, more concerned about immediate gains, are reluctant to implement them. Nevertheless, these reforms are critical to reduce the vulnerability of the state finances to exogenous decisions regarding pensions. The Central government has forwarded the case of Funded Pension Scheme with contributions from the employees known as the new pension scheme (NPS). Sixteen states including Uttarakhand have in principle agreed to join the NPS. However, smooth transition to the new system of NPS would require adequate preparations in terms of reforming the account keeping. In this context, the feasibility of keeping provident funds in a separate account should be examined.

Salary Reforms

Accelerating salary bill of the government employees is not unique to Uttarakhand. Most of the state governments face problems of overstaffing. There are now agreed steps in dealing with this problem, which include: (1) freezing/restricting government employment; (2) training and re-deployment of the surplus staff specially in IT which has potential to increase the efficiency of individual besides meeting requirement of IT trained staff; (3) Golden handshake or voluntary retirement scheme for surplus staff after a thorough survey of each department, and (4) abolition of positions that are vacant for long duration. State level experiences show that there is a pressing need of improving the quality of working staff and therefore, any restructuring programme must be sensitive to retaining the talent while thinking of reducing expenditure. To do this, expenditures on manpower should be weighted against its outcomes by each ministry. Outsourcing of services improves efficiency and it should be encouraged as far as possible. There is also a need to re-assess the need and size of departments falling under developmental expenditure in addition to scrutinising the non-developmental expenditure.

Subsidy Reforms

Subsidies are extremely contentious issues to tackle due to a variety of interest groups involved in one form or the other. The budget document should contain a separate schedule to enumerate all possible subsidies and this list should be updated year after year. Only after conducting such an exercise it can be clearly said

about the volume, cost and target groups of such expenditure. Often, subsidies are justified in the name of promoting social welfare but at times they are found to be overused, abused and inefficient. An outcome budget with respect to subsidy can be extremely useful tool to monitor its efficiency and the same should be attempted.

Refining the Planning Process and Capital Expenditure

The independence and long-term perspective of planning process cannot be overemphasised. It has also become a fashion to name different development programmes by politically sensitive names, while in a democratic system, no single political party is likely to remain permanently in power and retain the name forever. Often the new establishment tends to give a different name to the same programme or create an overlapping programme in a more convenient name leading to confusion, duplication and resentment in part of the society. Such practices need to be done away with, in order to maintain continuity and clarity of the key objective. This would also increase the efficiency and productivity of the planning process and return to investment. It should be clearly understood that the goal of planning process and the capital expenditure should not be to maximise direct employment but instead it should be to maximise indirect employment in the private sector. It should also be linked to the induced effect of the government investment on the private sector investment, which is likely to be more sustainable with high multiplier effect. Planning for generating direct employment is more likely to augment the fiscal problems with increases in committed expenditure.

Management and Monitoring of Budgetary Process and its Outcome

Budget management could be linked to the FRL provisions of other states. It includes reforms leading to reduction in deficit measures, particularly primary and revenue deficits; reduction in debt and liabilities; reduction and elimination of state guarantees for public or private sector loans; and improving the predictability of the budgetary components. The level of public debt and the level of implicit liabilities in the form of guarantees are to be in confirmation with the sustainability requirements on a consistent basis. Standard practices of reducing debt liability include retiring high cost debt with low cost borrowing, which Uttarakhand has already done to a large extent by retiring Central government debt. As the interest rate falls, similar steps can be taken for more costly debt. Several states have resorted to special purpose vehicle

(SPV) for meeting the capital expenditure on infrastructure projects that have created huge off-budget liabilities in those states (for example Maharashtra). Uttarakhand must not fall in the trap of such lucrative but translucent ideas. In order to bring more transparency in budgetary process, it is important to include every detail in the budget documents regarding employees (their distribution by salaries, department, vacant positions, reforms etc.); headwise implicit and explicit subsidies; pension liability, its projection and reforms; investments and returns from the public sector undertakings; commentary on outcome budget for the previous expenditures etc.

At present there is no consolidated and desegregate account at the state level for accounting receipts and disbursements and assets and liabilities of the local bodies. Sooner it is included in to consolidated budgetary process, better it will be. At least the economic survey or any such document must start compiling the accounts of local bodies. Computerisation of budgetary process is the call of the time. It has enormous advantages in terms of flexibility and monitoring the flow of receipts and expenditure with online matching of projections. Statements of deviations can be generated periodically for discussion and timely corrections and improvements in estimation methodologies.

Accrual System of Accounting

The transparency in the budgetary process can be improved automatically with the switchover to the accrual system or the double entry system of accounting instead of cash transaction system. Uttarakhand should start implementing the double entry system at least in the case of local bodies and corporations and insist on the SPSUs and the statutory bodies to follow the same.

Budget Monitoring

The FC12 has recommended that every state should set up a high level monitoring committee headed by the Chief Secretary with the Finance Secretary and the secretaries/heads of departments as members for monitoring proper utilisation of finance commission grants. The scope of such monitoring committees should be extended to cover all major heads of expenditure and including those that have history of high rate of variations between budgeted and actual values. The monitoring committee should be responsible for monitoring both financial and physical targets to ensure the fructification of actual outcomes expected from the fund allocations. For this, it is important that such a

committee should be a permanent feature of the governance and it should set the physical targets for the surveillance, monitoring and reporting on a monthly/quarterly basis immediately after each budget.

Key Targets Recommended by the Second State Finance Commission Needs to be Achieved

- The state should have a buoyancy of at least 1.2 for tax revenues during 2005-2010.
- The state should try 7 per cent return on outstanding loans and advances and 5 per cent on equity, to be achieved in graded manner by 2009-10.
- The growth rate of interest payments for Uttarakhand should be pegged at 7.5 per cent per annum.
- The level of interest payments relative to revenue receipts should fall to about 15 per cent by 2009-10.
- The own tax revenues of state should have annual growth rate of 23.5 per cent.
- The state should restrict market borrowings to the minimum level, so that the outstanding liabilities are reduced as much as possible to achieve the target set in FRBM Act.
- *Van Panchayat* be placed under overall guidance and supervision of corresponding *Gram Panchayat*, and suitable amendments should be made in Uttarakhand Panchayati Forest Rules 2001 to facilitate this.
- Scattered and isolated *Gram Panchayats* with very small population be merged with contiguous *Gram Panchayats* so that every *Gram Panchayat* has a population in excess of 300 and a voter population of at least 200.
- There should be a hierarchical system in the Panchayati Raj. KPs should supervise works undertaken by GPs and ZPs should supervise works undertaken by KPs.

SECTION B SOCIAL SECTORS

4. Poverty and Remedial Measure

4.1 Overview

At the national level, during 1973 to 2004 the percentage of population living below the poverty line

(PVR) has declined from 56 per cent to 28.3 per cent in rural areas and from 49.0 per cent to 25.7 per cent in urban areas. In total the PVR has gone down from 54.9 per cent to 27.5 per cent. It shows a sharp fall in the poverty ratio over time. However, the problem of poverty is more severe in rural areas than in the urban areas albeit, over the years the difference between rural and urban poverty ratio has gradually come down from 7.0 per cent in 1973-74 to 2.6 per cent in 2004-05. It is also clear that maximum decline in the poverty ratio has occurred during the period marked by economic reforms but Uttarakhand, with rural PVR of 40.8 and urban PVR of 36.5 does not seem to have performed as well compared to Himachal Pradesh and Uttar Pradesh where rural and urban PVR for 2004-05 stand at 10.7 and 3.4 and 33.4., 30.6 per cent, respectively.

Incidentally, the poverty line of Uttarakhand is way above that of Uttar Pradesh and Himachal Pradesh. It is clear that Uttarakhand has been at disadvantage by virtue of being part of Uttar Pradesh. However, it is surprising (and raises doubts about estimates) that the poverty line of Uttarakhand is above both the neighbouring states. This has enormously increased the estimated proportion of poor in Uttarakhand. The results of Uttarakhand's BPL census for 1997 and 2002 shows decline in BPL-based rural poverty in the order of 4.96 percentage points. The BPL census-based incidence of poverty in Uttarakhand is lower than its parent state and all India average, which is in contrast with the relative status indicated by the PVR based poverty measure. With high rate of growth in GSDP of Uttarakhand during the recent years (2002-2005), the poverty would have declined further in the state, which implies there is hardly any correlation between the two measures of poverty as indicated by BPL-census and PVR respectively.

Thus, there is a serious issue of correct estimation of poverty in Uttarakhand. PVR based poverty spread and BPL based poverty spread in rural areas confirm to each other in districts such as Almora, Pauri Garhwal and to some extent Tehri Garhwal and Nainital. However, the BPL census results do not exactly confirm to this pattern of spread in other parts of the state. The PVR base poverty spread indicates that 18.20 per cent of rural poor live in Haridwar, whereas BPL census based poverty spread indicates Haridwar contributes only about 7.1 per cent of rural poor.

Across districts of Uttarakhand, the proportion of rural population living below poverty line is highest in Bageshwar with PVR of 72.12 followed by Tehri

Garhwal (61.20 per cent), Udham Singh Nagar (US Nagar) (45.70 per cent). Bageshwar also tops in urban poverty with PVR of 64.38 per cent followed by Pauri Garhwal (52.58 per cent) and US Nagar (48.88 per cent). Haridwar and US Nagar, together constitute about 35.30 per cent of rural poor. Another 29.21 per cent of the rural poor live in Tehri Garhwal (12.23 per cent), Almora (9.78 per cent) and Pauri Garhwal (7.20 per cent). On the other hand about 61.48 per cent of the urban poor live in Dehradun and US Nagar. Haridwar and Nainital together, contribute another 25.18 per cent of the urban poor.

Based on NSSO 61st round consumption data, the GINI coefficient of inequality indicates rural Dehradun and Nainital are among the most unequal districts in consumption distribution, while Rudraprayag has minimal inequality. Among the urban areas, Dehradun is highly unequal while Uttarkashi is the most equitable society, rest of the districts are alike.

In order to identify worst areas at micro level, *tehsils* have been ranked in our analysis in two ways: first, according to deprivation in basic amenities like toilet facilities, difficulty in getting water and electricity, which is proxy poverty in indirect form and second, according to holding of household assets such as four/two wheeler motor vehicles, television, radio, bicycles etc. The analysis shows that in rural areas Rajgarhi in Uttarkashi is a highly unequal society. It ranks among top five household asset (HH-asset) ownership ranking and at the same time belongs to the last five in respect of the ranking based on availability of basic amenities. Rishikesh, Dehradun, Kashipur, Vikashnagar, Khatima, Kichha, Nainital, Haldwani, Kotdwara, Sitarganj, Haridwar, Laksar and Srinagar are among the privileged *tehsils* with high assets holding and low deprivation in terms of amenities. The worst hit *tehsils* include Puraula, Dhar, Dharchula, Kapkot, Pratapnagar, Joshimath, Ghansali, Dhoomakot, Munsiri and Bageshwar with low assets holding and high deprivation in terms of amenities. Similarly, for urban areas Dehradun, Khatima, Roorkee and Haridwar are among the developed *tehsils* while Joshimath, Chakrata, Dharchula and Lansdowne are among the most backward *tehsils*. *Tehsils* with highest level of inequality include Uknimath and Ranikhet. Narendra Nagar is among the least deprived but with small HH-asset ownership. Srinagar and Almora also to some extent fall in this category.

In order to fight back poverty, the Central as well as state governments have attempted a number of programmes leading to income generation. This

includes Jawahar Rozgar Yojana (JRY)/Jawahar Gram Samridhhi Yojana (JGSY), Million Well Scheme (MWS), Employment Assurance Scheme (EAS), Food for Work Programme (FPW), National Rural Employment Programme (NREP), Rural Landless Employment Guarantee Programme (RLEGP) and most recently the National Rural Employment Guarantee Programme (NREGP) under National Rural Employment Guarantee Act (2005). However, it is observed that temporary employment generating programmes suffer from problems of mishandling of the project fund, lack of transparency, irregularities in the payments, insufficiency in number of man-days generated, deployment of more resources on maintenance than creating new assets and lack of monitoring. Like many other states, Uttarakhand too has introduced different schemes like Swarna Jayanti Gram Swarojgar Yojana (SJGSY), Swashakti Project, Swayamsiddha Programme and Joint Forest Management (JFM), which are expected to generate self-employment leading to sustainable poverty alleviation and economic empowerment and the success of these programmes largely depends on the success of community based organisations such as self-help groups (SHGs) and village forest management committee (VFMC), which work as conduit to facilitate micro-financing and management of the economic activities leading to effective transmission of the benefits of macroeconomic reforms.

In all the three programmes of SJGSY, Swashakti Project and Swayamsiddha, SHGs are considered as the key units and therefore, evaluation of the SHGs in Uttarakhand is important. The leading states in this movement include Andhra Pradesh, Karnataka and Himachal Pradesh, while the concentration of SHGs in Uttarakhand is far thinner. At present, more than 25,000 SHGs are reported to be operative in Uttarakhand (informal discussion with NABARD officials), out of which 14,043 were linked to the banks till 31 March 2005 with outstanding loan in the order of INR 5,761 crore. Importantly, the distribution of SHGs is broadly at odd with the distribution of poor across districts. The highest percentage share of rural poor resides in Haridwar, but it has the least concentration of SHGs. However, the distribution of SHGs in Nainital, Dehradun, Almora is in conformity with the status of poverty. The data on performance of SHGs under SJGSY across the blocks of Dehradun district indicate that the share of SHGs involved in income generating activities (IGA) during 2004-05 was just about 23 per cent. Our survey, to evaluate the

performance of SHGs shows that most of the loans are taken for meeting consumption needs. About 79 per cent of the loans are used for consumption purposes. Internal loaning is a common phenomenon, yet about 40 per cent of the members did not avail the loan facility even for a single time. Another important finding is that the group enterprise is still not a common activity in the state. Most of the loans are taken on individual basis.

More importantly, the government sponsored SJGSY has performed worst as compared to other projects. On an average, around 38.6 per cent of the total members of the Diversified Agriculture Support Programme (DASP) and 36 per cent of the Swashakti Project participated in some or other form of income generating activities with the help of the group loan. On the other hand, only about 8.5 per cent of SJGSY members participate in IGA. This is extremely a poor situation in view of the fact that SJGSY is the only programme, which exclusively targets SC/ST families. The failure of SJGSY amounts to the failure of anti-poverty programme. The survey results revealed that around 58 per cent of the total group members are from the above poverty line (APL) families. Even in case of SJGSY, around 14 per cent of the beneficiaries are from the APL families. A similar observations has been made in the "Concurrent evaluation of SJGSY" conducted by the Central Ministry of Rural Development in the year 2002.

Similar issues have been observed with respect to Joint Forest Management Programmes. The JFM project ended in 2003 and it was expected to continue its effects on a sustained basis. The survival rate of VFMCs is as low as 29 per cent in Almora division, while it was found to be 40 per cent in Chakarata division. The 2002-03 report of the Comptroller and Auditor General for Uttarakhand in respect of five forest divisions noted that 20 VFMCs stopped working after receiving one or two instalments and also did not submit account of INR 25.61 lakh received from the forest department. The key reasons being failure to submit the utilisation certificate and infighting among villagers. The extent of unutilised funds varied from 42.8 per cent in New Tehri division to 61.07 per cent in Pithoragarh. Lack of awareness, complacency and delays on part of government officials and lack of training process have added to the intensity of failures of the programme.

4.2 Recommendations

1. Methodology to identify the poor needs to be improved. For targeting the poorest of the poor,

the BPL surveys provide superior tool as compared to simple PVR base programme, but that too suffers from flaws. There is need to scrutinise the survey methods and results carefully. Particularly, exclusion criteria need to be included and scoring method should be made more transparent supported by well-defined scale in order to reduce subjectivity and application of mind. Further, the number of scoring indicator should be reduced to those, which reveal deprivation more clearly and fundamentally. Application of information technology should be made compulsory for identifying the BPL families. In particular the BPL census directly or indirectly depends upon the information contained in the *arthik* register, which is maintained manually at the block level. Computerisation of this register can provide a check on the BPL census.

2. The planners need to develop the vision for a long-term goal instead of short-term goal, which means concrete steps towards improving rural infrastructure, education, health and opportunities of self-employment.
3. The system should be made more transparent than the present in all areas of programme design, implementation and monitoring. In this context, the system needs a massive administrative reform at all levels, which could guarantee more serious monitoring than the existing level.
4. The policy approach in employment generation programmes should aim at the ultimate goal of poverty alleviation, not one time employment generation.
5. In any project planning, execution and monitoring cannot be done by the same person. It has become visible in the programmes like SJGSY and the similar kind of programmes. Responsibility of execution and monitoring must be separated.
6. Sound policy needs to be framed in the state keeping the issues on participatory management in mind.

5. Health Sector

5.1 Overview

Being predominantly a hilly terrain possess challenging constraints in providing quality health

services to the people of the state. Nevertheless, high female literacy and healthy climate have helped the state to register better performance than the national average in terms of lower population growth, birth rate, death rate and infant mortality rate. The percentage of females having knowledge of AIDS is around 66.6. At present, there are 1765 sub-centres, 84 main centres (MCs) attached to block PHCs, 322 allopathic dispensaries, 232 PHCs (187 additional PHC and 45 BPHCs) and 49 CHCs, at primary level serving people in rural settlements in Uttarakhand. Further at secondary level 3 base hospitals, 11 district hospitals, 15 combined hospitals and 6 district female hospitals are providing health services to both men and women. Out of total sub-centres currently functioning, 893 are rented buildings and 121 are under construction. However, the need-gap analysis indicates serious inadequacies in availability of the infrastructure.

Shortfall in sub-centres as against the requirement is to the extent of 23 per cent or 1/5th. However, out of 13 districts 2 districts have reported excess in the existing number over the requirement to the extent of 8.9 per cent in Garhwal district and 1.4 per cent in Pithoragarh district. In rest of the 11 districts the maximum shortfall has been found in district Dehradun and minimum shortage was at 16 per cent in district US Nagar. The state has 16,414 villages and each sub-centre is serving, on an average 10.8 village. In fact in most of the hilly districts where settlements are small, each sub-centre is serving on an average more than 15 villages. The requirement of sub-centre in the state would increase from 1986 in 2005 to 2139 in 2010 or additional 153 sub-centres have to be set up during the span of five years i.e., 2006 to 2010. Only 28.66 per cent of the sub-centres are in government-owned buildings; nearly 71 per cent are in rented buildings and around half a per cent in rent free buildings in 2004. In the states of Himachal Pradesh and Kerala the proportion of SCs in government buildings is 57 and 59 per cent respectively.

With population norm for setting up of Primary Care Centre (PHC) as 20,000 people per PHC in hills and 30,000 people per PHC, the state required 300 PHCs in 2004 as against existing 229; a shortfall of around 24 per cent. Shortfall is higher in hilly districts, with 50 per cent and above in two districts of Champawat and Almora. The annual cumulative requirement and net requirement of number of PHCs for hilly and non-hilly districts up to 2010 have been projected as 406 by 2010 or additional 101 PHCs need to be set up during the span of five years i.e., 2006 to

2010. According to a survey conducted by NCAER (2005), the number of PHCs operating from own building constitute 40 to 75 per cent. PHCs operating from *kuccha* buildings were reported from three districts. A large majority of PHCs are without basic infrastructure facilities like electricity, water, toilet facility, labour/IUD room, operation theatre, separate ANC clinic room, laboratory, vehicle, staff quarter, telephone and refrigerator. Staff availability is unsatisfactory in each category but worse in case of medical officers trained in sterilisation, MTP, female health assistant, male health assistant, male multipurpose worker and laboratory technician. Non-availability of female medical officer and public health nurse in almost all PHCs in different districts is most worrying.

Community Health Care (CHC) has population norm of 80,000 and 120,000 respectively for hilly and plain areas, which means the number required is 76 CHCs as against this there are only 36 CHC, nearly 53 per cent less than the number required. The shortfall is as high as 86 per cent in Tehri Garwal, 67 per cent in Haridwar and 63 per cent in Almora district.

Health and Population Policy of Uttarakhand (2002) also emphasised the need to integrate services of different systems of medicine and to encourage research and development in the field of Ayurveda. However, condition of facilities in existing government hospitals of Indian Systems of Medicines and Homeopathy (ISM&H) in these districts of Uttarakhand is not satisfactory. Proportion of hospitals with own buildings is below 24 per cent in all the districts. Very few hospitals ranging between 4.4 to 29.4 per cent have reported maintenance at least once in a year. Percentage of hospitals reporting source of water (at least from well) varies between the lowest in Rudraprayag at 4.4 to the highest in US Nagar at 71.4 per cent. Highest proportion of hospitals with electricity facility was reported in Haridwar at 47 per cent and lowest in Rudraprayag at 9 per cent. Hospitals having toilet facility and sewage connected to municipal sewage varies between 17 to 41 per cent across districts excepting Bageshwar where none of the hospitals reported having toilet or sewage connection. Overall, condition of hospitals in terms of basic infrastructure facilities in ISM&H is extremely poor. Except for Haridwar district where in few hospitals sisters and nurses are posted, in other districts they are non-existent. Adequate supply of medicines for common ailments is reported to be available in 44 to 76 per cent hospitals in different districts.

Inadequate health infrastructure in the state is an important constraint in providing quality health care by the public health institutions. Shortage of staff put the heavy load on existing workers.

5.2 Recommendations

Resource Mobilisation

The Health and Population Policy of Uttarakhand-2002 envisages that the state health sector spending to be increased to 7 per cent of the total budget by 2005 and further to 8 per cent by 2010. However, budgets of last four years since 2001-02 to 2004-05 do not show any progress in this direction. Expenditure on health in Uttarakhand is hovering around 4 per cent. Given the economic conditions of large section of the population purely profit-based health organisations should be discouraged. Also, certain innovative methods of mobilising resources ought to be discovered. Social, religious, voluntary/charitable organisations and big corporate houses need to be persuaded to adopt specific areas to provide minimum free primary health care to the people.

Cost Recovery and User Fees

In India there is great pressure on public health systems to introduce or enhance user fees, especially from international donors because they believe this will enhance responsibility of the public health system and make it more efficient and induce accountability. Already such a policy has been adopted in many states in India and immediately adverse impacts were seen, the most prominent being decline in utilisation of public services by the poorest.

The positive externalities associated with preventive and public health justifies governments to take up on its own the responsibility of providing (or arranging for its provision through some agency) health care for every citizen at affordable price or even free of cost to those who cannot afford it. Provision of primary health care, especially treatment of minor ailments, which do not require any elaborate tests, should be provided free of cost. In other primary care treatments that require certain tests using costly equipment and materials, nominal user fees should be charged. Only genuinely identified BPL families should be provided free service in all cases. Secondary and tertiary health care involve sophisticated and costly equipment and materials. Such equipment is required to be replaced on regular basis. So, there is need to charge user fee that covers the cost of materials used and pay for the replacement of equipment.

Public-Private Partnership

As per NFHS-2 data, three-quarters of households in Uttarakhand use private doctors for treatment when a family member is ill. Only 23 per cent go to public medical system. In fact, HPPU-2002 reveals that in India, nearly 85 per cent of health expenditure is out of pocket expenses, and Uttarakhand is no exception to this. The poor spend a higher proportion of their household income on health than the rich do. However, it is mainly the public sector that caters to the needs of population related to family welfare. Private sector plays larger role in urban areas as source of modern method. In rural areas private sector is a source, only for 6 per cent users (NFHS-2).

There is need to increase the private sector participation in rural health care through partnership with government. However, it is necessary that before engaging the private sector in partnership a strong regulatory mechanism must be put in place. Preferably primary care should be the complete responsibility of the state or non-profit based social/religious/charitable organisations might be involved. User fees must be kept to the minimum level so that every citizen is able to get the services. Private sector may be encouraged to set up hospitals in secondary and tertiary care sectors with mechanisms to ensure quality and competitive price, particularly in areas of peripheral services in public hospitals and diagnostic services. Local community should have a deciding role in selecting and controlling these private players, while a system of feed back from the consumers may serve as a check on quality.

Disease Surveillance System

Health and Population Policy (Uttarakhand)-2002 recognises that effective disease surveillance system is essential to control seasonal outbreak of diseases, to predict and prevent epidemics, and to control communicable diseases. The analysis of data about the causative factors of diseases, information about areas prone to particular diseases, demography of affected population are important in taking informed decisions and deploying available resources to counter it. An important obstacle in the way of collection of data is lack of cooperation by the private health sector. While public sector, despite its limitations, provide data on disease patterns, no such data is supplied by the private health care providers. Health and Population Policy (Uttarakhand)—2002 document also admits that no information is available on the number of private practitioners, private clinics and hospitals. This calls for

an urgent need to create a comprehensive database on private sector, persuade them through their associations and professional bodies, to provide necessary data about notified communicable diseases. In health care maximum emphasis is given to curative health. Private health care system exclusively deals with curative health care. But the best and cheapest way to provide health care to the people is to emphasise preventive and primitive care.

Health Education

Health education plays an important role in preventing as well as curing diseases. HPPU-2002 reports that due to the absence of family life education (FLE), particularly for adolescent girls, there are no opportunities to learn about reproductive health issues at an appropriate time. School enrolment in Uttarakhand is quite high and inching towards achieving almost 100 per cent enrolment up to upper-primary level. The best way to spread health awareness is through schools. There should be two way interactions between schools and health staff. Special target should be young girls and village women. There is a need to educate them about the reproductive health issues. However, lack of female teachers in large number of schools and almost complete absence of female doctors in PHCs is a major constraint, which needs to be addressed.

Governance Issues

Health staff in public sector is well trained but inefficient. To improve the efficiency of health delivery system there is a need to develop a transparent system of incentives/disincentives. Criteria of total delivery should be developed for each institution, branch and individual functionaries and their performance need to be judged on that basis. Surveys should be conducted to evaluate the client satisfaction. Accountability should be fixed for failures and the efficient ones should be honoured and given public recognition. Medical officers engaged in management of hospitals should be held accountable for the overall performance of the institution. Management is becoming a specialised service and for better management and motivation of the staff, doctors with some sort of management degrees are appointed on managerial posts. Existing staff on managerial posts be trained in management techniques through short courses by rotation.

Decentralisation

HPPU-2002 finds it essential to have decentralised systems and capacity building of elected representatives.

These representatives, starting from village *panchayat* level, need to be involved in health care planning and implementation to improve access to and quality of services at all levels. For effective implementation of programmes, health committees should be formed at each level. Dissemination of information about existing services and the health rights of the people and to co-ordinate between health workers and the population for efficient delivery of services should be a part of its tasks. There should be a continuous interaction between health staff and community representatives to get feed back about the health needs of people. Involvement of local representatives may not automatically lead to improvement in service delivery unless there is heck by the people against vested interests of representatives. Given the existing power relations, sustained efforts are required, to make the decentralisation work in the interest of the community. There is a need to increase the social consciousness of the people about their health rights. Once people realise that health is their fundamental right and actively ask for information about their health entitlements and demand those services, delivery will improve.

Other Recommendations

With the creation of the new state several achievements have been made in many fronts. But a close observation of the facts indicates that there are several issues, which need to be addressed through concerted effort. Some of the important steps include the following:

- New PHCs need to be opened immediately as per the suggested norms.
- The vacant post of the general doctors, medical specialists and pharmacists need be filled immediately.
- A well defined transfer and posting policy need to be framed immediately so that the vacancies even at the centres of the remote areas can be filled up.
- It should made mandatory for the doctors at all levels to spend minimum 5-7 years of their service in the rural areas.
- The Central schemes like eradication of tuberculosis, blindness etc., need to be revisited and redesigned.
- In the absence of enough qualified private doctors, there is a need to provide short

duration training to unqualified medical practitioners in primary health care and be allowed to do restricted practice to the extent of treating simple medical cases. The long term strategy should be to train people through one or two year courses in primary health care.

- It is necessary that before entering into public-private partnership strict regulatory mechanisms must be put in place.
- Nominal user fees may be charged in primary health care for clinical/pathological services using costly equipments and materials. But BPL families should be exempted from making such payments.
- In secondary and tertiary health care, there is a need to charge user fees to meet up for the cost of materials and replacement of equipment.
- For promoting health insurance there is a need to learn from SEWA experience. To cut down processing costs and reduce malpractice, some genuine NGO may be involved.
- Effective disease surveillance system is essential to control seasonal outbreak of diseases, to predict and prevent epidemics, and to control communicable diseases.
- Above all, the administrative mechanism used to monitor the health network need to be strengthened.

6. Education

6.1 Overview

At the national level, literacy rate has increased from 18 per cent in 1951 to around 65 per cent in 2001. However, the performance of Uttarakhand has been much better. By 2001 census, Uttarakhand achieved male literacy of 84.01 per cent and female literacy of 60.26 per cent. The overall literacy rate (2001) in the state varies from the highest in 79.6 per cent in Nainital district to the lowest in Haridwar district at about 65 per cent. Male literacy is more than 90 per cent in four districts of Almora, Pauri Garhwal, Pithoragarh and Rudraprayag, which is almost at the level of male literacy rate in Kerala. The difference between the male and female literacy rate and difference between rural and urban areas is more in districts with lower literacy. However, the rural-urban differences in male literacy rates are quite close to each other in almost all districts, while this difference is larger in

case of females. The highest and lowest urban male literacy varies between 95.52 per cent in Pithoragarh and 79.47 per cent in Udham Singh Nagar. At the same time highest and lowest rural male literacy rate varies between 91.25 per cent in Pauri Garhwal and 70.56 per cent in Haridwar. The highest and lowest urban female literacy varies between 88.68 per cent in Almora and 62.5 per cent in US Nagar and the highest and lowest rural female literacy varies between 67.61 per cent in Nainital and 47.33 per cent in Tehri Garhwal.

It is found that in 6 out of 13 districts in Uttarakhand, the percentage of villages having a primary school within the village is less than the state average. In each of these six districts more than 60 per cent of the villages are not having a primary school within the village. This in fact reveals the extent of problem in accessibility of the primary schools for the children living in villages. Moreover, only 14 per cent villages in the state have upper primary schools within the village. However, the proportion is comparatively higher in the plain districts of Haridwar and Udham Singh Nagar.

Gross enrolment ratio in primary classes is quite high in the state, around 108 per cent, which is higher than UP and India but lower than HP. However, discrimination against women in Uttarakhand, it seems, is relatively less compared to most other Northern states and they are active partners in economic and social spheres.

Accessibility to schools is not universal, deficiencies in infrastructure facilities and persisting gender and social disparities are some of the problems affecting the quality of education. Only 30 per cent of primary schools are having separate toilets for girls. In fact, in seven out of 13 districts, number of primary schools with separate girls' toilet is less than 13 per cent. Nearly one-fourth of primary schools in Uttarakhand are single teacher schools in which a teacher when present manages five classes simultaneously. Lack of female teachers in schools in large proportions is also a deterrent in the expansion of female education. In case of schools with classes I to VIII and I to XII the proportion of schools without female teachers is 24 per cent and in the districts of Pauri Garhwal, Pithoragarh, Rudraprayag and Tehri Garhwal, proportion is a great deal higher and varies between 50 to 100 per cent. Further, there is acute shortage of other basic infrastructure facilities of drinking water, teaching materials like blackboards etc. As prevalent in most other states, in Uttarakhand also the government engages teachers in number of non-teaching activities,

like helping in family planning programmes, which keep them away from classroom. Politicisation of appointments, transfers and promotions are other factors affecting the quality of education. Above all, a more serious problem in improving the quality of teaching-learning process is lack of motivation and accountability.

6.2 Recommendations

- More primary and upper primary schools need to be constructed especially in the districts like Champawat, Haridwar, Dehradun and Uttarkashi.
- Minimum of two teachers need to be appointed at all primary schools: In a number of primary schools, there is only one teacher who runs the school. With the appointment of new teachers, the transfer and posting policy of the primary school teachers also need to be revisited.
- More female teachers to be appointed at primary schools: The number of primary schools without female teachers is too high in the hilly districts and less acute in case of districts in the plains. Therefore, measures like appointment of more female teachers with condition of compulsory service of minimum five years at the remote hilly areas during the service period for government school teachers should be implemented.
- Clarity in policy issues are required in development projects: Clear-cut policies provide sustainable benefits whereas ambiguous policy does not yield desired results. For example, Sarva Siksha Abhiyan (SSA) envisages habitation as a unit of planning but it does not specify if the education officer should be there or not at the habitation level.
- Infrastructure development before introducing computer education to rural areas: Many state policy/project documents have talked about and incorporated computer education even in the remote areas, without taking into consideration the availability of electricity, computer literate teachers and instructors at the village level.
- Block Resource Centres (BRCs) and Nyay Panchayat Resource Centres (NPRCs) need to be made operational: BRCs and NPRCs have opened but most of these are not operational. Immediate steps should be taken to make these operational. The successful implementation of these could be the role model and thereby a source of inspiration for quality education at the elementary level.
- Need to follow time management in project implementation: Often ambitious projects like District Primary Education Programme, Sarva Siksha Abhiyan are not carried out properly due to lack of time management and pre-project activities like environment building, training of staff at the grass roots level etc. It is pragmatic to take steps to implement the programmes in such time frame so that all the stages could be implemented in practice.
- Allocated funds need to be utilised fully: Availability of fund is not always the constraint but the implementing machinery should be competent enough to use it in a proper manner. It is found that in case of District Primary Education Programme and Technical Education Quality Improvement programme, a sizeable portion of the funds remained unutilised.
- Evaluation teams need to be formed as per the given guideline: In principle an evaluation team should not have any member from among those who participated in the implementation process. But the three-member evaluation team of District Primary Education team in Uttarakhand had a member who was one of the key decision-makers in the process of implementation. With such arrangement, there is wide possibility of incorrect evaluation of project.
- Gender gap among the students above upper primary level need to be brought down: Gender gap among the students above upper primary level is too high. The gender gap in case of medical education is too wide. Special programmes will have to be designed and implemented for reducing this gap.
- Development of linkage between Block Resource Centres and Cluster Resource Centres: There should be a proper linkage between block resource centres and cluster resource centres through DIETs to discuss issues related to teachers training and frequent workshops should be conducted where teachers and other staff could share their experiences with other DIET members.
- Proper training of Panchayati Raj Institutions (PRIs): The objective of such training schedules

should aim at better understanding of their role(s)/responsibility(ies) in management of school education.

- Role of Village Education Committees (VECs): The role of VECs in the structure needs to be strengthened and encouraged to take up educational activities more sincerely. A system should be institutionalised such that the VECs undertake the following educational activities themselves:
 - Conducting annual field survey,
 - Conducting regular monthly meetings;
 - Checking and ensuring:
 - 100 per cent enrolment of children and no dropout in schools;
 - adequate availability of teachers in schools;
 - regular presence of teachers;
 - all teachers are trained;
 - regular supply of educational material like; books, uniform, mid-day meals in schools;
 - proper buildings for schools including ancillary facilities;
 - actions in case of shortcomings.

SECTION C BASIC SECTORS

7. Agriculture

7.1 Overview

Agriculture and allied activities engage over 65 per cent of the workforce in Uttarakhand and provide livelihood to more than 70 per cent of the total 8.5 million population but cultivation is practised only on 14 per cent of the land area. Approximately 34 per cent of the net sown area is concentrated in plain districts of Haridwar and Udham Singh Nagar while their share in geographical area is only 10 per cent. Here about 52 per cent of the area is used for cultivation. A large chunk of the cropland is allocated to food grain crops. In TE 2003/04 food grain crops occupied as high as 69 per cent of the gross cropped area. Their share however declined marginally during the last decade. Cereals dominate food grain crops. But their share in gross cropped area has come down from 72 per cent in TE 1991/92 to 67 per cent in TE 2003/04. A comparison of the yield of some important crops indicates that food grain production is more efficient in Uttarakhand than in Himachal Pradesh. Rice and wheat yield is higher by

30-36 per cent, pulses by 180 per cent and oilseeds by 81 per cent. Maize yield in Uttarakhand is nearly two-third of that in Himachal Pradesh. Potato yield is similar in both the states. Though food grains dominate agriculture production in the state, the sector is gradually diversifying towards high-value crops like fruits, vegetables and floriculture. In TE 2003/04 these shared about 18 per cent of the gross cropped area and contributed 35 per cent to crop sector output. Land for agricultural purposes (including cultivation of crops, cultivable waste, fallow, trees and groves) in the state remained almost static during the past two decades. It is around 1.4 million ha. Expansion in vertical utilisation of land was also at a very slow pace. The smaller size of land holdings and existing land tenancy laws are impeding investment in agriculture. The growing concerns include: (i) declining holding size, (ii) increasing fragments of land holdings (iii) rising number of small and marginal farmers, and (iv) migration of men folk for want of jobs. The existing average yield levels of important crops are low in the state with exception of Udham Singh Nagar and Haridwar districts. Non-adoption of improved technologies and continuation of traditional system of agriculture are the major reasons for low crop yields.

Uttarakhand has the potential to emerge as an organic state for commodities like *basmati* rice, fruits and vegetables, the domestic and international demand for which has been growing fast. Although the government of Uttarakhand has taken some steps in identification of commodities, their production regions and international markets, focused approach is needed to promote the concept of organic farming in the state. So far 983 villages covering about 24,171 ha area have adopted organic farming in the state. The programme benefited more than 20 thousand farmers. Future strategies must consider the production and marketing needs together. Often production is emphasised and markets are ignored. Therefore, pro-diversification policies (both in production and post-harvest) and adequate institutional arrangements would offer immense promises to create conditions for diversification. These need to be tuned to match the nature and process of diversification. Obviously, horticultural and livestock products require more attention for post-harvest transport, storage and processing. They need quick processing for delayed disposal and value addition. The requirement for processing of sugarcane, oilseeds and pulses are different than horticulture and livestock products. Incentives to private sector in strengthening backward

and forward linkages-processing will unambiguously boost agricultural diversification. Institutions such as cooperatives, producers' association and contract farming may go a long way in accelerating the pace of production of high value commodities and benefiting small and marginal farmers.

7.2 Recommendations

Invest in Watershed Programme

The state should give highest priority to invest in watershed development programme. A large area in the state is rainfed. The water from rainfall and other sources need to be tapped through conserving and harvesting water. There are indications that the water availability from natural sources in the hill regions has declined sharply. Effective people's participation through replication of 'GAREMA' (Gaon Resource Management Association) concept should receive highest priority. Concept of 'Integrated Water Management Approach' needs to be applied in the watersheds.

Disseminate Improved Technologies

In terms of adoption of improved agricultural technology, there is a huge gap between the hill and plain regions. The hill region of the state needs special attention in dissemination of improved technologies. The extension machinery needs to be geared up and the potential of information technology may be utilised. Examples are related to 'help-line' service, agricultural related websites, and participation of private sector in the process of technology dissemination. The existing linkage between research and extension needs to be strengthened. The state agricultural university, research institutions and extension department should jointly adopt villages for demonstration of improved technologies. Examples from Andhra Pradesh, where 'Village Adoption Programme' has made significant difference in technology dissemination process may be adopted in the hill regions of Uttarakhand. Seed sector needs special attention. Lack of good quality seed is one of the major impediments in agricultural growth. Role of seed corporations, government farms, research institutions and state agricultural university have to gear up seed production, certification and distribution programme of different crops for different agro-climatic target domains. Particular attention needs to be given to horticultural crops.

Incentives for Contract Farming

Marginal and small farmers dominate in the state. They have tiny marketable surpluses. Even if they are

efficient in production, their meagre marketable surplus makes them inefficient due to high transaction costs. Besides, they are highly prone to production and marketing risks. To overcome these problems, contract farming offers enormous promise to augment income, reduce cost and minimise production and marketing risk. Private sector and cooperatives are playing key role in harnessing the potential of marginal and small farmers by providing them information, technical know-how, critical inputs and capital. These institutions utilise their labour and available land and offer them assured markets and prices to overcome the market and price risk. Few successful examples are Safal in fruits and vegetable sector, Venkatshwara hatchery in poultry sector, National Dairy Development Board (NDDB) and Nestle in dairy sector and Hindustan Lever in wheat. Lessons from these successes need to be promoted in the state. The state has enormous potential for contract farming in vegetables, fruits, dairy, backyard poultry and angora wool, among others. To promote contract farming, the state needs to relax the land ceiling act. Some steps have been initiated in this direction. It has been decided that the act will be relaxed on case-to-case basis. To make use of degraded forest lands for contract farming, the state needs to seek approval from the Central government for beneficial and economic use of those lands. Rationalise fees, cess, taxes, levies, duties, etc., on procurement of agricultural produce processed through contract farming. Some incentives may be extended to the industry and private sector for promoting contract farming. Encouraging contract farming may reduce cost on several service sectors, like extension, input delivery, etc. The private sector would actively involve in dissemination of information and technology and delivery of inputs. This may provide an opportunity to gradually transfer the extension system, input delivery system and output marketing system to the private sector.

Strengthen Vertical Coordination

A strong vertical linkage between production, processing and marketing would offer immense opportunities to add value to the raw products. Large quantities of such products are wasted due to lack of appropriate storage, packaging and processing facilities. To strengthen the agro-processing sector, backward and forward linkages are to be developed. The Industrial Policy 2001 of the State has a provision to strengthen this sector. The salient features are: (i) establishment of small and medium size agro parks to provide common infrastructure facilities for storage, processing and marketing, (ii) encourage establishment of fruits

and vegetables based wineries, (iii) develop agri-export zone for agro-based export, (iv) modernise the packaging industry by producing durable, attractive and eco-friendly packaging material, (v) create an integrated network for marketing of horticulture produce including cool chains, and (vi) assistance by the government for development of high quality horticulture farms, which will act as hubs for developing commercial horticulture with the latest technology and techniques. The state has also a rare diversity of flowers and excellent climatic conditions conducive to commercial floriculture. The industrial policy proposes to establish a 'Floriculture Park' with common infrastructure facilities for sorting, grading, pre-cooling, cold storage, processing, packaging and marketing facilities.

Legal Framework for Enforcement of Acts

Sound legislative measures and appropriate policies are to be enacted to integrate various measures suggested for accelerated agricultural growth in the State. For example, legislative measures are immediately needed to reform existing land tenure and market laws, attract private sector for contract farming, incentives to private sector for investment in agro-processing and value addition, laws for certification of organic products, laws for seed production and certification, laws for greater and democratic participation of community in watershed management, etc. The reforms should begin with liberalising agricultural markets by amending the APMC Act, which otherwise restricting entry of agri-business firms. There is a need to promote competition among the private sector to venture in the agriculture sector. Most of the existing laws suit the needs of plain region. The legislative measures can be quickly changed as the state was recently separated from Uttar Pradesh. This opportunity should be immediately availed. Any delay may lead to many rigidities and mar the prospective strategies and policies.

Revisit Research, Extension and Development in Agriculture

Research, extension and development are vital for the growth of agriculture. These are important future sources of growth in agriculture. The state needs to revisit its research portfolio by giving more focus to hill and backward areas. The aim of research investment may be to enhance farm income, generate employment, check migration and conserve natural resources. More research focus may be towards women-friendly technologies and high-value enterprises. Women are the backbone of hill agriculture in Uttarakhand. Therefore, the implements may be modified to suit the needs of women farmers.

Since the state has comparative advantage and strength on horticultural commodities, research and development may be focused towards production and marketing strategies for high-tech horticulture, organic horticulture and low-volume and high-value enterprises. Research may also be extended to develop appropriate marketing strategies, encourage contract farming and growth oriented agricultural policies. In an era of scarce research resources, 'consortium approach' may be adopted to solve the critical and complex problems. Various research institutions and universities in the state may come together for addressing the key issues in the state. Such an approach will not only save scarce resources but also avoid lot of duplication of research efforts. The amount saved can be judiciously used for more basic and strategic research. In the consortium approach, the entire gamut of problems are addressed in a holistic approach by involving different stakeholders including research organisations, NGOs, private sector, policy makers and farmers. Research efforts in the field of biotechnology may be encouraged. The state may develop a white paper on 'Biotechnology Research'. It should cover the purpose of biotechnology in the state. The crops and enterprises will be different and research strategy will differ with the purpose of biotechnology research.

8. Industry

8.1 Overview

Despite impressive performance in overall industrial activities, Uttarakhand is still performing poorly in manufacturing sector. The level of manufacturing sector in terms of its share in state's real GSDP is far below all-India average. In particular, the share of manufacturing sector in Uttarakhand has registered a declining trend from 18.5 per cent in 1994-95 to 10.2 per cent in 2003-04. On the other hand, a similar neighbouring state like Himachal Pradesh has registered a perceptible increase in the contribution of manufacturing sector over the same period, and it has achieved much higher level of manufacturing activity as compared to Uttarakhand.

The Uttarakhand government has framed two industrial policies since its formation, one in 2001 and the other in 2003. The New Industrial Policy of 2003 is based on the special package of incentives to promote industrial development.

Analysis of Annual Survey of Industries (ASI) data for 2001-02 and 2002-03 reveal in majority of the registered manufacturing sectors (14 out of 27 sectors)

the number of factories was below 10. In 8 sectors, the number of factories lies between 20 and 60. With respect to employment, in 17 out of 27 sectors, the average number of workers per factory is less than 50. There is only one very large sector where the average number of workers per factory is more than 200. The watches and clocks (333) is the most labour-intensive sector. It has the largest number of workers per factory in both the years, being 244 workers per factory in 2001-02, which decreased marginally to 235 in 2002-03. The most capital-intensive registered manufacturing sector (measured through fixed capital per factory) in Uttarakhand is 'plastic products' (252) whereas the least capital-intensive sector is 'furniture' (361) in 2001-02 and 'saw milling and planing of wood' (201) in 2002-03. Registered manufacturing sectors in Uttarakhand are distributed among only eight districts out of thirteen districts in Uttarakhand. The penetration of registered manufacturing sector is very low in the districts of Tehri Garhwal, Pauri Garhwal, Almora and Champawat and this is reflected in the low basic and total employment figures and a very high district population to basic employment (and total employment) ratio.

In Uttarakhand, 17 out of 43 unregistered manufacturing sectors have a number of operating factories below 100. On the other hand, in 13 sectors the number of factories is more than 1000. Among the top ten unregistered manufacturing sectors measured by number of operating factories, the sector, 'products of wood, cork, straw and plaiting materials' (202) is the largest one, while 'non-metallic mineral products n.e.c.' (269) is the smallest with 3608 factories.

With respect to employment, in majority of the sectors (26 out of 43 sectors) in the state, the average number of workers per factory lies between 2 and 5. It is also observed that majority of the unregistered manufacturing sectors (22 out of 43 sectors) has fixed capital investment, below INR 1 lakh. There are 32 sectors (out of a total of 43) whose 'gross value added per worker' is between INR 10,000 and INR 50,000. The number of sectors in other ranges is comparatively very less. Only one sector has gross value added per worker above INR 1 lakh. With respect to profitability, maximum numbers of unregistered sectors (16) report a profitability ratio between 15 per cent to 30 per cent. It is seen that all the 13 districts report presence of unregistered manufacturing sector. The penetration of unregistered manufacturing sectors in all the districts of Uttarakhand is quite high and this is reflected in the high basic and total employment figures and a

reasonably low district population to basic employment (and total employment) ratio. In fact, the districts where the penetration of registered manufacturing sector is nil or abysmally low, the unregistered manufacturing sector is driving the economy. Haridwar has reported the largest basic employment in the unregistered manufacturing sector. It is worth mentioning that Pithoragarh, where there is negligible number of registered manufacturing sectors, has a substantially large number of basic employment in the unregistered manufacturing sector. Even districts like Uttarkashi, Chamoli, Bageshwar and Rudraprayag reveal a similar phenomenon.

Uttarakhand has competitive advantage in output *vis-à-vis* the national average with respect to 13 registered manufacturing sectors at the three-digit level. However, out of these 13 sectors only 5 sectors have reported an increase in competitiveness in 2002-03 compared to 2001-02. 'Plastic products' has the maximum 'gross value added per worker' in both the years indicating the highest partial labour productivity. In addition, on the profitability side, this sector is earning a healthy profit of more than 20 per cent on value of output. Hence, 'plastic products' should be considered as one of the most important sectors of Uttarakhand. There are some sectors, which are not competitive, but their competitiveness demonstrates a positive sign. Manufacture of chemical products or preparations of a kind used in textiles, paper, leather or like industries has the potential to become the competitive one since the IOS is very close to unity and the financial viability of the sector is relatively sound. Moreover, this sector can get a good support from the well established paper industry in Uttarakhand.

In Uttarakhand, district-wise investment (fixed assets) figures and investment attractiveness indices have a high positive correlation and the correlation coefficient is estimated to be more than 0.50. This signifies that the districts with higher investment attractiveness index have attracted more investment than the rest of the districts. The crux of the state government's strategy should be to focus on those indicators which are poor in that particular district.

Majority of the registered manufacturing sectors have suffered a decline in the fixed capital per factory in 2002-03 compared to 2001-02. A large number, 18 out of 27 (more than 50 per cent) of sectors were either incurring losses or earning profit between 0-5 per cent in 2001-02. However, in 2002-03, there is a perceptible change in the situation in respect of profitability of

additional five sectors which switched over in the 'above 20 per cent' category increasing the number of sectors from 2 in 2001-02 to 7 in 2002-03; but still majority of sectors are either incurring losses or earning profit between 0-5 per cent.

8.2 Recommendations

Tangible and Intangible Incentive System

Since private investors are guided by the return and risk on investment in choosing among alternative investment opportunities, the promotional strategy should focus on three factors:

- Efforts to emphasise the comparative advantage of host base (infrastructure, resource base and market factors).
- Investment incentives (fiscal, financial and others).
- Promotional activities (such as sending missions, advertising etc.—a role to be performed by Udyog Bandhu).

Infrastructure

- Development of industrial corridors: A viable approach for the development of infrastructure is to identify industrial corridors, so that those regions that are relatively better off in terms of infrastructure could be targeted to grow faster in the new competitive environment. An industrial corridor is a selection of contiguous districts that are fairly developed. The contiguity facilitates the realisation of benefits associated with the economies of scale, scope and agglomeration.
- Overcoming infrastructure bottlenecks: Ideally, the problem of power shortage should be addressed by attracting fresh investment into power generation or allowing captive generation of power by new industries.
- Improving social infrastructure: The private sector could be roped in for investment into education and health care. Incentives should be offered in this sector at par with those for industry.

Marketing Comparative Advantage

Apart from announcing incentives, the government should make efforts to harness Uttarakhand's comparative advantages as a host base in terms of availability of resources and markets. Suitable

promotional activities should be taken up like undertaking a public relations drives, sending missions to other parts of India and abroad for conducting road-shows and taking out advertisements. Udyog Bandhu will have to play a crucial role in this exercise.

Development of Small Enterprises Using Cluster Approach

Clusters of enterprises make the same, similar or complimentary products. They have many advantages including a usage of collective efficiency, recognition of heterogeneity, product characteristics, technology, type of markets served, production scale, etc. (see Sonobe and Otsuka, 2007 and Gulati *et al.*, 1997).

In the contexts of cluster approach development of small enterprises, following issues/recommendations emerge for Uttarakhand:

- 1) The private sector should be providers of common services rather than state-level public sector agencies.
- 2) FDI into clusters that have inherent export capabilities should be encouraged.
- 3) The state should involve clusters in dialogues to evolve policies and plans on industry.
- 4) Flexible and unconventional support instruments should be introduced. A number of consortia could be formed for export promotion, mutual credit guarantee and purchases. The institutional capacities of local associations can be upgraded. These are some of the support instruments that can be exploited to the advantage of clusters and their local economies.
- 5) Positive competition should be induced. Encouraging competition, both external and internal, for clusters based on quality rather than price would ensure motivation for upgradation, which is necessary for units in Uttarakhand to retain their competitiveness.
- 6) Cooperation mechanisms should be induced. Clusters could be encouraged to develop task forces so as to make them self-sufficient to the maximum extent possible.
- 7) New firms should be included. A continuous process of introducing new firms into the clusters and phasing out of ineffective ones, whether induced or natural, is quite the norm. The process of development can be hastened by identifying the gaps in the value chain, which

would necessitate the entry of a particular kind of firm. This is done not by the conventional system of providing financial incentives but through a positive approach. Providing services and linkages with local associations and research bodies could help new firms.

- 8) A database on clusters should be built. Clusters should be typecast into them according to their production and marketing at three levels—local, national and international. Some of the most important typologies relevant in Uttarakhand are: family firms, rural firms operating on a survival basis for the local market; urban firms in the formal and informal sectors catering to the local markets, and specialised firms within well known areas catering to national as well as international markets.
- 9) Policy support and development assistance in this crucial time will have to strike a fine balance between the speed of change and the capacity of the small firms in these clusters to absorb change. At the lowest end the artisan clusters producing handicrafts would have to be protected. On the other hand, modern SSI clusters having the capacity to carry out international contracts would need to be promoted.

Sector-specific Policies Worth Pursuing

- Export Oriented Units (EOUs) and Engineering Exports: It is important to include the development of EOUs as a special thrust area. The logic for this stems from the fact that India has been successful in engineering exports over the past decade. For instance, India's performance in exports of simple metal products with high labour content (flat forged hand tools, sanitary castings, etc.) has been quite encouraging.
- Information Technology—Software: IT clusters in Bangalore contribute to around 35 per cent of India's software exports. Electronics and computer software accounts for 40 per cent of Karnataka's exports. The NCAER study for Bangalore where the IT cluster narrates development of successful linkages with research and academic institutes ('software diamond'). McKinsey projected the growth of India's IT sector to \$50 billion by 2008 employing 2.2 million knowledge workers,

which throws up the possibility for exciting interstate competition.

- IT Enabled Services Exports: As foreign organisations are concentrating on their 'core competencies', several of IT enabled services are being outsourced. A sharp fall in real costs of international telecom services has opened up enormous opportunities in this sector.
- Bioinformatics or the use of IT in biology: Bangalore has developed bioinformatics as a key growth area in service exports. Dehradun can emulate this as it has all the resources, the market technology and social infrastructure to be competitive in this important area.
- Garments Assembly: A proactive, induced-cluster oriented approach in developing garments' 'parks' around Dehradun and Haridwar is the need of the hour as Multi-Fibre Agreement has lapsed in 2005. Garments assembly activity accounts for over 14 per cent of Karnataka's exports. Moreover, Dehradun and Haridwar are one of the most favoured tourist destinations(Refer Chapter-Tourism). Therefore, these districts potentially become a market centre for developing rural handicrafts and garments industry especially supporting manufacturers of hilly regions.

9. Handicrafts

9.1 Overview

Essentially, Uttarakhand has the dominance of traditional handicrafts, using mostly local raw materials. A large part of the production is for domestic consumption and for sale to the tourists visiting the state, some part of the production is exported, as well. Given the fact that the state of Uttarakhand was recently carved out of Uttar Pradesh, there is dearth of information at the moment and whatever is available, it is at best a crude estimate of production and exports figures. It is however clear that the state has large potential for handicraft exports as the state has a rich tradition of individually crafted products which can have large demand from the affluent people both from within the country and from outside the country as well.

The most important feature is the wide gap between the credit requirements and the credit actually availed. Second, the total contribution of the handicraft sector in terms of value of production is only around Rs. 20

crore (based on 1995-96 NCAER survey, this may be more with prices having risen over the period). Third, there is wide inter-district variations if one looks at the household income derived from handicrafts, which ranged from around 26 per cent in Chamoli to nearly 90 per cent in Haridwar. Further, nearly half of the value of production is devoted to input costs. And last but not the least, the per capita income of the artisan household was a meagre INR 11 to INR 26 per day, assuming 240 working days a year. Clearly this is not adequate for meeting even the minimum needs. Uttarakhand shows the domination of textile-related activities with hand-knit woollen carpets as the other important handicraft, especially in the districts of Almora, Chamoli and Pithoragarh. Other activities based on cane and bamboo, straw, grass, fibre and leaf are also fairly significant in the state. As far as cane and bamboo-based handicrafts are concerned, they are largely concentrated in Almora, Nainital and Tehri Garhwal.

9.2 Recommendations

Land Use Survey

Since handicraft needs low investment, it also provides low earnings to the people engaged in that activity. Irrespective of this, handicraft has been universally considered an important and integral source for providing increasing employment opportunities in the rural areas. Because incomes are low, almost all the members of a handicraft household contribute. Often, they start working at an early age with school-going children working during their time off from school. And there is no retirement from this activity unless the worker is incapacitated or too old to practice his skills or unless he loses interest in the work.

However, there is need for a detailed land use survey of the region before launching any immediate development plans. Globalisation has pushed through legal and policy changes that pave the way for corporate takeover of natural resources like land, water and bio diversity. Therefore, dynamics of source of raw material for handicraft and the sustainability of the business needs to be analysed and established based on good database.

Craft Villages

There is a need to develop crafts villages with vibrant training centres as well as marketing outlets for tourists both from within the country and from outside the country. This would be the most affordable way of

conserving and developing dying craft and putting it to new use. These craft villages would serve as tourist destinations of another kind. For such villages, for example, wood of the desired variety can be provided by the Uttarakhand Forest Development Corporation. Most of the villages are on well-known routes like Tons Valley, Yamuna Valley, etc. Locations of *haats* could be considered in the four natural river system inter lands that run through the region. These are in Pithoragarh district, Almora/Nainital district with the *mandi* possibly located in the Kosi river valley, Pauri Garhwal/Chamoli district with the *mandi* on the Alaknanda river, Yamuna river valley. Steps may be initiated to provide a unique identity to the Uttarakhand products, documentation and publicity.

Industry, Finance and Marketing

In the case of handicrafts, in particular, availability of market information is a serious constraint on production. Hence a number of initiatives are possible. Given the hilly nature of Uttarakhand overall development of industry in Uttarakhand may focus on producing high-cost and low-volume products. Eventually this would mean that the network of small processing plants should be established at different nerve centres of the marketing ability of the agricultural/horticultural production. Further Uttarakhand appears as an appropriate region for eco-friendly and agro-based industry. All traditional wool-based cotton industry needs to be restored. For this purpose, it would be desirable to revive livestock, sheep breeding etc.

Formation of a Handicraft Development Corporation for forging improved market linkages. It would also oversee the bridging of the gap between the market and environment and linking it to human needs, resources and availability of raw materials. It should provide proper coordination with entrepreneurs, marketers, exporters. Other measures would include assistance for establishing permanent marketing outlets like emporia and urban *haats*; preparation of area directory and directory of important crafts; preparation of directory of capable manufacturers; setting up of craft development centres and common facility service centres for providing technical support and infrastructure for quality production.

Human Resources: Women

The fact that Uttarakhand's most effective and leading workforce is made up of women is well documented. This is visible in every walk of life, from agriculture to small industry.

The education and empowerment of women is the only route to an educated and empowered state. The craft sector should focus upon self-employment of women and generate self-employment schemes. Local knowledge-based education in afforestation, water supply and sanitation projects and opportunities for self-employment in the form of cottage/home industry should be created. Women will provide not only technological solutions to the problems faced by women but also inspire in them the cooperative spirit that could be channeled for sustainable development as well as for gnomonic conservation of natural resources. A meaningful development plan for women and for the region should essentially cover needs and aspirations of women with the objective of making them self-reliant.

Role of NGOs

In the endeavour to promote the small scale handicraft sector the government can only play an enabling role. However, given the dispersed and caste-oriented structure of the artisan population, it is important to define the forms of organisation and mobilisation. Experience suggests that cooperatives have been the most effective method of organisation of village-based and small-scale industries. So, the state must play an active role in getting the NGOs in to give a fillip to the process of organisation of artisans into self-help groups (SHGs).

Developing Brand Equity

To achieve the objective of boosting the handicrafts sector only a synergistic approach can yield results. This could come from the purposeful sharing of a common vision by all the concerned partners. Foremost would be the developing of a brand image based on a vision. A state that is deficient in craft skills and has difficult means of communications cannot compete with the crafts of states such as Rajasthan and Gujarat. Therefore, a unique selling point has to be discovered which rests on the holistic view of what the state has to offer. Could it lie in the scenic view, gurgling rivers and clean environment that lend themselves to a concept of ecology and sustainability?

A logo for the state could be devised and an appropriate slogan such as "Uttarakhand Green" or whatever, using state trees and flowers such as the brush or rhododendron. These could be done with the help of the Institute of Craft, Jaipur or NID, Ahmedabad, or NIFT. This logo could be put on a variety of products as has been done in the case of

Koala bear of Australia or the Monal bird of Himachal Pradesh. These items can be given a brand image and publicised with the help of the Tourism Ministry and various export houses. In the current international context, many of the international and national buying houses promote and package such products.

10. Tourism

10.1 Overview

Tourism for the state, since its creation, has become much more than just natural bounties from the angle of the external observer and visitors to the state. Tourism is now viewed as one of the key sectors of economic growth and development in the state both from the point of view of income and employment generation as well as a source of revenue for the state. The Uttarakhand government, realising the potential tourism holds for the state, has taken concrete steps to promote and develop tourism in the state. The state government announced a forward looking tourism policy, which clearly recognises the strengths, weaknesses and potential of tourism in the state. The plan allocation to tourism was also raised from Rs 31.23 crore in 2001-02 to Rs 53.24 crore in 2004-05 which is around 10 per cent of the total allocation to tourism in the country. The total foreign tourist arrivals to India crossed the three million mark in 2004. Of these only about 74,761 foreign tourists visited Uttarakhand, which is just about 2.2 per cent of total tourist arrivals in the country. In comparison to this, about 1.5 lakh foreign tourists visited Himachal Pradesh, which is about 4.54 per cent of total tourist arrivals in the country. In 2005, the foreign tourist arrival was 92,744 which is 24 per cent more than the previous year. But as far as the domestic tourists are concerned, Uttarakhand is way ahead of HP. While Uttarakhand had 13.8 million domestic visitors, Himachal Pradesh had only around 5 million domestic tourists. The pilgrimage destinations in the state attract the domestic tourists. But the state lags behind the others in terms of foreign visitors and has to take steps to increase the number of foreign tourists as well. Haridwar has been the most preferred destination of the Indian tourists.

The most preferred destination of the foreign tourists is Dehradun. One reason for this could be the airport facility at Dehradun, which makes it a stopover point for them. The prospects of health tourism are also the highest in Dehradun, which attracts the foreign tourists. Pilgrimage has traditionally been a

major segment of tourism in Uttarakhand. However, Uttarakhand also has enormous resources for cultural, adventure, wildlife, nature, health and leisure tourism and a wide variety of entertainment and sporting activities, which attract the modern tourist. Expenditure on schemes for tourism development and promotion of tourism in Uttarakhand has progressively increased over the years. In the Tenth Five Year Plan, approximately INR 8,600 lakh have been spent, which is more than 10 times the amount spent during 1980-1985. Some of the initiatives currently under the process are:

- To develop adventure tourism and eco-tourism master plans like Dayara Bugyal, Valley of flowers-Hemkunt etc., are designed and in process of implementation.
- Promotion of Uttarakhand as a tourist destination is done through advertisements in print and electronic media alongwith seasonal advertisement campaigns like—autumn, winter campaign etc.
- River rafting licences is granted to promote river tourism and adventure activities in the state.
- Department of tourism is, in coordination with other departments trying to develop basic infrastructure facilities at the tourist places and on the tourist routes.

But, clearly, even this has not been enough to develop and fully exploit the vast tourism potential of Uttarakhand. A few of the problems, which the tourists and the tourism officials (based on discussions with the tourism officials) are facing in the state and for which immediate action needs to be taken, are listed below:

- The regional tourist offices are understaffed. The regional tourist offices in Udham Singh Nagar and Champawat have only one person managing the office; Bageshwar and Pauri Garhwal have only two people looking after the tourism offices. Their job profile apart from providing information to the tourists and other jobs includes collection of data on the tourist arrivals in the destinations of their district. But due to their excessive workload, they are not being able to do justice to their tasks.
- The infrastructure facilities at some of the destinations are not adequate. This creates problems especially during the peak season. There is a shortage of accommodation facilities, water and even power supply. The peak season is taken to be for 120 days where the occupancy

rate is also the highest. The government needs to look into this and try to make some arrangements for the peak season so that these problems can be avoided. The rates are not fixed during the peak season and this too causes problems especially during the peak season.

- There is excessive pressure on some of the destinations like Mussoorie and Nainital, especially during the peak season. These places are becoming very dirty and the tourist attractions at these places are in a pathetic condition. These have to be taken care of at the earliest before it can become a serious problem. For example, Kempt Falls in Mussoorie is full of plastic water bottles. The government needs to impose rules and regulations at these places and also ensure that they are adhered to.
- The connectivity to Uttarakhand is still not as well developed as in other states like Himachal Pradesh. The government needs to improve the connectivity to Uttarakhand. It has put in efforts to build airports and airstrips, but in order to attract the tourists in the middle and lower income brackets, it needs to concentrate on improving the road and rail connectivity, though it might be difficult given the terrain of the region.

10.2 Recommendations

- Currently, most of the tourists visit Uttarakhand only for religious purposes. Thus the state government can do much to promote other forms of tourism. The state should be shown as nature tourism spot rather than just highlighting the pilgrimage destinations in the state. This does not mean that the religious destinations should be ignored. But the government can concentrate on promoting the other destinations in state along with provision of facilities in these religious places.
- In a NCAER survey, only 11 per cent of the tourists reported that they were visiting the place due to media (TV, newspaper, magazines etc.) indicating a poor media exposure. A lot can be done to promote the destinations in Uttarakhand through the media. There could be advertisements in TV and newspapers highlighting "Destination Uttarakhand" on the lines of the campaigns brought out by states like Goa, Kerala etc.

- The state government should encourage more private sector participation. Even though the Master Plans that the state government has set out are in partnership with the private sector, it needs to see that these are properly implemented and it should encourage private sector participation in the other areas as well apart from these master plans.
- Develop a theme for Uttarakhand and highlight it and develop regions on the basis of this theme. This could also involve running a tourist train which showcases this theme.
- River tourism can be developed in the state and river cruises could be introduced along the Ganges.
- Nainital could be developed as a convention city.
- The technological capability of the tourism ministry officials as well as other staff should be upgraded. The government could conduct IT training programmes for the staff.
- The state government should also try to improve the infrastructure availability to the staff even at the district level/regional offices. And at the same time it should aim to increase the number of staff at the regional offices that are highly understaffed and are not able to do justice to the various tasks they have at hand.
- The state government can encourage hotel chains to set up shops in Uttarakhand by providing them with land, price and tax concessions. They will then, themselves conduct promotions to fill rooms.
- Maintenance of historical and archeological monuments calls for a strong public private partnership.
- The state could provide incentives and technical assistance to SMEs in the tourism sector, notably local artisans and cottage industries producing high quality handicrafts.
- 'Destination Cleaning Campaigns' need to be launched and conducted at regular intervals. Funds need to be allocated for maintaining cleanliness at tourist attractions. Various NGOs can be roped in to undertake this.
- Betterment of basic amenities like electricity, water supply, drainage, sewerage, solid waste disposal system, etc., needs to be carried out at various tourist destinations.

- With regard to transport, luxury coaches and buses need to be introduced in a large quantum and low cost airlines and rail links could be introduced to the various tourist destinations. Along with this link roads and airport infrastructure needs to be upgraded.

SECTION D INFRASTRUCTURE

11. Telecommunication and Information Technology

11.1 Overview

The government of Uttarakhand envisions "to deploy, use, exploit and leverage the information technology as an effective tool for catalysing accelerated economic growth, efficient and transparent governance which is accountable to the people and to this end create the knowledge rich society". Accordingly, the state has declared IT as a thrust sector and announced incentives to realise the aspirations of becoming one of the front-line IT states in the country. A number of policy measures have been introduced to reap the benefits of ICT. Telecommunications being a subject of the Union government, the policy measures are required to be tailored to the needs of the state. The Bharat Sanchar Nigam Ltd. (BSNL), in the public sector and the Reliance Infocom Ltd. (RIL), are the two main service providers in the state. However, the presence of the latter is limited to few segments, the BSNL is synonymous to the communications sector in the state.

BSNL has installed a total of 451 telephone exchanges in the state with present capacity of 5.4 lakh lines. Fixed and Wireless in Local Loop (WLL) capacities constitute about 92 per cent and 8 per cent of the total equipped capacity respectively. Additions to capacity in fixed telephone segment have been insignificant while addition to the WLL capacity have increased at higher rate except for the financial year 2004-05. Capacity utilisation rates of fixed telephone segment has been stagnant at 73 per cent while that of WLL increased from 21 per cent to 74 per cent in about four years time. There are 11,931 village public telephones (VPTs) as on 1.12.2005. Thus, while growth in the fixed line telephone segment is stagnated, the WLL is turning out to be the appropriate technology for Uttarakhand state. The number of villages provided with VPTs under the Universal Service Obligation Service Scheme stands at 11,931 thus leaving 3,679

villages left to be covered. In Almora, New Tehri and Srinagar SSAs, WLL technology is preferred.

Though the replacement of Multi Access Radio Relay technology (MARR) was taken up as a separate service, eligible for funding from USO, there are 697 VPTs still left to be replaced. This can be attributed to the slow progress in roll out of WLL in the circle. There are 18 VPTs functioning on International Maritime Satellite technology (INMARSAT). These are mainly provided on the pilgrim routes. With regard to internet usage, there are 29,013 internet subscribers in Uttarakhand Circle as on 1st December 2005. About 54 per cent of them are in Dehradun SSA. Nainital and Haridwar are the other two SSAs with significant share of internet subscribers. The BSNL in Uttarakhand state has 770 broadband (data transmission speed exceeding 256 kilobits per second) customers, majority of them are in Dehradun. There were 679 integrated services digital network (ISDN) subscribers in the state as on 1st December 2005; most of them are in Dehradun SSA. Barring Haridwar SSA, that have got mobile services introduced on 24th December 2003, all other SSAs have got them in 2002 itself. There were about 2.4 lakh mobile subscribers of BSNL in Uttarakhand Circle at the end of November 2005. Mobile services are provided by BSNL in 54 towns of the state. Dehradun and Nainital SSAs account for 34 per cent and 20 per cent shares respectively in total number of mobile connections in the state. Teledensity (number of telephones per one hundred population) in Uttarakhand state was 5.10 at the end of March 2004, which increased to 5.72 by December 2005.

There is a significant urban-rural digital divide existing in the state as indicated by urban and rural teledensity in December 2005. Compared to Himachal Pradesh, Uttarakhand is falling far behind. However, in comparison with Uttar Pradesh (East and West circles), Uttarakhand has higher teledensity. Average teledensity in the urban India is higher than that of Uttarakhand. Thus, it can be noticed that whole of UP and Uttarakhand circles are lagging behind than all India average in terms of teledensity. Uttarakhand is better connected by telephone facilities than UP. The state entered into collaboration with Software Technology Park of India (STPI) to establish an Earth Station with an international gateway at Dehradun. The BSNL has laid over 3000 kilometres of optical fibre cables in the state and established another gateway exchange at Dehradun. These earth stations and the OFC network constitute backbone of communications network and provide the band width connectivity for the IT industry

in Uttarakhand. Under the State-wide Area Network (SWAN) the entire district headquarters are connected with reliable media. Majority of Block offices and District Rural Development Agencies (DRDAs) have also been connected under SWAN. With the computerisation of all government offices (expected by March 2007), the hardware set up required for providing e-governance applications is in place. In order to link up all its citizens to this backhaul a separate project called 'Uttarakhand Infoway' was formulated by the state. The state government recognises the key role played by private sector in the development of IT industry. A number of measures have been announced for corporates participating in the IT sector.

11.2 Recommendations

BSNL Relaxation of Norms for Setting up New Exchanges

In order to cater to the scattered demand in hills, low capacity exchanges need to be opened. However, BSNL's present norms require that there should be a demand for minimum 150 lines within the coverage area of 5 kms for opening a small exchange. This puts a hurdle in opening new exchanges in rural areas of the state. The government, should evolve a policy to compensate BSNL for recovering loss incurred in establishing a telephone exchange in hills and for running it with a sub-optimal capacity utilisation rate. Similar to opening smaller exchanges, the capacity utilisation rates of WLL are lower than optimal levels owing to factors attributed to hilly terrain and scattered population.

USO Support for Mobile Facilities and Setting up Infrastructure

A shift in the USO funds policy, away from service subsidy and towards infrastructure subsidy is more suitable for providing telephone services in Uttarakhand. In the present USO functioning, financial assistance has been provided to operators for providing specific services in remote areas. However, since telecom sector is a capital-intensive one and returns are spread over a longer period, for lack of sufficient capital and for recovering investment in short periods, private operators are not interested in participating USO activities in states like Uttarakhand. An alternate approach that gives assistance in provisioning of infrastructure and subsidised access to the backbone network would enable private operators to participate in USO. Especially, if passive infrastructure is shared (subsidy subject to sharing), more competition in

difficult terrain areas can be realised. Thus, there needs to be a change in the USO scheme to consider wireless technology in the last mile.

Increasing Subsidies from USO Fund

In the present USO set up, benchmark subsidies meant for telecom facilities provided in difficult terrain districts are fixed five per cent higher than in normal districts. Moreover, USO support does not take the total switch cost into account. It only takes the cost of last mile from customer premises equipment to the line card in the exchange. In view of special geographical conditions prevailing in Uttarakhand state, USO subsidy needs to be enhanced to cover the cost of switch also.

Niche Operators

It is assessed by TRAI that despite the USO support, existing big service providers would not be interested to serve about 50 per cent of the villages. To address this issue, TRAI in its Unified Licensing recommendations envisaged that the Short Distance Charging Areas with teledensity less than one per cent be notified as telecom-wise-backward areas. In these areas, niche operators defined as 'the telecom service providers whose services are restricted to these backward areas only' will be inducted. These operators are entitled for concessions of zero entry fees, lower licence fees and eligibility for USO support. The scheme is aimed to promote local entrepreneurs who have the technical competence to provide communication solutions but cannot compete on equal footing with large operators. Uttarakhand would greatly benefit from introducing 'Niche Operators'. However, so far there has been no development towards the introduction of 'Niche Operators'.

Infrastructure Development

Providing and maintaining telecom services mainly require quality electricity and roads. In the rural areas of Uttarakhand, there is no three-phase power, required for running BTSs. Providing power backup to BTSs with engine alternators is very costly. At the customer end also, solar batteries are provided for VPTs and not for DELs. Landslides, no road connectivity to far-flung areas, *ghat* roads and unfriendly weather add to the maintenance costs of telephone facilities in Uttarakhand. Therefore, improvement of power supply and road conditions is necessary for increasing teledensity in rural areas of Uttarakhand.

Institutional Setup

In view of the special conditions prevailing in Uttarakhand a separate cell to look after Uttarakhand and similar states, needs to be set-up within the present TRAI. Instead of the present USO method of supporting same set of services across the country, a demand based USO Subsidy for the services identified at the level of a SDCA would help increase teledensity in Uttarakhand.

'Hub and Spoke Model'

This model is believed to be effective in connecting rural communities. Developing infrastructure at local business centres or at district headquarters for transforming it as a development hub is the first step in this model. As the second step, localised projects in the form of call centre and rural commodity marketing and information centres are to be established. This model generates employment and spurs economic activity. Thus it helps check migration of people to large cities and metros.

Taking ICT to Rural Areas

Strategies that are required to address the supply side challenges are: (a) Backbone infrastructure, (b) Infrastructure sharing, (c) Last mile connectivity, (d) Power supply (e) Operation and maintenance costs, (f) Duties, levies and taxes, and (g) Licensing framework. Similarly to take care of demand side issues *viz.:* (a) Cost of computers and access devices, (b) Unavailability of locally relevant applications, and (c) Affordability of services are the challenges to be faced and suitable measures are to be prepared.

12. Power

12.1 Overview

Uttarakhand is particularly well-endowed with respect to hydro-electric potential which, when optimally exploited, can yield rich gains to the state. The high annual growth in electricity demand of the state during recent years is worth noticing: Between 2001-02 and 2005-06, total electricity consumed grew at the compounded annual rate of 12.05 per cent. The installed generating capacity was 1486.4 MW as at end of May 2006 of which 1019.7 MW was the state's share. As part of the interstate settlement on bifurcation, Government of India had allocated 353.3 MW out of the undivided Uttar Pradesh's share of 3399.9 MW in the central sector generating stations (owned by NTPC, Nuclear Power Corporation of India Ltd. and NHPC) of

the Northern region to Uttarakhand. Five years later, on 31.3.2006, this share stood at 466.7 MW. Uttarakhand's share of Central Generating Stations (CGSs) is around 3 to 4 per cent of plant capacity. In the case of plants located in the state, the state is also entitled to 'free power' of 12 per cent of generation.

Per capita consumption averaged 393.47 kWh in 2004-05, which was about 5 per cent lower than that year's national average of 411.04 kWh. Within the Northern electricity region, Uttarakhand was better off than Uttar Pradesh, Rajasthan and J&K in this respect, but much below a state more comparable to it (in terms of size, topography and population) like Himachal Pradesh. Significantly however, in the growth rate in per capita consumption, Uttarakhand at 12.35 per cent (compounded annual over the last three years) has outstripped all other states in the Northern region and is far ahead of the all India average (CAGR 4.98 per cent). According to Census 2001, percentage of households with electricity connections was 60.3 per cent. While nearly 91 per cent of urban households had access to electric connections, the share was a low 50.4 per cent for rural households. Data available for the last four years show that there is no improvement in the situation of electricity shortages. Of the two measures of shortages, the position is almost unchanged in the case of energy demand (shortage here is in the 2 to 3 per cent range, much better than the corresponding figures for the Northern Electricity Region of 10.7 in 2005-06), but the shortfall in 'peak' power requirement in Uttarakhand aggravated in 2005-06 to 13.5 per cent (Northern region—10.5 per cent, all India—12.3 per cent).

UPCL inherited a huge backlog of 'receivables' dating from before the formation of the state. Efforts to clear these arrears are continuing. Notable feature regarding outstanding dues is the poor collection rate from government agencies. While the percentage of revenue realisation from all non-government consumers was 90 per cent of the assessment in 2001-02 and 87 per cent in 2002-03, the corresponding percentage for government consumers was as low as 8 per cent and 9 per cent for the respective years. Because of the concentration of undivided UP's hydro-power stations in the area that now forms Uttarakhand, there is dramatic improvement in the power availability after the state's formation. While supply was made for restricted hours only under the pre-Uttarakhand dispensation, during 2001-02 it improved on average to 22 hours or more per day, barring some rural areas where it was

around 20 hours. However, because of the acute demand-supply position in the winter months of 2004-2005, UPCL did have to resort to limited roistering to curtail demand.

With the formation of Uttarakhand, the cost of power for arranging the supply also dropped because the low cost hydro-power from stations—several of them built decades ago—met the bulk of the demand. This was partly fortuitous, and in part thanks to Regulatory intervention that nullified an effort by Uttarakhand's newly-formed power entities—UPCL and UJVNL—to jack up the purchase price of power generated by UJVNL plants. In its first Tariff Order, UERC ruled that the price revision (which sought to set the basic price at a mutually agreed rate of 55 paise per unit) overlooked an agreement between UPJVNL and UPPCL—of which the respective Uttarakhand undertakings were successor entities—that continued to be valid and legally binding. Under this agreement the generating undertaking was entitled only to the basic price of 37 paise per unit for the power its stations supplied to UPCL in year 2001-02 and this price could be revised only with the approval of the Regulator. In December 2004, after considering fresh submissions by UJVNL, the Commission reviewed the rate and reset it still lower at 29.68 paise per unit. Although UPCL has been meeting the subsequent increase in demand from other costlier sources (chiefly Central Generating Stations) supply from UJVNL's stations continue to meet the larger share, accounting for 57 per cent of the total power requirement of UPCL in 2005-06. This has kept UPCL's average cost of power (from all sources and inclusive of transmission costs) in that year to a low Rs. 1.11p per unit. The comparable cost incurred by states of Andhra Pradesh, Haryana, Karnataka and UP is in the range of Rs. 2.00 per unit.

Uttarakhand has abundant sources of hydro power. According to latest authorised estimates, the state has a hydro-electric potential of 18,175 MW, which is 12.2 per cent of the total for the country (148,701 MW). Plants already set-up by the state and central agencies (1,352 MW) make for just 7.4 per cent of the state's potential. A further capacity of 3,125 MW (17.2 per cent of potential) is being developed through plants either under construction (2,104 MW) or those for which clearances have been obtained and developing agencies identified, but are to be taken up for construction (1,021 MW). If we also take into account the status of hydro-electric potential that is in the

process of being developed, a better picture emerges. According to details given in a presentation by PTCUL, the Uttarakhand government has already allocated eight projects adding up to 3,448 MW of additional capacity for execution to THDC (960 MW), NHPC (1,420 MW), NTPC Hydro (520 MW) and UJVNL (548 MW). The policy that the Uttarakhand Government has laid down for hydro power development allows ample scope for private participation. The policy regime differentiates between small (installed capacity less than 25 MW), medium (25 MW to 100 MW) and large (above 100 MW) schemes.

12.2 Recommendations

- The efficiency level of sector undertakings needs to be raised to normative standards in key performance areas like T&D losses and plant availability.
- The short term targets of connecting all villages by 2007, all habitations by 2009 and providing access to electricity to all households by 2010 needs to be met.
- Hydro power projects already allotted for implementation including those in the small hydro power category need to be brought on stream over the next six years so that the level of exploitation of the state's identified potential rises to about half by end of Eleventh Plan.
- Review of hydro power policy: To meet the long term demand on the generation side, the focus should be on implementing such of the already allotted large projects that may fail to take off in the next five years, and the shelf of projects under CEA's '50,000 MW Hydro Initiative', including the medium and large 'low tariff' schemes numbering around twenty.
- Privatisation of distribution and competition: The main suggestions in it concern the size of the distribution area to be offered for privatisation, equitable sharing of obligations between the two parties to the contract and phased process of inducting the private entity. A medium sized town may be made into a 'model distribution area' that should set the standards for the future intending private entrants in other areas.
- Large outstanding 'receivables' of electricity dues from government agencies present an incongruous situation when we consider that government is not paying any subsidies to the sector undertakings and is in fact earning substantial revenues from the sector through 'cess', royalty, energy trading and up front payments by project promoters.
- UPCL's idea of converting 'losses' into a 'regulatory asset' is to be discouraged. State government could consider intervening in this matter after the issue of 'surplus' versus 'losses' is sorted out between UPCL and UERC.
- UREDA should consider putting in place a system of regular monitoring of progress and performance of stand-alone power supply schemes in remote areas as a long-term measure.
- Training of personnel and skills upgradation at all levels should be a priority area for the state's power sector. Expert assistance should be obtained to identify the training needs and to put a well-designed training programme in place.
- Inter-sector linkages should be developed, in particular to draw upon communication and Information Technology. For example, linked to pre-paid cards, concepts like metering that displays the balance available could be developed.

13. Roads

13.1 Overview

Uttarakhand is predominantly a hilly terrain state spread over 53,483 square km with altitudes varying between 100 metres and 7,800 metres. Rail network is minimal and confined to plains and foothills only while the air connectivity of the state is extremely low.

Road network in Uttarakhand is inadequate, both in rural as well as in urban areas. The State Public Works Department (SPWD) has been working towards upgrading light vehicle roads as all weather motor roads, providing connectivity to all villages above the population of 250 by year 2010. National highways account for 8.5 per cent of total road length in Uttarakhand as against 2 per cent share at all India level. Contrary to this, the state highways and major district roads have lesser percentage shares in total roads network in Uttarakhand. In the case of other district roads and village roads, there is not much difference between Uttarakhand and all India. Clearly, the contribution of state government in building road

network does not match with the efforts put in by the central government in view of the fact that inadequacies continue to prevail in provisioning of inter-district and rural connectivity. As of March 2005, Uttarakhand had 45.26 km of roads in every 100 square kilometres of geographical area, which is less than 50 per cent as compared to the all India average of 103 km road length for every 100 square km of area. In terms of coverage of population, Uttarakhand had 2.85 km of roads for every 1000 population as against all India average of 3.29 km. With regard to village connectivity, all over Uttarakhand, only about 60 per cent of the villages have been connected by road.

The Pradhan Mantri Gram Sadak Yojna (PMGSY) has been the main scheme designed to provide roads in rural areas. Under PMSGY, between March 2002 and November 2005 about INR 57 crore were spent and 67 works were completed leading to construction of 299 km of village roads during 2001/02 and November 2005. Looking at the state government's efforts during Tenth Plan, as against the targeted 1650 km (1200 km of motor roads + 450 km of other roads) of roads, 1337 km have been completed. Of this, 1003 km are of motor quality. In the case of reconstruction and improvement of the existing roads, roads of 2154 km were completed as compared to the targeted 1380 km. During this period, 264 bridges were constructed as against the target of 230 bridges. The information thus shows that state government schemes are aimed mainly towards reconstruction and improvement of existing roads rather than the construction of new roads, a fact noted earlier.

Under the centrally sponsored schemes, about 144 km of roads and 2 bridges were constructed. Uttarakhand government has incorporated Uttarakhand Infrastructure Development Company Limited (UDECI) as a joint venture between the Government of Uttarakhand (GoUA) and the Infrastructure Development Finance Company Ltd. (IDFC), to assist Uttarakhand Government and its agencies in developing policies and strategies for infrastructure development, and render assistance in project selection, development and implementation.

The public-private partnership is the hallmark of new strategy in road building across all the states and the Government of India. In Uttarakhand the private sector is to be involved through built own and transfer (BOT) approach in the following three projects to provide 300 km roads.

13.2 Recommendations

Furthering the Policy Reforms

The state can take lead in preparing and implementing infrastructure development programme through a comprehensive policy document. As the first step a transport policy document need to be prepared making clear the objectives of the road development programme. In addition, measures to streamline institutional framework and establish accountability in construction and maintenance of roads need to be built in the Public Works Department. With regard to village connectivity, the State government's strategy was to prioritise larger villages in providing road connectivity. However, in view of the difficult geographic conditions prevailing in the state, it could be argued that the social benefits of roads connectivity to an interior village outweigh that of road connectivity to the bigger and better connected villages. Therefore, the strategy should be to connect far-flung villages with equal importance as that of connecting larger villages.

Developing Institutions

A regulatory mechanism has to be introduced in the roads sector in order to promote operating efficiency, specify and monitor service standards, and to ensure responsiveness to final customer needs. The Gujarat Infrastructure Development Act-1999, and the Infrastructure Development Enabling Act of Andhra Pradesh are good models to follow for this purpose. Similarly, establishment of Special Purpose Vehicles for funding infrastructure at state level is required. Also, on the lines of Central Road Fund (CRF), a State Road Fund needs to be set up for complementing the allocations from CRF in improving the road connectivity in the state.

Promoting Investments

The PPP model of infrastructure development is motivated by three distinct factors: (1) public resources are limited, (2) state of the art technologies are needed to build better road more quickly, and (3) private sector is equipped with better and efficient management techniques as compared to public sector. Therefore, multilateral financing, consortium with government guarantees and tax incentives etc., are the ways followed for this purpose. Uttarakhand has to seriously pursue sector-specific reforms judging their appropriateness from the experiences of the states that have followed them earlier.

14. Water Resources

14.1 Overview

The average annual rainfall of Uttarakhand has been assessed around 1700 mm/year (from active monsoon of hardly 100 days). The average volume of water received per year from rainfall comes out to be 9.462 mha-m (94.62 BCM). Of this 17.5 per cent goes as evaporation loss, 29.55 per cent as absorption in soil, 15.45 per cent - infiltration as groundwater and only 37.50 per cent is there as flow in rivers. According to the State Water Policy of Uttarakhand, only three per cent of annual rainfall in the state will suffice to meet the state's total water needs for all the purposes. Yet, shortage of water is felt in both the Kumaon and Garhwal regions. With growing population and rising standards of living, demand for water is increasing more than the assured supply, thus exacerbating the shortages further. The greatest threat is faced by the agriculture sector, which accounts for about 75 per cent of the total demand. With more emphasis on tourism, the pressure on the management of water resource is likely to increase further. The reason of scarcity of water in most of the year is unsystematic distribution of water and/or poor development/management of water resources.

At the state level in Uttarakhand, the responsibility of irrigation lies with two departments, viz., Irrigation and Minor Irrigation. The public health department looks after urban water supply while *Panchayats* take care of rural water supply. Government tubewells are constructed and managed by the two irrigation departments or by tubewell corporations setup for the purpose. Hydropower is the responsibility of the Uttarakhand Jal Vidyut Nigam Ltd. The general vision of the Uttarakhand government towards drinking water for the people in the state is to provide access to safe and potable water to every household in the state by 2012; make the service delivery system self-sustaining with local government, PRIs support and public participation; and ensure protection, preservation and recharge of water sources surface and under ground. In order to assess the availability of water for state of Uttarakhand for use in different sectors, the following issues need to be considered:

- Average natural availability of water from all the major streams up to their last sites beyond which Uttarakhand cannot effectively use the water.
- Average seasonal and annual availability of

water from the numerous rivulets/*gadheras* scattered in different parts of the state wherever flow data are available and rainfall-runoff relationship where flow data are meagre or not available.

- Likely and reasonable upstream uses that may take place in other states/adjacent countries upstream of these sites.
- Downstream obligations, which Uttarakhand may have to fulfil on the basis of treaties and agreements etc.
- Available remaining water free from all burdens.
- Large return flows also need to be accounted for, as these will either lend themselves for re-use in the same command area or at other places.
- Flow data of non-monsoon season for the purpose of assessing the water availability during most critical period when different areas of the state suffer from serious water scarcity.
- Rainfall data to calculate availability of water from smaller streams whose flow data is not available.

14.2 Recommendations

Single Water Resource Ministry

There are six departments in Uttarakhand at present, dealing with water resources but working under different administrative controls in the government. Due to this reason the water resource planning for different purposes falls mostly into the abyss of dispute causing bottleneck in the pace of development. To establish synchronisation, all the water resource agencies viz., Irrigation Department, Minor Irrigation Department, Watershed Management Directorate, Jal Vidyut Nigam, PeyJal Nigam and Uttarakhand Jal Sansthan should be brought under single administrative umbrella of a Water Resource Ministry.

Discharge Database of Water Sources

No database related to discharges of small rivers/*rivulets/gadheras/naulas* flowing seasonal and perennial is available with either MI/Irrigation Departments or PeyJal Nigam/Uttarakhand Jalsansthan. Minor irrigation does only need based/demand driven work in some specified areas while Irrigation Department confines itself to only maintenance of canals and civil structures

of Jal Vidyut Nigam. Jal Sansthan and PeyJal Nigam too do not maintain this record on regular basis. Due to these lacunae, preparation of Integrated Resource Management for the state is difficult. Discharge data of Ganga/Yamuna and its tributaries are not obtainable from CWC due to various reasons. Hence picture of natural water availability status in the state is bleak rendering water balance computation erroneous and any development report faulty. So it is strongly recommended that a comprehensive source study and data collection of seasonal discharges with water quality thereof must be carried out through a trusted agency involving sector specialists including social and environmental scientists.

Restructuring of Irrigation System

More thrust on source identification and its sustainable development strategy has to be given to solve the water supply problem of rural areas of Uttarakhand state. Like UP, Uttarakhand should also prepare restructuring projects based on community/farmers' participation in order that operation and maintenance of the tail ends of the canals and channels/*gules* are made properly and also cost sharing is also done by the farmers. Emphasis on Participatory Irrigation Management (PIM) is a must in Uttarakhand as is being practiced in UP through Water Restructuring Projects envisaged for sector reform. It is to actively involve farmers in management of not only in tertiary (which is the present norm) but also in secondary system. Have deliberative committees where farmers can participate in deliberation about improvement of irrigation water management.

Canal Automation

In conventional design of a canal system, steady state conditions with a steady (time invariable) flow in all elements are assumed. In actual field conditions, water demands change from day to day to weather conditions, rainfall and field operations. The supplies from the head works take considerable time to reach the place of demand, thus balancing supplies and demands becomes difficult when demands reduce. Even if supplies are reduced after receiving the reports of rainfall, the reduction may take 3 to 4 days to be effective in the command. Canal automation saves considerable water and affords 'on demand' irrigation. Such automated projects may be of much use where:

- The system is storage-based;
- Water scarcity conditions exist and importance of water is realised;

- Water distribution system is lined and well maintained.

Canal automation upgrades the system and provides better match between the canal deliveries and current demands. Automation works on the principle of "on demand deliveries, to the user". Thus any one who wants water gets it from the storage in the canal. Similarly in case of any breach, or even a quick reduction in demands, the water flowing in the upstream canals gets stored, and this reduces wastage. In this method the canal system serves both as a conveyance and a storage element. Pilot implementation of such operational practices is recommended.

Institutional Reform of Drinking Water Sector

- Water supply and environmental sanitation is in principle a local issue, which requires local solutions. This is also the spirit of the thrust towards community involvement in development and operation of water supply schemes.
- Existing institutional arrangements place responsibility for water supply at the *Panchayat* level, but most of the authority, especially those concerned with decisions having financial implications, remain with the state government. Without appropriate authority and capacity the *Panchayat* cannot properly discharge their responsibilities. Moreover, the lack of local authority results in lack of accountability. This is not conducive to developing community involvement (sense of ownership).
- The Swajal model differs from the sector reform programme under ARWSP in some of the financial guidelines—most notably that it demands a 10 per cent capital contribution for basic need schemes whereas ARWSP does not. Institutionally, the Swajal model is still in the experimental stage, whereas the ARWSP sector reform guidelines already identify specific institutional entities, responsibilities and procedures.
- The expressed preference of the NDWSM is for a single department looking after both water and sanitation. Uttarakhand has established a unified Drinking Water Department, responsible for both the urban and rural sectors. However, the relevant responsibilities and institutional allegiances remain divided. PJJN is the prime organisation charged with development and

operation of water supply schemes, both urban and rural. Jal Sansthan exist with similar responsibilities in all but one district. There is thus duplication of organisational capacity, particularly regarding management and administration.

- There are two main departments that deal with water supply and wastewater management works in Uttarakhand. They are Peyjal Nigam and Uttarakhand Jal Sansthan. The two departments have their own intrinsic problems related to their identity and expertise. Peyjal Nigam (erstwhile Jal Nigam) has more technical workforce as compared to Jal Sansthan, which is simply a maintenance body but due to several reasons, it does not seem to be in concordance with the former.
- Merger of the two organisations to improve the organisational efficiency by shedding duplications in the respective establishments is an option to be considered. This should be attempted only if the combined entity is granted greater autonomy.
- Besides the mandate for development of schemes the PJN also has sector-level responsibilities (planning, monitoring and evaluation, HRD, R&D, etc.) Moreover, there may be tasks that even the enlarged JSs could not perform without some technical assistance of a more sophisticated level from a centralised organisation like PJN. To carry out these sector-level tasks it will be necessary to retain at least some of the capacity of the divisions of PJN that are not being integrated into the JSs. This capacity could be incorporated into the DWD as a WSS Directorate.
- While merging the Jal Sansthan into Peyjal Nigam as a maintenance wing thereof, one Chief Engineer (Maintenance) and two General Managers one each for Kumaon and Garhwal should be given to Maintenance wing (excluding other necessary subordinate positions) of Peyjal Nigam. This will solve staff problems of the two departments also adequately.

Water Conflict Related Issues

Conflicts between uses and users are likely to grow. The main concerns are:

- 1) Irrigation *versus* domestic use;
- 2) Irrigation *versus* hydro-power, and water use *versus* ecological flows.

Water rights of individuals and groups of individuals need better delineation through a legalised process of allocations and review of allocations. This system needs to cover returned waters, water quality, and meeting demands through waters of a quality appropriate to the demand. Water rights of individuals and groups need to be linked with obligation to return a predetermined quantity of acceptable quality, to the system. The "user pays-polluter pays" principle needs to be adopted. Water management for hydrologic unit like basins/sub-basins needs to involve stakeholders. For homogenous areas with only irrigation use, WUAs could be the vehicle for management. For heterogeneous uses, stakeholder committees would have to be formed and empowered to manage the resource, within allocations and financial sustainability. In the area of interstate issues, a large number of storage dams including those under construction and proposed, would be located in Uttarakhand, with benefits shared by UP. Joint actions would be required in implementing such projects.

15. Urban Area Development

15.1 Overview

Uttarakhand is better endowed in terms of resource like water and potential for abundant power supply. It is also a further advantage that even the larger towns of the state are of modest size and the incidence of problems of urbanisation like slums is not widespread. However, urban services in several towns of Uttarakhand have to cater not only to the normal growth of the urban population but also to the regular, massive influx of visitors from other parts of India and abroad, to the well-known pilgrimage centres in the State. The four class-I towns with population above one lakh are: Dehradun, Haridwar, Haldwani-cum-Kathgodam and Roorkee. There are three class-II towns i.e., with population ranging between 50 thousand and one lakh. These are Kashipur, Rudrapur and Rishikesh. Nearly half the number of towns in the state had a population of less than 10 thousand each. As per the 2001 Census, about 26 per cent of Uttarakhand's total population stays in urban areas. This was below the all-India level of 28 per cent in 2001 Census which was up from 26 per cent as per 1991 Census. The corresponding share of the areas now forming Uttarakhand was 23 per cent in the 1991 Census.

However, in terms of share of urban population, the state ranked higher than its parent state of Uttar Pradesh as well as the neighbouring state of Himachal Pradesh whose urbanisation figures are 21 per cent and 10 per cent respectively as per 2001 Census. There is wide disparity among the districts with regard to degree of urbanisation. Only five out of thirteen districts have a degree of urbanisation greater than 15 per cent. Dehradun, which has the largest urban population, has a degree of urbanisation of 52.94 per cent, more than double the state average. The degree of urbanisation is higher than the state average (25.67 per cent) also in three other districts Nainital (35.27 per cent), Udham Singh Nagar (32.62 per cent) and Haridwar (30.84 per cent); all other districts are predominantly rural.

Uttarakhand has a total of 63 urban local bodies. ULBs are classified primarily on the basis of population. The state capital is administered by a Corporation (Nagar Nigam) and towns of 50,000 or more population have regular Municipal Boards (Nagar Palika Parishad - NPP). At the lowest tier is Nagar Panchayat (NP); towns having 10,000 or more population in hilly areas and 25,000 or more in plain areas have Nagar Panchayats. Water supply, sewerage and sanitation comprise three related areas in urban management that would demand a coordinated and integrated approach. Of these, in Uttarakhand only sanitation rests with the ULBs while different institutions are handling water supply and sewerage functions. To improve the functioning effectiveness of these three related aspects it would be important to transfer responsibility for water supply and sewerage functions to the ULBs. It may be underlined that 74th Constitutional Amendment envisaged these two functions to be with the ULBs and had accordingly provided it as part of the 12th Schedule.

Solid Waste Management: Official estimates are that about 50 per cent of the total waste generated in urban areas does not get collected and transported out. The problem is further compounded during the tourist season.

Power Supply and Public Lighting: Most of the urban areas in the state are left without streetlights. As solution, official plans envisage that electricity distribution system needs to be reorganised by forming a ring type grid of all substations. It should also be noted that ULBs have a tradition (since UP days) of not paying electricity dues. GoUP had waived Rs. 550 crore dues relating to period till March 1997. Viewed district-wise, drinking water deprivation is highest in the urban

areas of Bageshwar and Chamoli districts; more than 25 per cent and 18 per cent of households respectively do not have drinking water source either within the house or nearer to the house. On the other hand Rudraprayag, Udham Singh Nagar and Haridwar districts have less than four per cent of total urban households deprived of drinking water.

As for sanitation facilities, the level of deprivation is even larger than for drinking water.

The range of this measure starts from 11 per cent in Tehri Garhwal district to about 33 per cent in Chamoli district. The present status of sewerage system in towns is also quite inadequate for a healthy and hygienic environment. Only 20 towns have partial sewerage system cover, which is also insufficient for the present population. Out of these towns only Haridwar and Rishikesh have sewage treatment plants, but they require further upgradation in the capacity and sewerage network extension to cope up with the increase in population and township area. Other towns also require upgradation and extension of the sewerage network supported by suitable sewage treatment plant.

15.2 Recommendations

'Show-case' Model

The state would do well to develop a few well-planned projects and deploy resources to bring about a critical difference to a select urban area. This could serve as a 'show-case' model for raising of resources for other projects and also for copying by other towns in the state. Our suggestion to select an SWM 'pilot project' for a medium town where it will make maximum impact may be recalled in this context. As urban reform could cause some initial dislocations and could also entail higher user charges, special measures need to be taken to secure public support. A specific suggestion is to co-opt the services of NGOs and CBOs who could play a useful role in bringing about improvements.

Strengthening the ULBs

This is a central part of the programme of upgrading urban infrastructure. Strengthening of ULBs is aimed at by reforming their financial management, improving the planning capacity of ULBs, reforming the maintenance of urban infrastructure, and outsourcing of certain jobs to the private sector. Besides this, implementation of double-entry accounting, adopting unit area method of property tax, computerisation of all property tax and

water charges database, billing and collection processes, formulating effective urban planning norms for the orderly growth of urban areas and minimising functional fragmentation in the urban areas are other areas to be addressed. Improvement in financial management of ULBs towards: (a) achieving better control over the present revenues and expenditures and, (b) realising the potential revenue from sources endogenous to ULBs. Financial viability is to be envisaged as the main objective of designing, implementing and maintaining new and existing projects. Tapping capital markets by ULBs either directly or through intermediaries is also envisaged.

Sources of Municipal Funds—Municipal Bonds

While several larger cities in the country have successfully tapped the market through Municipal Bonds, a more relevant model for Uttarakhand is the 'Pooled Financing Option' for small and medium towns on the lines of Karnataka, Tamil Nadu. This does not suggest that town-specific Municipal Bond issues are ruled out; as we observed, a town like Haridwar in particular, with assured stream of visitors is well-placed to tap this source as well.

Costing and Cost Effectiveness

Cost effectiveness can be improved by: (a) technological appropriateness, (b) proper attention to maintenance, (c) curbing misuse of services and efficient institutional arrangements for providing services. By packaging different infrastructure projects together, like water supply and drainage projects, cost

effectiveness can be promoted. Coordination between different departments providing different services will also reduce overall cost of provision.

Augmenting the Planning Capacity of ULBs

All of the above is contingent on upgrading the capacity of ULB personnel through imparting training and hiring of specialised skills. In order to achieve the goals envisaged in the State's Urban Vision, a strategy based on: (a) Strengthening of ULBs, (b) Devolution of finances, and (c) Private Sector Participation, was recommended.

Motivated Leadership

Motivated leadership is key to dramatic improvements of the type illustrated by the case of the 'Zero-garbage Town'. Here, the turnaround was brought about by a joint effort by the Municipal Chairman and Municipal Commissioner. Several other such successful initiatives in areas of waste management, tax collection and public transport, achieved through the determined leadership of elected as well as non-elected officials have been reported in the recent past from larger cities as well.

Capacity Building

The importance of this issue cannot be overstressed. This is an area that has been neglected all along, so the much ground remains to be covered. Expert specialist assistance should be obtained for this purpose and the financial supports envisaged in the central programmes should be tapped.



Introduction

The State Development Report of Uttarakhand has been prepared at the instance of the Planning Commission under the guidance of a steering committee constituted by the Commission. A number of subject specialists were engaged to develop the individual chapters, cutting across important economic and social sectors under the broad purview of the terms of reference. The Draft Report was presented in November 2006 and the final Report was presented in May 2008, before the officials of Uttarakhand government, the Planning Commission and other stakeholders in widely attended workshops held in Dehradun. The draft chapters were also sent to the state government departments for scrutiny and suggestions. The valuable comments and the suggestions of the participants of workshops and the state government officials have been incorporated appropriately.

The Report broadly covers the period of 1993-94 to 2005-06 and most recent data available up to November 2006 have been used. Recently, effective from September 2007, the Central Statistical Organisation (CSO) has introduced a new series of state domestic product data based on 1999-2000 prices for the period of 1999-2000 to 2005-06. In view of the difficulty in reworking the entire report based on the new series and the lack of compatibility between the two series, the latter has not been used in the analysis but simply appended to the overview-chapter. According to the new series, the overall growth of the economy is lower than the estimates obtained by using the 1993-94 series. This, however, does not impact the overall conclusions and the recommendations of the report. The advantage associated with the 1993-94 series is that it captures a longer period for analysis and projections.

The Report is organised into four broad sections and gives a macro as well as micro perspective of the sectors identified for this report. Further, it discusses in details

the policy initiatives of the state government and recommends certain strategies to overcome constraints to growth and overall development. Section A deals with overview, macroeconomic analysis of growth and development strategies and highlights the current status of state finances. Section B elaborates social sector issues and prospects for developing social infrastructure in the state. Chapters forming part of this section include those on poverty, health and education. Section C presents the performance and problems of basic economic sectors of agriculture, industry, handicrafts and tourism. And finally, Section D discusses the state of infrastructure and strategies required to overcome the challenges in development of information technology and telecommunication, power, roads, water resources and urban areas.

A summary of strategies and recommendations of all these sections is presented in the Executive Summary.

The basic framework for overall economic growth and macroeconomic development links to the following broad perspectives:

1. Structure of the economy and revealed advantages.
2. Investment and growth linkage.
3. Strengths, weakness, opportunities and threats (SWOT) analysis of the economy given its resources and endowments.

The macroeconomic analysis indicates that Uttarakhand remains a low-productivity agriculture dominated economy, constrained by landlocked terrain and regional divide between hills and plains. The state revealed comparative advantage in primary and secondary sectors with slackness in tertiary sector at the aggregate level. The state is experiencing fragmented land with small landholdings generating negligible or no surplus,

leading to constraints in the use of innovative methods. The situation is aggravated by poor industrialisation process at the village and town level. In the tertiary sector, Uttarakhand reveals clear advantage in community and social services, possibly due to high expenditure on account of public administration. But, it lacks in critical areas such as trade, hotel and restaurants, transport and communication. Growth has also been poorer in these sectors when compared to the national average.

The development programme, therefore, needs to focus on areas of rapid industrialisation and improvement in agriculture yield and prices, and provisioning of infrastructure. The key to address the problems lies in developing support system for fragmented land holdings, initiating high-end research in the field of biotechnology and dissemination of knowledge, ensuring better financial access to build up more investment-friendly climate, greater private-public partnerships, ensuring higher education and health facilities to retain and develop quality of human capital, and a shift from 'we will see' to 'lets do it' attitude in governance. The state has performed better than all-India averages in certain areas of health, education and infrastructure. This needs to be highlighted in good spirit to motivate and strengthen the

sense of competition with other states. The targets set by Uttarakhand for the Eleventh Five Year Plan involves heavy investment and demands active participation from the private sector. To achieve these goals, the entire government machinery including bureaucracy and leadership has to remain *ex-ante* and *ex-post* more investment-friendly in all the sectors of economy.

The state has made considerable progress in enacting its fiscal responsibility management legislation and setting up targets to improve its fiscal position. To promote the tourism industry and project Uttarakhand as a tourist destination, several initiatives like adventure tourism and eco-tourism have been undertaken. The state government has further recognised the importance of facilitation and promotion. Institutions like Udyog Mitra, State Industrial Development Corporation of Uttarakhand, District Industrial Centres have been set up. A Non-Resident Indian (NRI) and Non-Resident Uttarakhand (NRU) cell have also been formed in the state to foster investment and single window access.

However, it is just the beginning for the new state and there is enormous scope to make it more competitive than other Special Category States and its neighbouring states of Himachal Pradesh and Uttar Pradesh.



Chapter 1

Social and Economic Condition: An Overview

1. New State

Uttarakhand became the 27th State of India on November 9, 2000. It was carved out of the North Western hilly region of the erstwhile state of Uttar Pradesh. The state earlier named Uttaranchal is now known as Uttarakhand, which in Sanskrit means 'North Country'. Due to its geography and strategic location, the Union of India has given it special category status (SCS). Since its formation, the economic development of the state has taken a new turn, growing at one of the fastest rates. Uttarakhand is poised to bridge the gap in per capita income from the average of all India to become a part of the leading states in the country.

2. Geography

Uttarakhand borders China in the north-east and Nepal to the south-east, while its neighbouring states are Himachal Pradesh and Uttar Pradesh. Geographically, Uttarakhand is situated in the central Himalayan zone extending between 77° 34' and 81° 02' E longitude and 28° 43' to 31° 27' N latitude. The topography of Uttarakhand is characterised by hilly terrain, rugged and rocky mountains, deep valleys, high peaks, swift streams and rivulets, rapid soil erosion, frequent landslides and widely scattered habitation. The natural vegetation is mixed broad-level forest with oak and pine predominating. Climate varies from subtropical in the valleys to temperate on the higher slopes with a summer monsoon. The temperature ranges from 16°C to 40°C but it drops below freezing point in many parts of high mountain areas of the region during winter (Census 2001, Uttarakhand).

Uttarakhand is a region of outstanding natural beauty. The high Himalayan ranges and glaciers form most of the northern parts of the state while the lower reaches are densely forested. The unique Himalayan ecosystem plays

host to a large number of animals (including *bharal*, snow leopards, leopards and tigers), plants and rare herbs. Two of India's mightiest rivers, the Ganga and the Yamuna take birth in the glaciers of Uttarakhand, and are fed by myriad lakes, glacial melts and streams in the region.

3. Administrative Divisions

Uttarakhand has traditionally been divided into two parts, the western half known as Garhwal Mandal and the eastern region going by the name of Kumaon Mandal. The state comprises of 13 districts namely, Almora, Bageshwar, Chamoli, Champawat, Dehradun, Haridwar, Nainital, Pauri Garhwal, Pithoragarh, Rudraprayag, Tehri Garhwal, Udham Singh Nagar and Uttarkashi. There are 78 *tehsils* in the state and 95 developmental blocks (Table 1.1). The state has a total of 16,826 villages, of which 15,761 are inhabited including forest settlements as per the 2001 census. The provisional capital of Uttarakhand is Dehradun, which is also a railhead and the largest city in the region. The small hamlet of Gairsen has been mooted as a future capital owing to its geographic centrality. The High Court of Uttarakhand is situated in the district of Nainital.

4. Area, Land Use and Habitation Pattern

Uttarakhand is a small state, spread over an area of 53,483 sq kms, which makes it the 18th largest in India in terms of area but it has highly diversified topography and hence land use pattern. Within Uttarakhand, Uttarkashi and Chamoli have approximately the same area. Uttarkashi is spread over an area of 8016 sq km accounting for 15.0 per cent of the total area of Uttarakhand and Chamoli has an area of 7520 sq km accounting for 14.1 of the total area. Pithoragarh follows this with an area of 7217 sq km. The smallest district in the state is Bageshwar with an area of 1688 sq km (Figure 1.1). About 62.3 per cent of the reported area of

TABLE 1.1
Number of Tehsils, Development Blocks, Village Panchayats and Towns in Districts of Uttarakhand

| S.No. | District | Tehsils Blocks | Development Villages* | Habitable Forest Settlements | Inhabited | Towns* Panchayat | Nyay Panchayat | Village |
|-------|---------------|----------------|-----------------------|------------------------------|------------|------------------|----------------|-------------|
| 1 | Uttarkashi | 6 | 6 | 682 | 17 | 3 | 36 | 427 |
| 2 | Chamoli | 6 | 9 | 1166 | 12 | 6 | 39 | 552 |
| 3 | Tehri Garhwal | 7 | 9 | 1801 | 11 | 6 | 76 | 928 |
| 4 | Dehradun | 6 | 6 | 738 | 20 | 14 | 40 | 370 |
| 5 | Pauri Garhwal | 9 | 15 | 3151 | 14 | 7 | 118 | 1165 |
| 6 | Rudraprayag | 3 | 3 | 658 | | 2 | 27 | 318 |
| 7 | Haridwar | 3 | 6 | 510 | 5 | 10 | 46 | 302 |
| 8 | Pithoragarh | 6 | 8 | 1579 | 13 | 4 | 64 | 644 |
| 9 | Almora | 9 | 11 | 2172 | 24 | 4 | 95 | 1122 |
| 10 | Nainital | 8 | 8 | 1091 | 26 | 8 | 44 | 450 |
| 11 | U.S. Nagar | 7 | 7 | 674 | 16 | 17 | 27 | 303 |
| 12 | Bageshwar | 4 | 3 | 883 | 2 | 1 | 35 | 363 |
| 13 | Champawat | 4 | 4 | 656 | 5 | 4 | 23 | 283 |
| | Total | 78 | 95 | 15761 | 165 | 86 | 670 | 7227 |

Note: * The Data is for 2001.

Source: Statistical Diary, Uttarakhand 2002-03.

Uttarakhand is covered with forest, while net shown area is just about 14.2 per cent.

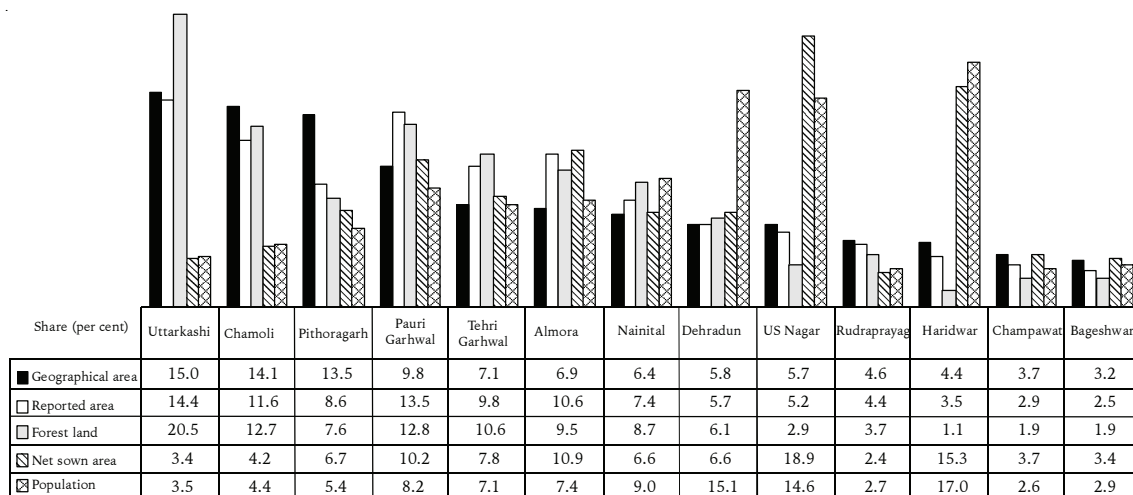
Nearly half of the population reside in three districts of Haridwar, Udham Singh Nagar and Dehradun. About 34 per cent of the agriculture land is concentrated in Haridwar and Udham Singh Nagar and 21 per cent in Almora and Pauri Garhwal. However, the distribution of

population and the distribution of net shown area in the state are evenly balanced across districts except Dehradun, where population share is almost 2.5 times of the net shown area.

Forest and Forest Settlements

Uttarakhand is very rich in forest. It has 35,392 sq km of forest area as of 2002. However, nearly 55 per cent of

FIGURE 1.1
Distribution of Total Land Area, Forest Area, Net Sown Area and Population of Uttarakhand



Source: Sankhikiya Diary 2004, Uttarakhand Government, and District Statistical Handbooks (2002).

the forestland is concentrated in Uttarkashi, Chamoli, Pauri Garhwal and Tehri Garhwal (Figure 1.1).

There are 165 forest settlements in forestland. Out of these, 70 villages are located in Almora (24), Nainital (26), and Dehradun (20). Other districts that have such unreported villages include Uttarkashi (17), Udham Singh Nagar (16), Pauri Garhwal (14), Pithoragarh (13), Chamoli (12), and Tehri Garhwal (11), Haridwar and Champawat (5 each), and Bageshwar (2). However, 60 per cent of population in such villages exist in Nainital and another 28 per cent in Udham Singh Nagar and Haridwar. Thus forest in areas such as Nainital, Udham Singh Nagar and Haridwar are highly stressed and face threat of degradation. The average population of forest villages in Nainital, Haridwar and Udham Singh Nagar are 2913, 2166 and 1471 persons, respectively. At the other extreme, number of people residing in two villages of Bageshwar is just 13. In Pithoragarh, there are 13 villages with total population of 67, which approximately means one family per forest village. Most interestingly, male-female ratio in forest villages of hilly districts of Uttarkashi, Chamoli, Pithoragarh, Almora, Bageshwar and Champawat, is just about 530 per thousand female (total population being 3581), whereas this ratio for all forest villages is 835 and for the state as a whole the sex ratio is 963.

5. Population

Uttarakhand is the 19th most populous state in India. The total population of Uttarakhand according to the

2001 Census was 8.48 million, of which male population is 4.32 and the rest 4.16 million is female population. Around 38 per cent of the population of Uttarakhand are in the active age group of 20-50 years. Approximately 13 per cent of the people are in the 10-14 and 15-19 age groups.

During the intermittent period of 1991-2001, the state has recorded a decadal growth rate of 19 per cent and an average annual growth rate of 1.78 per cent as against all India population growth rate of 1.97 per cent during the same time. The share of Uttarakhand in the total population as of Census 2001 was 0.85 per cent, while Uttar Pradesh remained the most populous state even after division with a share of 16 per cent of the total population. Himachal Pradesh, which is a neighbouring state of Uttarakhand and similar to its terrain, has a share of 0.61 per cent of the total population (Table 1.2).

The population density of the state is 159 persons per sq km as compared to the all India population density of 325 persons per sq km.

Uttarakhand has achieved a moderate urbanisation of about 26 per cent, which is two percentage points below all-India average level of urbanisation. However, it compares better than 10 per cent urbanisation in neighbouring Himachal Pradesh. Thus, a majority population of 6.31 million still lives in rural areas. Uttarakhand has a population density of 2735 persons per sq km in urban areas and 120 persons per sq km in the rural areas, which is higher than that of Himachal Pradesh

TABLE 1.2

Population Share, Growth and Density across Selected States and Uttarakhand

| State | Total Population (Crore) | Share in Total Population | Annual Growth Rate (1991-2001) of India | Working Age Population | Sex Ratio (Female per 1000 Male) | Urban Population (Per cent) | Population Density (Person per sq km) | | |
|------------------|--------------------------|---------------------------|-----------------------------------------|------------------------|----------------------------------|-----------------------------|---------------------------------------|-------|-------|
| | | | | | | | Rural | Urban | Total |
| Bihar | 8.30 | 8.34 | -0.40 | | 919 | 10.46 | 805 | 4824 | 881 |
| Chhattisgarh | 2.08 | 2.09 | 1.69 | | 989 | 20.09 | 125 | 2243 | 154 |
| Himachal Pradesh | 0.61 | 0.61 | -9.48 | | 968 | 9.80 | 99 | 2464 | 109 |
| Jharkhand | 2.69 | 2.71 | 2.12 | | 941 | 22.24 | 269 | 3344 | 338 |
| Karnataka | 5.29 | 5.31 | 6.15 | | 965 | 33.99 | 187 | 3475 | 276 |
| Kerala | 3.18 | 3.20 | -3.39 | | 1058 | 25.96 | 662 | 2542 | 819 |
| Madhya Pradesh | 6.03 | 6.07 | -0.92 | | 919 | 26.46 | 147 | 2294 | 196 |
| Maharashtra | 9.69 | 9.74 | 2.07 | | 922 | 42.43 | 186 | 5588 | 315 |
| Nagaland | 1.99 | 0.20 | 5.11 | | 900 | 17.23 | 100 | 2328 | 120 |
| Uttar Pradesh | 16.62 | 16.71 | 1.79 | | 989 | 20.78 | 562 | 5267 | 690 |
| Uttarakhand | 0.85 | 0.85 | 1.78 | 38 | 962 | 25.67 | 120 | 2735 | 159 |
| All India | 102.9 | 100 | 1.97 | | 933 | 27.81 | 248 | 3666 | 325 |

Source: Census 2001.

but much below all-India average population density in rural and urban areas (Table 1.2).

Within Uttarakhand, the population is distributed as follows (also see Table 1.3 and Figure 1.2):

- Almost half of the population is concentrated in Haridwar (17 per cent), Dehradun (15.1 per cent) and Udham Singh Nagar (14.6 per cent).
- Champawat, Rudraprayag and Bageshwar are the least populated districts of Uttarakhand constituting just about eight per cent of population.
- Rudraprayag, Bageshwar and Uttarkashi constituting about 9 per cent of total population are the least urbanised districts and devoid of market support, while Haridwar, Nainital and Udham Singh Nagar are highly urbanised districts.
- Haridwar is the most densely populated district with 613 persons per square km and the lowest is of Uttarkashi at 37 persons per sq km. Chamoli and Pithoragarh are other thinly populated districts.
- Most adverse and rather alarming sex ratio is observed in urban Rudraprayag and rural Haridwar. The sex ratio is too favourable in rural Pauri Garhwal, Rudraprayag, Almora and Bageshwar. At the state level the rural sex ratio is far better than urban areas.

Urbanisation and Population Movement

During the intermittent period of 1991 and 2001, huge movements in population is observed through the growth pattern of urban and rural areas of different districts. Rural population in the less urbanised areas such as Almora, Pauri Garhwal, Pithoragarh, Tehri Garhwal and Rudraprayag appear to move towards urban areas of their own districts or urban areas of Dehradun, Nainital, US Nagar, Haridwar or even to the rural areas of US Nagar and Haridwar as agriculture labourers. Nainital, Pithoragarh, Tehri Garhwal and Rudraprayag are the fastest growing urban centres.

Population Living in Slum

There is an alarming built up in slum population across major cities of Uttarakhand. In fact, 19 per cent of city population in Uttarakhand lived in slum during 2001 Census as compared to 15 per cent slum population in India, and no slum was reported in Himachal Pradesh. In Rudrapur city of Udham Singh Nagar, almost 60 per cent population lives in slum. The other cities reported to have slums include Dehradun, Kashipur, Roorkee, Haldwani and Haridwar. The sex ratio in Uttarakhand slums is 881 as compared to 841 in non-slum urban population. The corresponding figures in respect of India are 876 and 905. It appears that migration to slum areas in Uttarakhand is generally family migration.

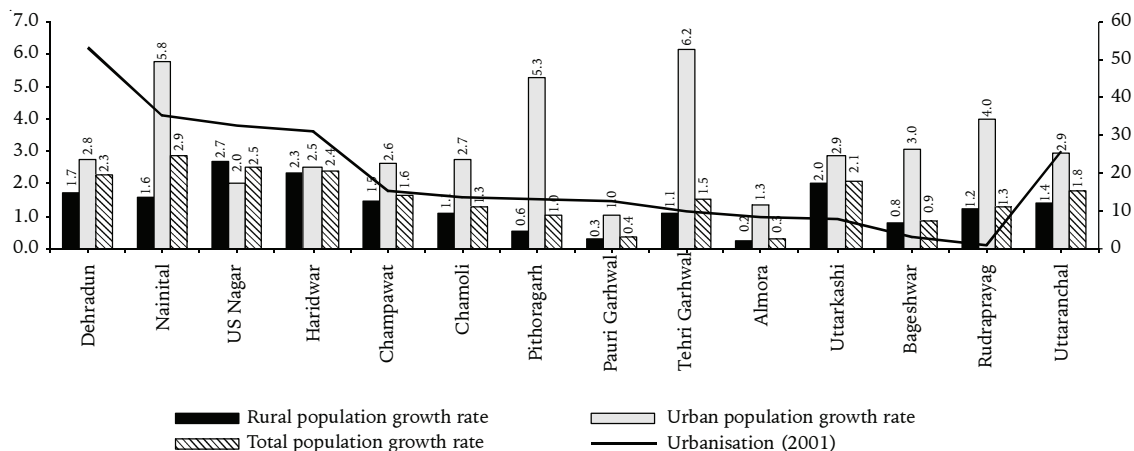
TABLE 1.3
Demographic Statistics of Uttarakhand (2001)

| | Total Population (lakh) | Share | Pop. Density (per sq.km) | Sex Ratio | | | Urban Population (Per cent) |
|---------------|-------------------------|-------|--------------------------|-----------|-------|-------|-----------------------------|
| | | | | Rural | Urban | Total | |
| Uttarkashi | 2.95 | 3.5 | 37 | 961 | 726 | 941 | 8 |
| Chamoli | 3.70 | 4.4 | 49 | 1073 | 716 | 1016 | 14 |
| Tehri Garhwal | 6.05 | 7.1 | 159 | 1109 | 628 | 1049 | 10 |
| Dehradun | 12.82 | 15.1 | 415 | 914 | 863 | 887 | 53 |
| Pauri Garhwal | 6.97 | 8.2 | 133 | 1155 | 821 | 1106 | 13 |
| Rudraprayag | 2.27 | 2.7 | 93 | 1127 | 444 | 1115 | 1 |
| Haridwar | 14.47 | 17.0 | 613 | 874 | 844 | 865 | 31 |
| Pithoragarh | 4.62 | 5.4 | 64 | 1066 | 824 | 1031 | 13 |
| Almora | 6.31 | 7.4 | 171 | 1189 | 774 | 1146 | 9 |
| Nainital | 7.63 | 9.0 | 223 | 922 | 878 | 906 | 35 |
| U.S. Nagar | 12.36 | 14.6 | 404 | 916 | 876 | 902 | 33 |
| Bageshwar | 2.49 | 2.9 | 148 | 1116 | 810 | 1105 | 3 |
| Champawat | 2.25 | 2.6 | 115 | 1055 | 849 | 1021 | 15 |
| Total | 84.89 | 100.0 | 159 | 1007 | 845 | 962 | 26 |

Source: (basic data) Census 2001.

FIGURE 1.2

Rural and Urban Population Growth during 1991-2001 and Level of Urbanisation as of 2001 across Districts



Source: (basic data) Census 2001.

Religion and Caste Composition

Almost 85 per cent people in the state follow Hindu religion including 17.9 per cent scheduled castes and 3.02 per cent scheduled tribes. Share of people having faith in Islam is about 12 per cent. The rest of the population (3 per cent) consists of Christians, Sikhs, Buddhists, Jains and others. This distribution is similar to that at the all India level where 80 per cent people are Hindus followed by 13 per cent Muslims and the remaining seven per cent amongst the other religions (Table 1.4). More disaggregated distribution in Uttarakhand is as follows:

- About 40 per cent of the hindus are concentrated in Dehradun, Haridwar and Udham Singh Nagar.
- Interestingly, 47 per cent of the muslim population of Uttarakhand live in Haridwar, and 25 per cent in Udham Singh Nagar.

- While scheduled caste population is evenly distributed, 81 per cent of the scheduled tribe population live in Udham Singh Nagar and Dehradun (Table 1.3).

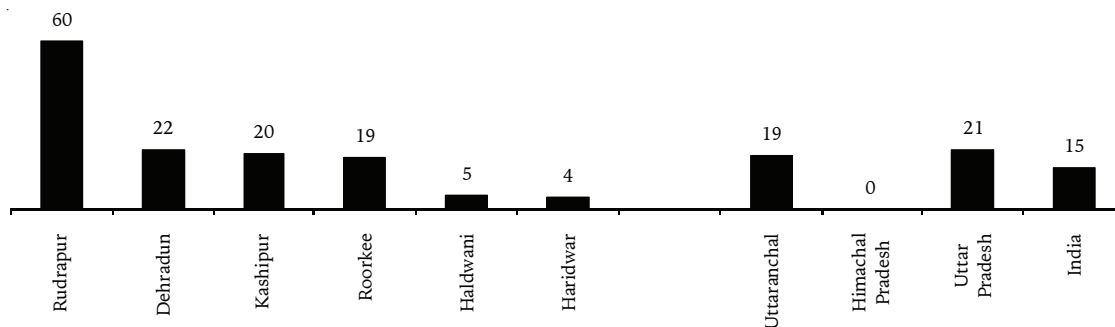
6. Social Indicators

6.1 Education

The literacy rate in Uttarakhand is 72 per cent (Census 2001), which is much better than the all India level of literacy rate. Yet, it ranks 14th in the total literacy rate. Female literacy is 60 per cent and it ranks 15th among all the states in India. These figures are much better than the figures for Uttar Pradesh from which the state was formed (Figure 1.4). However, the neighbouring state of Himachal Pradesh has better figures for the literacy rate at 77 per cent for the entire population, 86 per cent for

FIGURE 1.3

Share of City Population Living in Slum across Districts of Uttarakhand and in Selected States



Source: (basic data) Census 2001.

TABLE 1.4
Population Distribution by Religion and Caste (Per cent)

| | Hindu | | | Muslim | Christian | Sikh | Buddhist | Jain | Others | Total Population (lakh) |
|------------------|-------|-------|------|--------|-----------|------|----------|------|--------|-------------------------|
| | Total | SC | ST | | | | | | | |
| Uttarakhand | 84.96 | 17.87 | 3.02 | 11.92 | 0.32 | 2.5 | 0.15 | 0.11 | 0.05 | 85 |
| Uttar Pradesh | 80.61 | 21.15 | 0.06 | 18.5 | 0.13 | 0.41 | 0.18 | 0.12 | 0.01 | 1662 |
| Himachal Pradesh | 95.43 | 24.72 | 4.02 | 1.97 | 0.13 | 1.19 | 1.25 | 0.02 | 0.01 | 61 |
| All India | 80.45 | 16.2 | 8.2 | 13.43 | 2.34 | 1.87 | 0.77 | 0.41 | 0.65 | 10287 |

Source: Sankhikiya Diary 2004, Uttarakhand Government.

TABLE 1.5
Distribution of Population with Different Religion and Caste across Districts (Per cent)

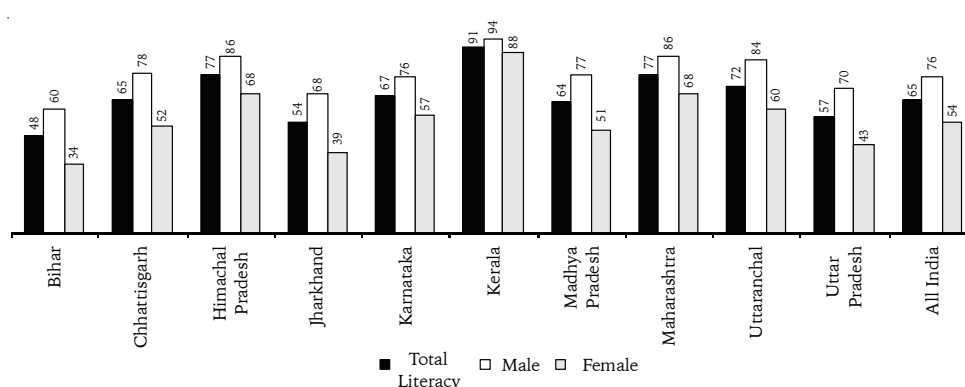
| S. No. | Districts | Total | Hindu | SC | ST | Muslim | Christian | Sikh | Buddhist | Jain | Others |
|--------|---------------|-------|-------|------|------|--------|-----------|------|----------|------|--------|
| 1 | Uttarkashi | 3.5 | 4.0 | 4.5 | 1.1 | 0.3 | 0.9 | 0.1 | 10.0 | 1.7 | 2.1 |
| 2 | Chamoli | 4.4 | 5.1 | 4.5 | 4.1 | 0.4 | 0.9 | 0.2 | 1.4 | 0.3 | 8.8 |
| 3 | Tehri Garhwal | 7.1 | 8.3 | 5.8 | 0.3 | 0.6 | 2.0 | 0.3 | 0.6 | 1.6 | 6.7 |
| 4 | Dehradun | 15.1 | 15.1 | 11.4 | 38.8 | 13.8 | 38.1 | 15.7 | 60.3 | 54.3 | 15.4 |
| 5 | Pauri Garhwal | 8.2 | 9.3 | 7.0 | 0.6 | 2.0 | 7.1 | 0.4 | 0.8 | 2.9 | 6.9 |
| 6 | Rudraprayag | 2.7 | 3.1 | 2.7 | 0.1 | 0.1 | 0.2 | 0.0 | 0.3 | 0.1 | 2.7 |
| 7 | Haridwar | 17.1 | 13.1 | 20.7 | 1.2 | 47.3 | 11.2 | 8.2 | 5.4 | 26.5 | 11.8 |
| 8 | Pithoragarh | 5.5 | 6.3 | 7.0 | 7.5 | 0.4 | 4.5 | 0.2 | 1.7 | 0.2 | 2.6 |
| 9 | Almora | 7.4 | 8.6 | 9.3 | 0.3 | 0.7 | 3.5 | 0.2 | 1.5 | 0.4 | 10.0 |
| 10 | Nainital | 9.0 | 9.1 | 9.8 | 1.9 | 8.6 | 13.8 | 7.6 | 4.8 | 3.6 | 7.7 |
| 11 | U.S. Nagar | 14.6 | 11.6 | 10.7 | 43.0 | 25.1 | 14.3 | 66.7 | 11.6 | 8.2 | 20.7 |
| 12 | Bageshwar | 2.9 | 3.4 | 4.3 | 0.8 | 0.1 | 1.3 | 0.1 | 1.3 | 0.1 | 3.2 |
| 13 | Champawat | 2.6 | 3.0 | 2.5 | 0.3 | 0.7 | 2.3 | 0.2 | 0.6 | 0.2 | 1.5 |
| 14 | Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Source: Statistical Diary, Uttarakhand 2002-03.

males and 66 per cent for females. The literacy rate in Uttarakhand has improved significantly from 19 per cent in 1951 to 72 per cent in 2001. The literacy rate for males has gone up from 32 per cent in 1951 to 84 per cent in 2001 and for females it has increased from 5 per cent in 1951 to 60 per cent in 2001.

Within Uttarakhand, Dehradun has the highest literacy rate for the total population. The literacy rates for males and females are 86 and 71 per cent, respectively. Male literacy is highest in Pauri Garhwal at 91 per cent. Haridwar has the lowest literacy rates for the population

FIGURE 1.4
Literacy Rate across Selected States (Per cent)



Source: (Basic data) Census 2001.

as a whole as well as for females at 64 and 52 per cent respectively.

Differences in literacy rates across districts are mainly a reflection of differences in the availability of infrastructure across regions. The number of basic and secondary educational institutions have increased by 600 from 2002-03 to 2003-04. However, the number of junior basic schools per lakh population was 437.6 for Dehradun, which was the highest for all the districts in Uttarakhand. Haridwar had only 105.6 junior basic schools per lakh population in 2001-02. The same trend holds true for the senior basic schools with Dehradun having the highest and Haridwar the lowest. Rudraprayag had the highest number of higher secondary schools per lakh population at 42.3 and here again, Haridwar had the lowest value at only 5 schools per lakh population.

Centres for Higher Learning

Uttarakhand is home to a number of well-known technical educational institutes. The most important among them is IIT Roorkee. Other important institutes of higher learning include GB Pant Engineering College, Pauri and Kumaon Engineering College, Dwarahat under the government and Dehradun Institute of Technology, Dehradun, Birla Institute of Applied Science, Nainital, College of Engineering, Roorkee and Graphic Era Institute of Technology, Dehradun under the private sector and other 16 engineering colleges under the government and the private sectors.

6.2 Health

The crude birth rate, death rate and IMR for Uttarakhand in 2002 were 17, 6.4 and 41, respectively, per thousand live births. This is a much better achievement as

compared to all India average and neighbouring Uttar Pradesh, Himachal Pradesh (Figure 1.6).

There is wide discrepancy in health infrastructure across districts of Uttarakhand.

As of 2003-04, a total of 229 primary health centres, 36 community health centres and 325 state allopathic hospitals are available in Uttarakhand. Apart from these, district level hospitals, health posts, women hospitals, tuberculosis hospitals are available under the allopathic hospitals and dispensaries. The number of beds available in government hospitals was 7123 in 2003-04. Table 1.14 gives the number of hospitals in Uttarakhand.

However, Nainital had the highest number of beds in PHCs and allopathic/dispensaries per lakh population in 2001-02 at 213 beds. Haridwar had the lowest number of beds at only 21 beds per lakh population. Dehradun is the only other district which had number of beds above 100 per lakh population. The rest of the districts had less than 100 beds per lakh population which shows the scope for improvement with regards to health in the state. The number of allopathic/dispensaries per lakh population in 2001-02 were 18.8 for Nainital and only 2.8 per lakh population for Haridwar. The number of PHCs was at a miserable level with the highest being 5 PHCs for a lakh of population in Pauri Garhwal and 2.4 in Champawat.

7. Physical and Financial Infrastructure

There are several issues related to infrastructure development in Uttarakhand. These include connectivity in civil aviation, power, surface transport, communication and finance. One of the possible reasons for faster growth of Gurgaon compared to Noida is the proximity of Gurgaon to Indira Gandhi International Airport. However,

FIGURE 1.5

Literacy Rates across Districts of Uttarakhand (Per cent)

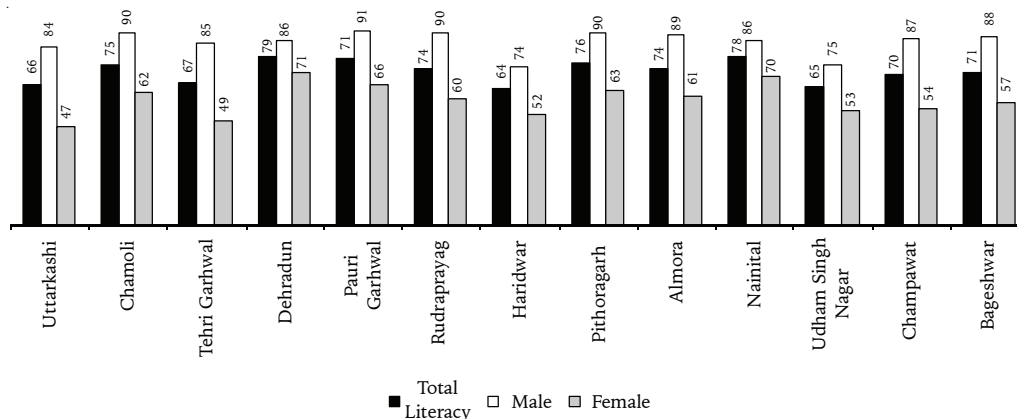
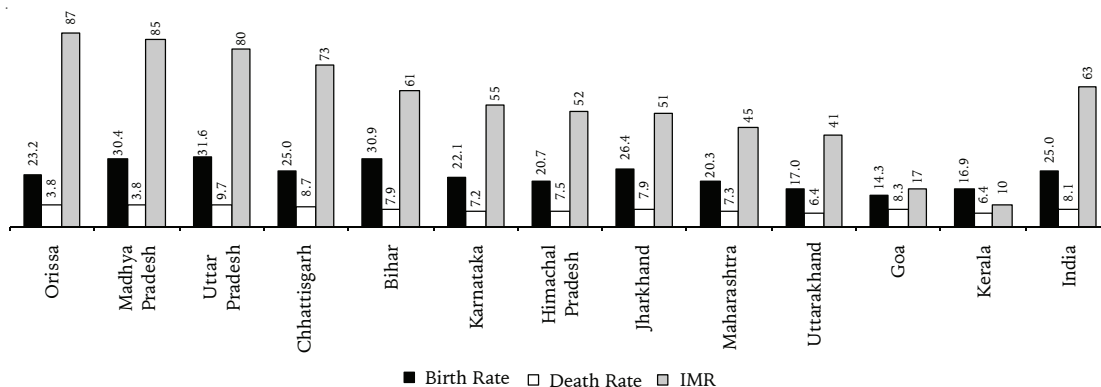


FIGURE 1.6

Birth Rate, Death Rate and IMR for Selected States in India
(Per thousand Live Births)



Source: (basic data) *Statistical Diary 2004*, Uttarakhand.

any plan for an international airport requires adequate traffic. In this context, international airports at Haridwar and Pantnagar can be feasible propositions with increasing inflow of tourists and business travels.

7.1 Access to Power

Power consumption in the state is about 824 kWh per person per year, which is far above the all India average of 592 kWh (Figure 1.7), and that of Uttar Pradesh 300 kWh, and Himachal Pradesh 794 kWh. Among all the special category status (SCS) states, Uttarakhand has the lowest percentage of villages electrified (82 per cent); yet it has highest per capita power consumption. In addition, the household access to power is just about 60.2 per cent just about the national average of 56 per cent. Clearly, the power position in Uttarakhand is better than several other states but it is no way comparable with the performance

of best states given the availability of natural resources for generating power, particularly hydro-power.

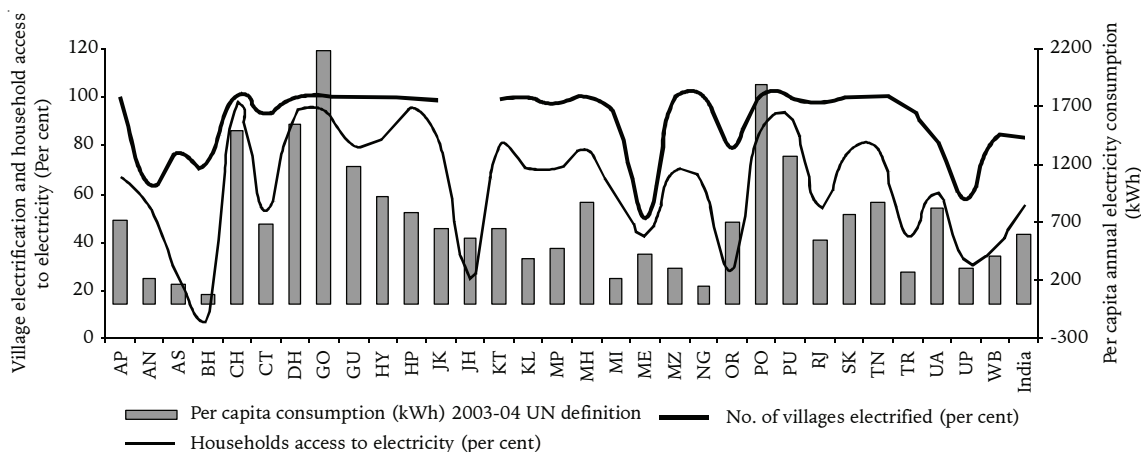
Considering the regional status, all the villages in Dehradun and Udham Singh Nagar were fully electrified in 2001-02. Champawat was the only district where a lot still has to be done to electrify all the villages. The percentage of villages electrified in Champawat to the populated villages was the least at 66 per cent. However, in 10 out of 13 districts, more than 50 per cent of the population was without access to power (Figure 1.8). Even in districts with 100 per cent electrification, the rate of access was less than 70 per cent.

7.2 Access to Surfaced Roads

Uttarakhand being a hilly state, the need for surfaced (all weather) road cannot be overemphasised. Taking into account the risk to life in the remote areas, scattered population need to be connected with equal emphasis

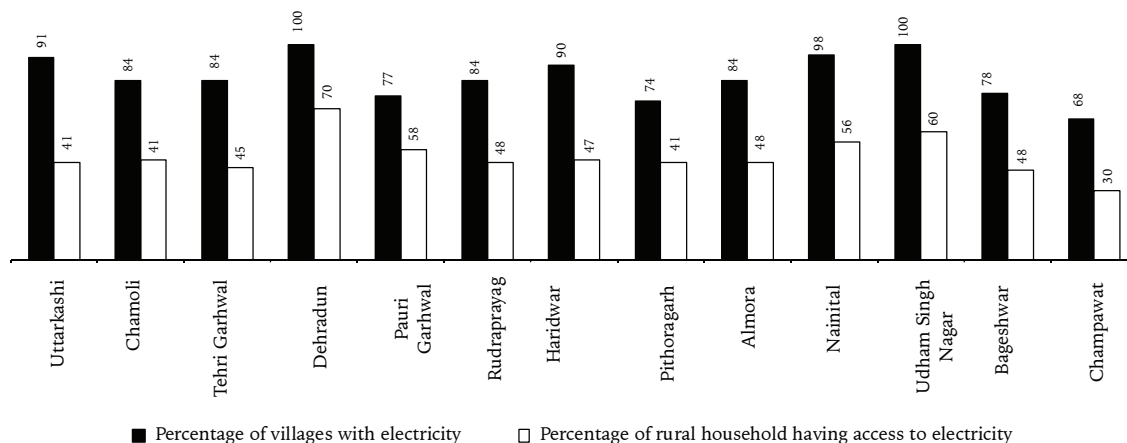
FIGURE 1.7

Consumption, Connectivity and Access to Electricity in Uttarakhand and Selected States



Source: (basic data) CEA (2004) and Census 2001.

FIGURE 1.8
Village Electrification and Access to Electricity across Districts of Uttarakhand



Source: Statistical Diary 2004, Census 2001.

irrespective of size of the villages or towns. Compared to other hill or/and border states, of Himachal Pradesh, Mizoram, Nagaland, the access to surfaced road in Uttarakhand is still much less (Figure 1.9). In fact, almost 40 per cent of the villages in Uttarakhand have no access to road and the population living there relies on trekking for all livelihood needs.

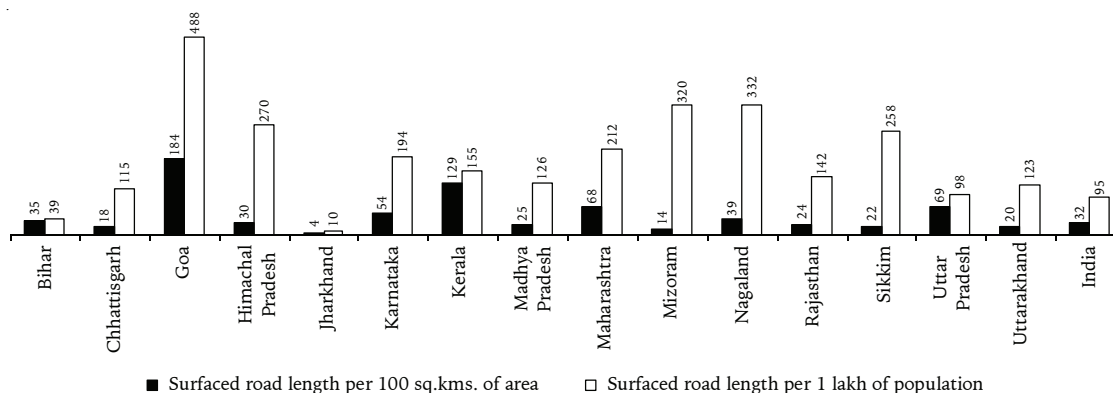
The total surfaced road length of Uttarakhand as of 2001-02 was 10,730 km and the total road length was 33,547 km. The surfaced road length per 100 sq km of area was 62.82 km and the road length per lakh population was 385.60 km. These values at the all India level stand at 77.58 kms and 233.86 km respectively. However, the surfaced road length is estimated to have increased from 10,730 km in 2001-02 to 12,579 km in 2003-04.

Across Uttarakhand, Nainital was much ahead of the other districts with 761.6 kms of surfaced (*pucca*) road length per lakh population and Haridwar had the least value at 146.7 kms in 2000-01. Pithoragarh had the lowest surfaced road length per 1000 sq kms at 58 kms.

7.3 Access to Water Resource

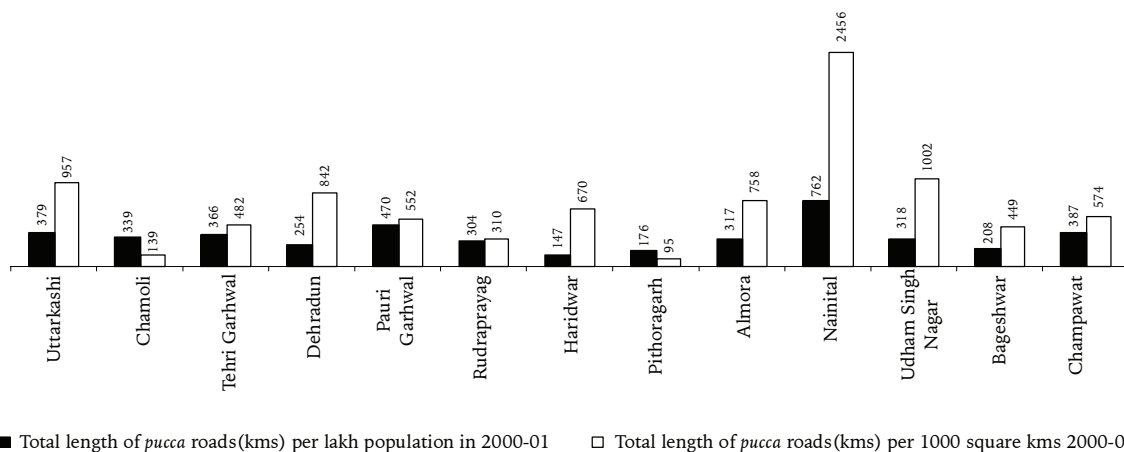
In spite of it being the rising ground of the Yamuna and Ganga, the people of this state have to deal with the problem of inadequate drinking water. In the villages, the sources of natural water are fast drying up. While the state government is introducing modern techniques to solve the problem of drinking water, it has to rejuvenate the traditional old methods of water harvesting to provide drinking water to the people. The geographic hardships of the state have given rise to various traditional methods of

FIGURE 1.9
Surfaced Road Intensity across Selected States



Source: (basic data) Basic Road Statistics, Transport Research Wing, 2001-02.

FIGURE 1.10
Access to Surfaced Road across Districts of Uttarakhand



Source: Statistical Diary 2004.

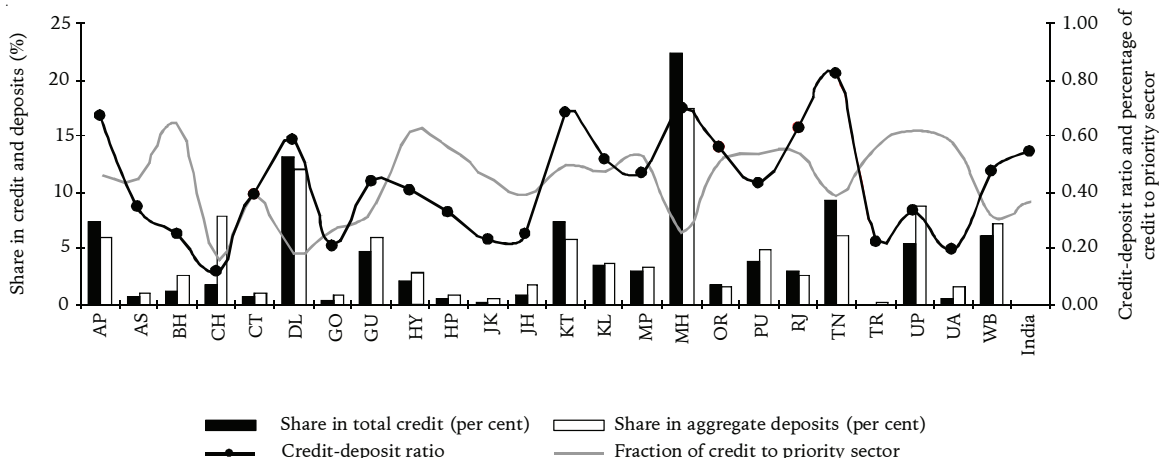
water conservation, prime examples of which are the *nauley*, *dharey*, *chal* and *khal*, which are now being restored to solve the water crisis.

7.4 Banking Facility

The operations of scheduled commercial banks in the state are an indicator of its financial development. Uttarakhand had 7.71 public sector commercial banks per 100,000 persons as against a national average of 4.51 public sector commercial banks during 2004 (*Economic Survey 2004-05*). This is one of the highest concentrations of banks. However, the credit to deposit ratio for the state

is one of the poorest at 0.19 as against a national average of 0.54. Total deposits formed about 1.49 per cent of all-India commercial bank deposits, while credit was 0.53 per cent (Figure 1.11). Importantly, almost 57 per cent of the credit in Uttarakhand goes to priority sector, while in the progressive states such as Maharashtra, Gujarat, lending to the priority sector constitutes about 26 and 34 per cent share. This is not surprising given the low level characteristics of industrialisation in Uttarakhand. With changing definition of priority sector such as increases in housing loan limit, aggregate credit off-take in Uttarakhand may further get marginalised. The problem can be presented in a different way as follows: At present

FIGURE 1.11
Consumption, Connectivity and Access to Electricity in Uttarakhand and Selected States



Source: (basic data) *Economic Survey, 2004-05*. Data pertains to public sector banks including State Bank of India and its 7 subsidiaries, and 19 nationalised banks.

banks use states such as Uttarakhand and UP to fulfil their priority sector obligations. The moment such restrictions are lifted or relaxed, there is fair possibility of diverting their business to other states.

8. Economic Status

8.1 Income¹ and Poverty: Bridging the Gap

The per capita real GSDP (at 1993-94) of Uttarakhand during 2002-03 was INR 10,207 as against the highest per capita income obtained by Goa at INR 33,168, Chandigarh INR 32,232 and Delhi INR 30,183. However, during the recent years, Uttarakhand has accelerated the pace growth which has helped it in closing the gap with the national average (Figure 1.12).

Incidence of poverty demonstrates negative relationship with the per capita real income across states (Figure 1.13). However, despite relatively better per capita income during 2004-05, the incidence of poverty in Uttarakhand is much higher compared to Uttar Pradesh, while Himachal Pradesh has much lower poverty ratio with just about 40 per cent higher per capita income (Table 1.6 and Figure 1.13). Accordingly, Uttarakhand finds its place in the scatter plot above the trend line. It may be noted that points below the trend line in Figure 1.13 indicate more equitable income distribution compared to the points above trend line for the same level

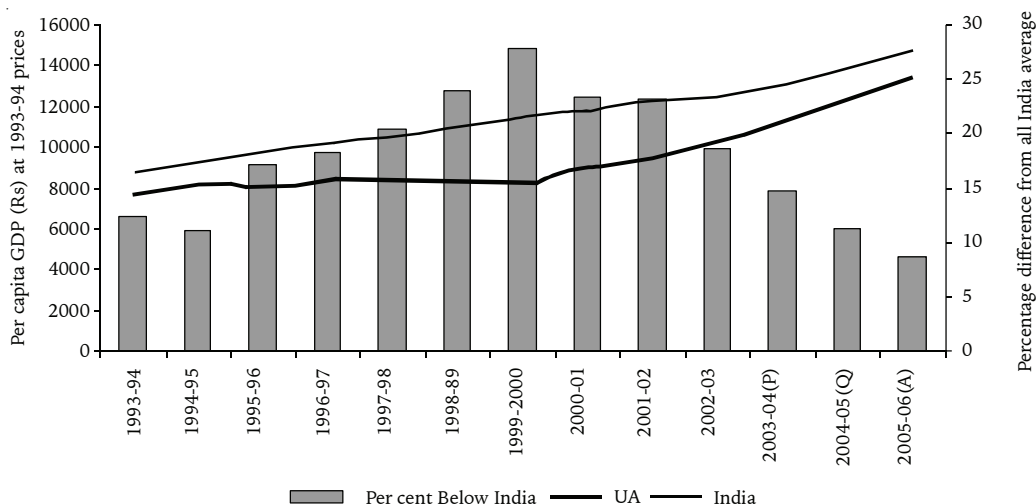
of income. Thus, it can be argued that Uttarakhand is the worst state compared to several other states with similar per capita income in terms of equity.

8.2 Structure of Economy and Contribution to National GDP

Uttarakhand is a fast growing state with most of the growth taking place in industrial sector and the services sector. During 2002-03 for which comparable figures are available for most states, the secondary and tertiary sectors contributed 27 per cent and 42 per cent to GSDP, while primary sector contributed 31 per cent. This structure was comparable to the agriculture dominant states. However, from 2003-04 the structure started changing quickly. During 2003-04, the gross state domestic product of Uttarakhand was INR 98,992 lakh at 1993-94 prices. The share of the primary sector in the total GSDP was 30.79 per cent (INR 3,08,827 lakh), the share of the secondary sector was 25.94 per cent (INR 2,56,815 lakh) and that of the tertiary sector was 43.27 per cent (INR 4,28,353 lakh). Within the main sub-sectors, agriculture accounted for the most among the individual sectors. The share of agriculture in the total state GSDP was 27.21 per cent. Manufacturing had a share at 10.2 per cent. However, the advance estimate of 2005-06 indicates the share of primary sector to slip to 26.02 per cent, while shares of secondary and tertiary sectors have increased to 29.27 and 44.01 per cent

FIGURE 1.12

Gap between Per Capita Real Income of Uttarakhand and All India Average

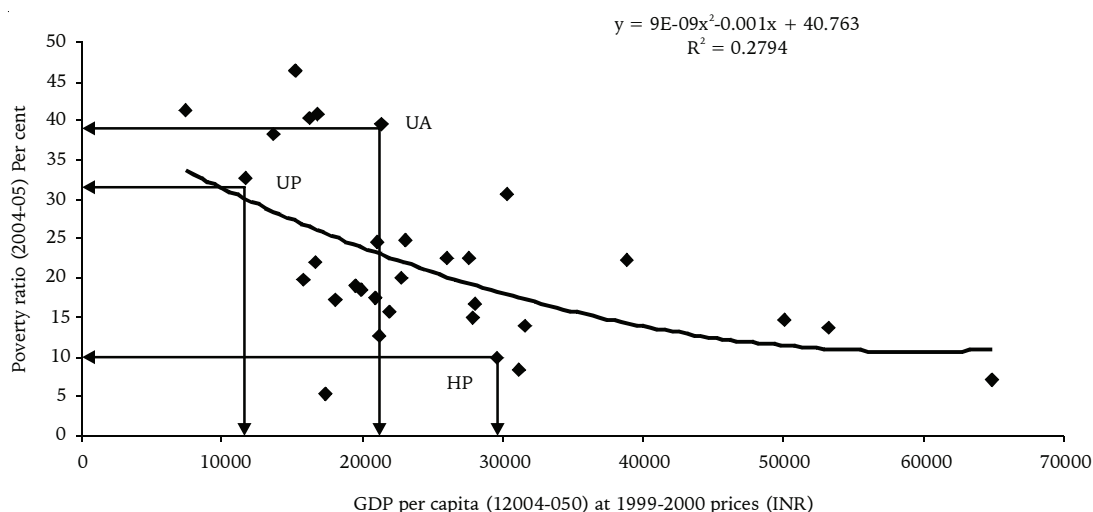


Source: (basic data) CSO.

1. The Report broadly covers the period of 1993-94 to 2005-06 and most recent data available up to November 2006 have been used. Recently, effective September 2007, the Central Statistical Organisation (CSO) has introduced new series of state domestic product data based on 1999-2000 prices for the period of 1999-2000 to 2005-06. According to the new series, the overall growth of the economy is lower than the estimates obtained by using 1993-94 series.

FIGURE 1.13

Scatter Plot between Real Per Capita Real GSDP (2004-05) and Poverty Ratio (PVR) (2004-05)



Source: Poverty Estimates for 2004-05, GoI.

TABLE 1.6

PVR (2004-05), Relative GSDP (at 1993-94 Prices) Per Capita and Share of Selected States in National GSDP across Sectors (2004-05)

| States | | PVR (2004-05) | Real GSDP Per Capita (INR) | Per Capita GSDP Relative to All India Average |
|------------------|------------------|---------------|----------------------------|-----------------------------------------------|
| Maharashtra | MH | 30306 | 30.7 | 139 |
| Uttar Pradesh | UP | 11599 | 32.8 | 53 |
| West Bengal | WB | 21024 | 24.7 | 97 |
| Gujarat | GU | 28064 | 16.8 | 129 |
| Karnataka | KT | 23074 | 25 | 106 |
| Delhi | DL | 50029 | 14.7 | 230 |
| Punjab | PU | 31171 | 8.4 | 143 |
| Kerala | KL | 27841 | 15 | 128 |
| Bihar | BH | 7434 | 41.4 | 34 |
| Haryana | HY | 31655 | 14 | 146 |
| Uttarakhand | UA | 21278 | 39.6 | 98 |
| Himachal Pradesh | HP | 29630 | 10 | 136 |
| Goa | GO | 53203 | 13.8 | 245 |
| Chandigarh | CH | 64820 | 7.1 | 298 |
| Meghalaya | ME | 19966 | 18.5 | 92 |
| Pondicherry | PO | 38813 | 22.4 | 179 |
| India | All India | 21730 | 27.5 | 100 |

Source: Poverty Estimates for 2004-05, GoI; CSO and Uttarakhand Government.

respectively. The share of manufacturing is estimated to have increased to 11.2 per cent.

A comparison of these with the other states in India reveals that the share of Uttarakhand in the total GDP was 0.75 per cent (2002-03), which placed it at 21st position in the ranking of the states in terms of their

contribution to all India GDP. Maharashtra continued to have the highest contribution at 15 per cent followed by UP, West Bengal and Andhra Pradesh. Moreover, Uttarakhand continues to remain an agriculture dominant economy with its shares in the primary, secondary and tertiary sectors in the all India being 0.97, 0.76 and 0.65 per cent (Table 1.7).

8.3 Results of Economic Census 2005

The Economic Census 2005 has also brought some good news for Uttarakhand. Its performance has been better than all-India average in terms of growth of employment as well as growth in enterprises. Importantly, in both the cases the rural sector has performed much better as compared to urban sector (Table 1.8).

8.4 Workforce and Employment

As of 2003-04, the number of unemployed persons registered in the live register of 23 employment exchanges in Uttarakhand was 3.3 lakh. During 2003-04, 75,529 registrations took place. Of these, only 2727 (3.6 per cent) were actually employed in 2003-04. The number of state government employees of Uttarakhand as of 2003-04 was 1.08 lakh. Thus, government appears to be one of the major job providers with almost every 85th person of the population in government service.

According to the Census 2001, the total workers in the state were 31.34 lakh. Of these, about 25 lakh were in the rural areas and 6.35 lakh in the urban areas (Table 1.9). These workers are classified as main and marginal workers according to their work in the reference period of the Census, i.e., those workers who had worked for the

major part of the reference period (6 months or more) are termed as main workers and those who had not worked for the major part of the reference period (less than 6 months) are marginal workers. Within the main and marginal workers, they are further classified into cultivators, agricultural labourers, household industry workers and other workers. And a person who did not work at all during the reference period was termed as a non-worker. The group of other workers include factory jobs as well as services sector jobs.

Uttarakhand had 37 per cent of its population in work force as against 39 per cent at the national level (Figure 1.14). The total main and marginal workers in Uttarakhand were distributed in the ratio of 74 per cent and 26 per cent as against a distribution of 78 per cent and 22 per cent at the all India level. Both these conditions are in line with lower per capita income of the state *vis-à-vis* that of all India average. On the contrary, Himachal Pradesh has its 49 per cent of population in the workforce, but a relatively larger proportion (34 per cent) as marginal workers. Yet, the per capita income of Himachal Pradesh is better than that of Uttarakhand. Clearly, what matters at the first instance is to get an opportunity to work and then seek regular and permanent work.

TABLE 1.7

Structure of Economy and Contribution to the National GDP (At 1993-94 Prices) of Selected States during (2002-03)

| | Structure | | | Contribution | | | |
|------------------|-----------|-----------|----------|--------------|-----------|----------|------------|
| | Primary | Secondary | Tertiary | Primary | Secondary | Tertiary | Total GSDP |
| Maharashtra | 15 | 28 | 57 | 9.49 | 15.87 | 17.25 | 15.01 |
| Uttar Pradesh | 35 | 24 | 42 | 13.53 | 8.32 | 7.90 | 9.36 |
| West Bengal | 25 | 21 | 54 | 8.77 | 6.62 | 9.07 | 8.34 |
| Gujarat | 16 | 42 | 43 | 5.00 | 11.88 | 6.61 | 7.63 |
| Karnataka | 22 | 28 | 49 | 5.99 | 6.79 | 6.45 | 6.43 |
| Delhi | 1 | 22 | 77 | 0.16 | 3.02 | 5.81 | 3.71 |
| Punjab | 38 | 24 | 38 | 5.71 | 3.27 | 2.77 | 3.61 |
| Kerala | 18 | 21 | 61 | 2.61 | 2.66 | 4.30 | 3.45 |
| Bihar | 45 | 9 | 46 | 5.82 | 1.03 | 2.95 | 3.12 |
| Haryana | 29 | 28 | 42 | 3.83 | 3.28 | 2.69 | 3.12 |
| Uttarakhand | 31 | 27 | 42 | 0.97 | 0.76 | 0.65 | 0.75 |
| Himachal Pradesh | 21 | 36 | 42 | 0.64 | 0.97 | 0.62 | 0.72 |
| Goa | 13 | 40 | 48 | 0.21 | 0.59 | 0.38 | 0.39 |
| Tripura | 25 | 22 | 53 | 0.31 | 0.25 | 0.33 | 0.30 |
| Chandigarh | 1 | 25 | 74 | 0.01 | 0.25 | 0.39 | 0.26 |
| Meghalaya | 32 | 15 | 53 | 0.30 | 0.12 | 0.24 | 0.22 |
| Pondicherry | 6 | 52 | 42 | 0.05 | 0.43 | 0.19 | 0.22 |

Source: CSO and Uttarakhand Government. Contributions are calculated on the basis of sum of state GSDP.

TABLE 1.8
Summary Provisional Results of Economic Census 2005 (Excluding Crop Production and Plantation)

| | | UA | | | HP | | | UP | | | India | | |
|-----|-----------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | Rural | Urban | Total | Rural | Urban | Total | Rural | Urban | Total | Rural | Urban | Total |
| 1 | Number of enterprises (lakh) | 2.0 | 1.3 | 3.3 | 2.20 | 0.52 | 2.72 | 22.0 | 18.2 | 40.2 | 25.9 | 16.3 | 42.1 |
| 1.1 | Percentage share | 60.98 | 39.02 | 100 | 80.88 | 19.1 | 100 | 54.7 | 45.2 | 100 | 61.3 | 38.7 | 100 |
| 2 | Percentage of agriculture enterprises | 16.4 | 2.8 | 11.1 | 6.2 | 0.4 | 5.1 | 13.0 | 1.9 | 8.0 | 23.2 | 2.8 | 15.3 |
| 3 | Percentage share of enterprises | | | | | | | | | | | | |
| 3.1 | Without premises | 12.3 | 10.4 | 11.5 | 11.8 | 5.2 | 10.6 | 13.8 | 12.4 | 13.1 | 20.9 | 15.5 | 18.8 |
| 3.1 | Having 10 or more workers | 1.1 | 1.9 | 1.4 | 1.7 | 5.1 | 2.4 | 0.5 | 1.0 | 0.7 | 0.9 | 2.2 | 1.4 |
| 4 | Average annual growth rate in enterprises [#] | 7.72 | 4.16 | 6.21 | 2.73 | 2.60 | 2.71 | 7.07 | 3.14 | 5.14 | 5.53 | 3.71 | 4.80 |
| 5 | Number of persons employed (lakh) | 3.96 | 3.53 | 7.49 | 4.62 | 2.05 | 6.67 | 42.0 | 43.4 | 85.4 | 50.2 | 48.8 | 99.0 |
| 5.1 | Percentage share | 52.9 | 47.13 | 100 | 69.27 | 30.7 | 100 | 49.2 | 50.8 | 100 | 50.7 | 49.3 | 100 |
| 6 | Percentage of hired workers* | 47.6 | 62.4 | 54.7 | 59.3 | 75.5 | 64.3 | 35.5 | 51.7 | 43.7 | 41.6 | 63.6 | 52.4 |
| 7 | Percentage of total adult female workers* | 14.7 | 9.9 | 12.5 | 17.4 | 14.4 | 16.5 | 14.5 | 8.1 | 11.3 | 24.3 | 14.0 | 19.3 |
| 8 | Average annual growth rate in total employed [@] | 7.06 | 2.04 | 4.45 | 2.54 | 1.13 | 2.09 | 4.98 | 1.4 | 3.03 | 3.33 | 1.68 | 2.49 |

Note: * In the total persons employed. # Average annual growth rate (per cent) in enterprises over Economic Census 1998. @ Average annual growth rate (per cent) in total employed over Economic Census 1998.

Source: (basic data) Provisional results of Economic Census 2005.

TABLE 1.9
Total, Main and Marginal Workers (in '000)

| | Total | | | Rural | | | Urban | | |
|----------------------------|-------|------|----------|-------|------|----------|-------|------|----------|
| | Total | Main | Marginal | Total | Main | Marginal | Total | Main | Marginal |
| Total | 3134 | 2322 | 812 | 2499 | 1746 | 753 | 635 | 577 | 58 |
| Cultivators | 1570 | 1068 | 503 | 1546 | 1046 | 500 | 14 | 12 | 2 |
| Agricultural labourers | 260 | 143 | 117 | 245 | 132 | 112 | 15 | 10 | 5 |
| Household industry workers | 72 | 49 | 23 | 57 | 37 | 20 | 16 | 12 | 4 |
| Other workers | 1232 | 1063 | 169 | 641 | 520 | 121 | 591 | 543 | 48 |
| Non-workers | 5355 | | | 3811 | | | 1544 | | |

Source: Census 2001.

Within Uttarakhand the distribution of labour can be summarised as follows (see Figure 1.15):

1. Around 50 per cent of the total (main + marginal) workers in the state are cultivators and other workers accounting for 39 per cent.
2. Around 79 per cent of the total workers were in the rural areas as cultivators and other workers.
3. Female participation was of the order of 57 per cent.
4. Share of main workers is more than the marginal workers in all districts.
5. Within the main workers, around 45 per cent are cultivators and another 45 per cent are other workers.
6. Household industry workers constitute a small percentage of the main workers.
7. Within the marginal workers, cultivators account for 61 per cent and other workers, 20 per cent.
8. Across districts, Haridwar has just about 29 per cent of its population in the work force, while Bageshwar has 48 per cent.
9. Share of industrial and services sector (other workers) is maximum 64 per cent in Dehradun and minimum of 16 per cent in Bageshwar.

FIGURE 1.14

Workers Participation and Share of Main Workers across Selected States



Source: (basic data) Census 2001.

8.5 Agriculture

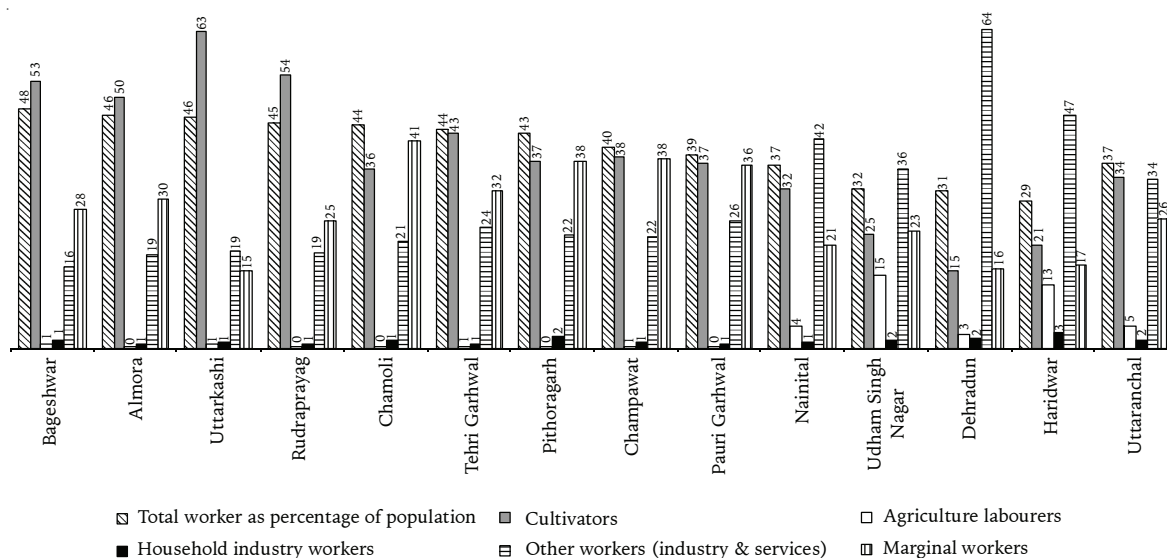
Agriculture contributes around 32 per cent to the GSDP of Uttarakhand. Cereals have remained the most important crops since 1999-2000. During 2002-03 about 81 per cent of the cultivated area was used for producing cereals, while 10.8 per cent was used for sugarcane (Figure 1.16). Within cereals, wheat is cultivated in about 40 per cent of the land under cereals. In terms of productivity, sugarcane is considered to be the dominant crop with a productivity of 590 quintals per hectare, which is much less than the all India average of about 700 quintal per hectare. Besides, there is large scope of diversification in agriculture in terms of horticulture, floriculture, and medicinal plants.

Low Yield Farming

Uttarakhand has a strong agricultural base. However, in terms of per capita production and yield per hectare, Uttarakhand is an average state (Figure 1.17). The Green Revolution of Punjab, Haryana and parts of other states could not effectively spread across Uttarakhand. Agriculture is not yet market-oriented in Uttarakhand as it is the case with Punjab and Haryana. There is hardly any surplus to what is produced and consumed on an average in the country. Serious analysis and scientific development is needed to professionalise agriculture. On an international scale, even the states with the highest yield in India fall short of the 4904 kg per hectare yield in China and 4315 kg per hectare yield in high-income

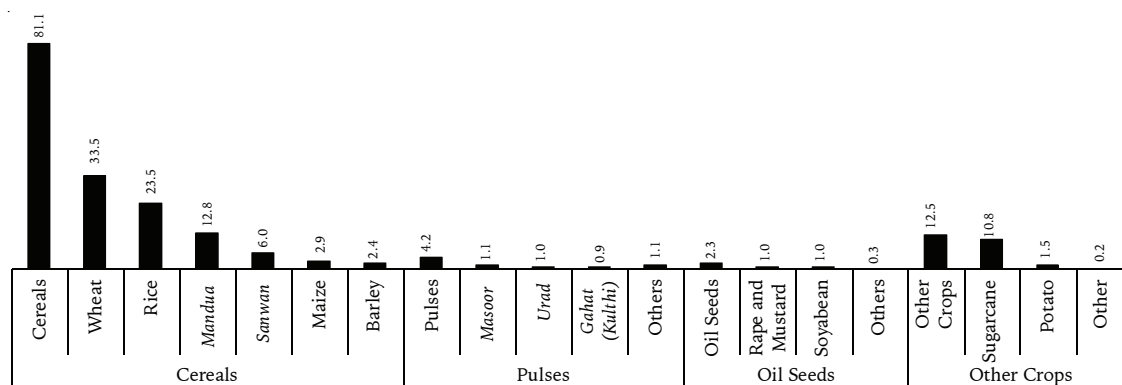
FIGURE 1.15

Distribution of Workforce across Sectors in Districts of Uttarakhand (Per cent)



Source: Census 2001.

FIGURE 1.16
Distribution of Area under Cultivation across Major Crops (2002-03)



Source: (basic data) Uttarakhand at a glance 2004-05.

countries. There are several areas of improvement, which can be accomplished only through scientific methods such as soil testing, better seeds, efficient irrigation, mechanisation and farmer education.

Farm Fragmentation

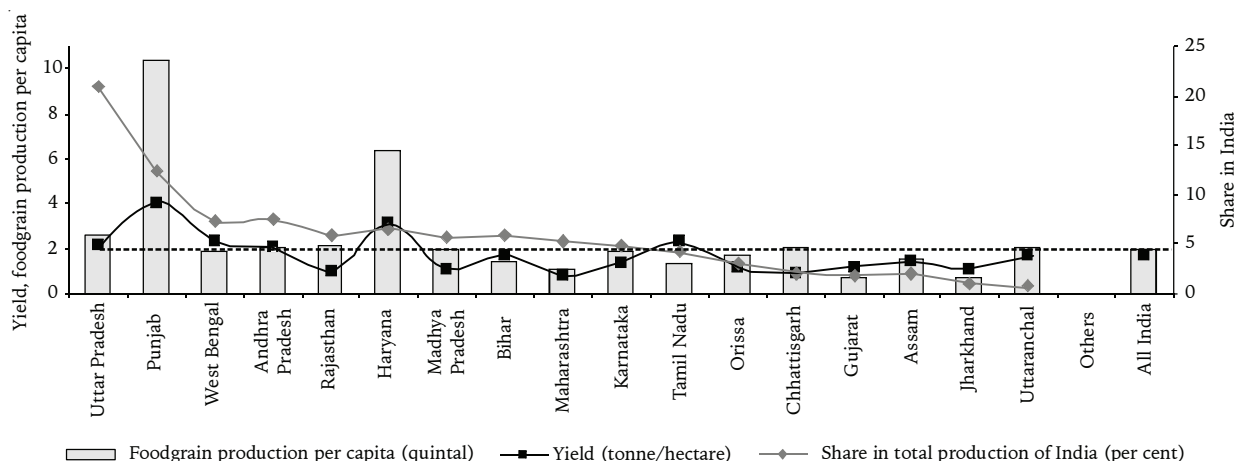
Fragmentation of agriculture land is one of the measure problems facing most states. Figure 1.18 compares the number and area of the landholdings in Uttarakhand with that of a few selected states. In the case of Uttarakhand, as of 1995-96, almost 72 per cent of the land holdings were of the size less than one hectare, and such holding together account for 27 per cent of the total area. Five per cent of the cultivated area had large size land holdings (10 hectare or more), which formed about 0.2 per cent of the total number of land holdings. 50.5 per cent of the cultivated

area had holdings of size between 1-4 hectares, which accounted for 25 per cent of the total number of holdings. In Uttarakhand, fragmentation of land is worst than all India average as well as Himachal Pradesh but marginally better than Uttar Pradesh (Figure 1.18).

High Cost Irrigation

Only around 44 per cent of the total cultivated area in Uttarakhand is irrigated. Of the total net irrigated area, 56 per cent is irrigated by tubewells, 29.7 per cent by canals, 2.4 per cent by wells and 12 per cent by the other sources. In absence of adequate electrification of farm area, most of the tube wells are diesel powered, which is costly. In addition, absence of surface irrigation creates problem in replenishment of groundwater making farming sensitive to rainfall.

FIGURE 1.17
Agriculture Productivity and Contribution to National Food Production



Source: (basic data) Fertiliser statistics, various issues.

Possible Diversification

Uttarakhand is blessed with a rare biodiversity, *inter alia*, 175 rare species of aromatic and medicinal plants are found in the state, which gives it a decisive advantage in traditional pharmacy.

8.6 Mineral Resources and Mining

The important minerals found in the state are dolomite in Dehradun, Tehri Garhwal and Nainital; limestone in Almora, Dehradun and Tehri Garhwal; magnesite in Pithoragarh and Almora; phosphorite in Mussorie; and steatite/soapstone in Almora and Pithoragarh districts. Table 1.10 shows the total reserves of the different minerals available in the state. Clearly, Uttarakhand is not a rich state in terms of mineralisation.

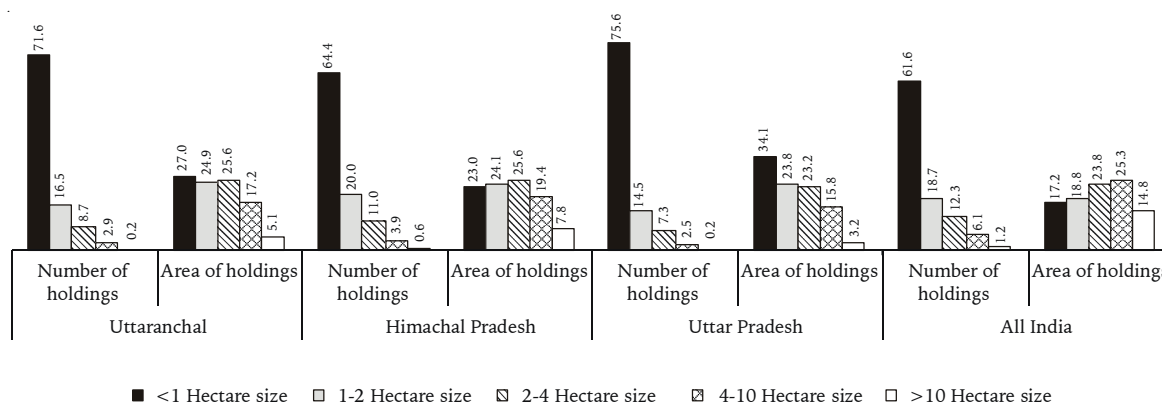
| Mineral | Proved | Probable | Possible | Total | Share in India |
|-----------------------------|--------|----------|----------|-------|----------------|
| Dolomite | 9 | 6 | 191 | 206 | 3 |
| Limestone | 146 | 237 | 1158 | 1541 | 1 |
| Magnesite | 31 | 187 | 54 | 273 | 66 |
| Talc/Soapstone/ Steatite | 50 | 31 | 25 | 106 | 33 |

Source: Indian Minerals Yearbook 2003, Indian Bureau of Mines.

The value of mineral production (excluding minor minerals) in Uttarakhand increased from INR 5.45 crore in 2000-01 to INR 7 crore in 2002-03. This was an

FIGURE 1.18

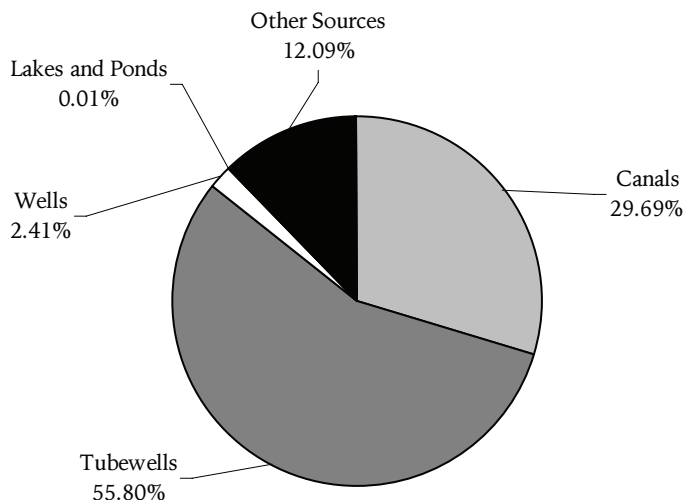
Distribution of Number and Area of Agriculture Farm Holding according to the Farm Size in Selected States



Source: Agriculture Census 1995-96 and Statistical Diary 2004.

FIGURE 1.19

Sources of Irrigation in Uttarakhand



Source: Statistical Diary, Uttarakhand 2004.

increase of 25 per cent over 2000-01. Uttarakhand is the second leading producer of magnesite (19 per cent) and steatite (13 per cent) in the country. Magnesite accounted for 53 per cent of the total value of mineral production in the state.

As much as 66 per cent of the recoverable reserves of magnesite are found in Uttarakhand, followed by 18 per cent in Tamil Nadu and 13 per cent in Rajasthan. The remaining reserves are in Himachal Pradesh, Jammu & Kashmir, Karnataka, Andhra Pradesh and Kerala.

Dolomite is widely available in almost all parts of the country. The total *in situ* reserves of all grades of dolomite are placed at 7349 million tonnes. Of the total *in situ* reserves in India, Uttarakhand constitutes about three per cent, while major share of about 90 per cent reserves is distributed in the six states of Madhya Pradesh (25 per cent), Andhra Pradesh (16 per cent), Chhattisgarh (13 per cent), Orissa (12 per cent), Gujarat (9 per cent), Karnataka (7 per cent) and Maharashtra (5 per cent).

The known *in situ* reserves of talc/steatite/soapstone as on 1.4.2000 were 326.9 million tonnes. Substantial reserves are established in Rajasthan (50 per cent), Uttarakhand (33 per cent) and the rest 17 per cent in the states of Kerala, Maharashtra, Madhya Pradesh, Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Jharkhand, Karnataka, Orissa, Sikkim and Tamil Nadu. Rajasthan accounted for as much as 80 per cent of production in 2002-03 followed by Uttarakhand with 13 per cent of the production.

As far as limestone reserves are concerned, the total *in situ* reserves of limestone of all categories and grades as on 1.4.2000 were 169,941 million tonnes. Around 30 per cent of the reserves are found in Karnataka followed by Andhra Pradesh with 19 per cent of the reserves. The share of Uttarakhand is less than 1 per cent of the total reserves of India.

8.7 Manufacturing Sector

The share of manufacturing sector in GSDP of Uttarakhand is much below the national average. In fact, it is less than Himachal Pradesh as well as Uttar Pradesh. However, the share of registered manufacturing (organised sector) in GSDP is almost at the same level as that of Uttar Pradesh. During 1998-2000, the share of organised manufacturing declined significantly from an average level of about 11 per cent during 1995-1998 to average value of almost 7.5 per cent during subsequent three years. However, a marginal improvement is recorded during the recent years (Table 1.11).

8.8 Organised Factory Sector

The total number of factories registered under the Act of 1948 was 698 in 2001-02. However, only 660 factories were operational employing 40,880 persons of which 27,317 were workers. These factories had a fixed capital of INR 1966 crore and generated an output of INR 5214 crore. As a percentage of the all-India output, the contribution of Uttarakhand was only a minute 0.54 per cent and it

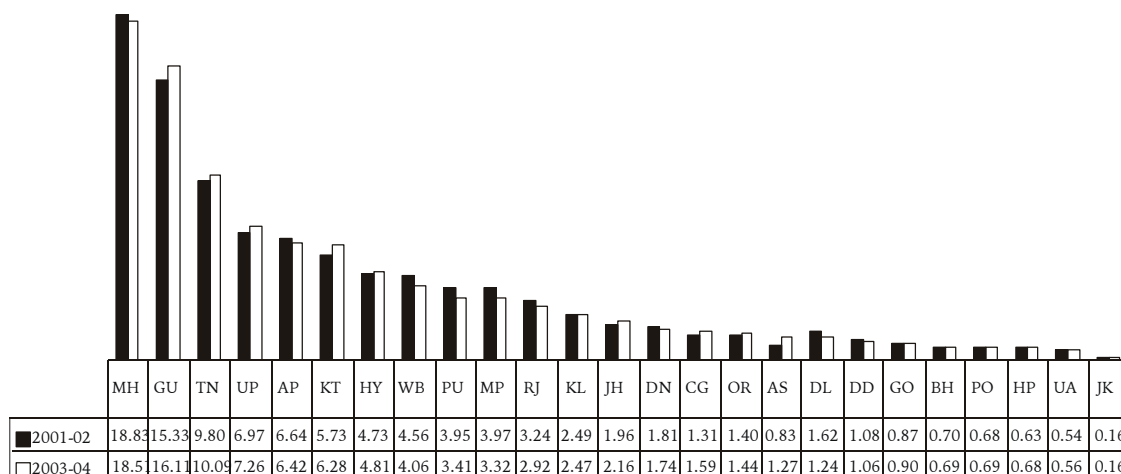
TABLE 1.11
Contribution of Manufacturing Sector in GSDP of Selected States and India

| | Uttarakhand | | | Himachal Pradesh | | | Uttar Pradesh | | | India | | |
|-----------|---------------|------------|--------------|------------------|------------|--------------|---------------|------------|--------------|---------------|------------|--------------|
| | Manufacturing | Registered | Unregistered | Manufacturing | Registered | Unregistered | Manufacturing | Registered | Unregistered | Manufacturing | Registered | Unregistered |
| 1993-94 | 14.2 | 12.2 | 2.0 | 8.8 | 6.6 | 2.3 | 13.7 | 8.0 | 5.7 | 16.1 | 10.5 | 5.6 |
| 1994-95 | 18.5 | 16.3 | 2.1 | 10.7 | 8.2 | 2.5 | 15.5 | 9.8 | 5.7 | 16.8 | 11.2 | 5.6 |
| 1995-96 | 12.4 | 10.0 | 2.4 | 11.9 | 9.1 | 2.9 | 15.4 | 9.3 | 6.1 | 17.9 | 11.9 | 6.0 |
| 1996-97 | 15.3 | 13.1 | 2.3 | 14.6 | 11.4 | 3.2 | 16.9 | 11.4 | 5.5 | 18.2 | 12.3 | 6.0 |
| 1997-98 | 12.6 | 10.2 | 2.4 | 14.4 | 11.0 | 3.4 | 16.2 | 9.8 | 6.4 | 17.7 | 11.6 | 6.1 |
| 1998-99 | 9.2 | 6.7 | 2.5 | 13.7 | 10.7 | 3.0 | 15.4 | 9.3 | 6.1 | 17.0 | 11.1 | 6.0 |
| 1999-2000 | 8.9 | 6.2 | 2.7 | 14.5 | 11.4 | 3.1 | 14.7 | 8.7 | 6.0 | 16.7 | 10.8 | 5.9 |
| 2000-01 | 11.9 | 9.4 | 2.5 | 15.8 | 12.3 | 3.5 | 14.2 | 8.3 | 5.9 | 17.2 | 11.2 | 6.0 |
| 2001-02 | 10.2 | 7.8 | 2.4 | 16.1 | 12.7 | 3.4 | 14.0 | 8.0 | 6.0 | 16.9 | 11.1 | 5.8 |
| 2002-03 | 10.3 | 8.0 | 2.3 | 15.9 | 11.9 | 4.0 | 14.4 | 8.3 | 6.0 | 17.3 | 11.4 | 5.9 |
| 2003-04 | 10.2 | 7.9 | 2.3 | 15.9 | 12.0 | 3.9 | 14.4 | 8.2 | 6.2 | 17.0 | 11.3 | 5.8 |
| 2004-05 | 10.6 | 8.5 | 2.2 | 15.9 | 12.1 | 3.8 | 14.5 | 8.1 | 6.4 | 17.4 | - | - |
| 2005-06 | 11.2 | 9.1 | 2.1 | 15.7 | 12.1 | 3.7 | - | - | - | - | - | - |

Note: - The data mentioned in the table is based on Old Series (at 1993-94 prices) that ends in 2003-04. So the last figures are blank. The new series on the same is given in the Appendix.

Source: (basic data) CSO, National Accounts.

FIGURE 1.20
Share of Selected States in All India Factory Sector Output



Source: ASI 2001-02 and 2003-04.

contributes 0.56 per cent to the gross value added at the all India level (Figure 1.20). Maharashtra contributes the maximum of around 19 per cent to the all-India output and around 20 per cent to the gross value added followed by Gujarat with 15 per cent and 13 per cent respectively, to output and value added.

Table 1.12 summarises the status of factory operations in Uttarakhand at two digits level. The sectors are arranged according to the revealed comparative advantage of the states in each of the sectors. Following points are worth noticing:

- (1) Uttarakhand participates in 78 per cent of the two digit sectors of the country, which constitute about 72 per cent of the factory operations in India. Clearly, most kinds of factory operations are carried out in Uttarakhand and its industrial operation can be considered as widely represented but its overall contribution in factory sector output is just about 0.73 per cent (Table 1.12).
- (2) Out of 18 sectors in which operations are conducted, at least in nine of the factory sectors at two digits, Uttarakhand revealed comprehensive comparative advantage during 2002-03 and these nine sectors constitute 85 per cent of Uttarakhand's GVA and 25.6 per cent of all India factory sector GVA.
- (3) Although, manufacturing of chemicals and basic metals form significantly high shares of about 8.8 per cent and 2.3 per cent in factory sector GVA of Uttarakhand, they do not reveal comparative

advantage. On the contrary, some sectors such as 33, 32, 20 and 22 have relatively lower share in Uttarakhand's factory sector GVA but they reveal strong comparative advantages.

Within Uttarakhand, most of the industrialisation has taken place in Udham Singh Nagar, Haridwar, Dehradun and Nainital. More than 75 per cent industrial outputs come from two districts of US Nagar and Haridwar. While Tehri Garhwal, Almora, Champawat and Bageshwar have negligible industrialisation, districts of Uttarkashi, Rudraprayag, Pithoragarh and Chamoli do not have any factory.

8.9 Unorganised Manufacturing Sector

The contribution of unorganised manufacturing in the GSDP of Uttarakhand is just about two per cent, which is one third of the level of the contribution of this sector at all India level. More importantly, it has a shrinking trend. The importance of informal sector lies in the fact that it provides employment to a large number of unskilled and semi-skilled labour, creates basic support system for further industrialisation and works as conduit for the transition of labour from agriculture to more industrialised urban centres.

The results of 56th round NSSO survey of unorganised sector indicates the following (see Tables 1.13 and 1.14):

- Uttarakhand has larger number of units and labour in the unorganised sector as compared to Himachal Pradesh, yet it has lower value of output and GVA.

TABLE 1.12
Factory Sectors in Terms of Value Added in Uttarakhand at Two Digits Level (2002-03)

| Code | Sectors at Two Digits Level (Shorted by RCA) | Share in | | | RCA |
|-------|--------------------------------------------------------------------------------------------------------------|----------|-----------|----------|------|
| | | UA_MFG | India_MFG | UA_India | |
| 29 | Machinery and equipment n.e.c. | 29.82 | 4.58 | 4.73 | 6.51 |
| 21 | Paper and paper products | 12.79 | 2.04 | 4.55 | 6.26 |
| 31 | Electrical machinery and apparatus n.e.c | 9.56 | 1.71 | 4.07 | 5.60 |
| 33 | Medical, precision and optical instruments, watches and clocks | 4.09 | 0.82 | 3.62 | 4.98 |
| 32 | Radio, television and communication equipment and apparatus | 3.53 | 0.90 | 2.84 | 3.91 |
| 25 | Rubber and plastic product | 10.74 | 3.47 | 2.25 | 3.10 |
| 20 | Wood and products of wood and cork, except furniture; manufacture of articles of straw and plating materials | 0.39 | 0.23 | 1.22 | 1.67 |
| 15 | Food products and beverages | 12.85 | 9.32 | 1.00 | 1.38 |
| 22 | Publishing, printing and reproduction of recorded media | 1.58 | 1.49 | 0.77 | 1.06 |
| 24 | Chemicals and chemical products | 8.88 | 18.11 | 0.36 | 0.49 |
| 36 | Furniture, manufacturing n.e.c. | 0.55 | 1.20 | 0.33 | 0.46 |
| 26 | Other non-metallic mineral products | 1.53 | 4.65 | 0.24 | 0.33 |
| 27 | Basic metals | 2.72 | 9.56 | 0.21 | 0.28 |
| 28 | Fabricated metal products, except machinery and equipments | 0.32 | 2.37 | 0.10 | 0.13 |
| 18 | Wearing apparel, dressing and dyeing of fur | 0.14 | 1.83 | 0.06 | 0.08 |
| 19 | Tanning and dressing of leather, manufacture of luggage, handbags, saddlery, harness and footwear | 0.03 | 0.45 | 0.04 | 0.06 |
| 17 | Textiles | 0.17 | 7.15 | 0.02 | 0.02 |
| >=400 | | 0.31 | 1.87 | 0.12 | 0.17 |
| | All Uttarakhand (78 per cent items of all-India factory sector) | 100.00 | 71.74 | 0.73 | |

Notes: UA_MFG = Share of sector in Uttarakhand factory sector GVA; India_MFG = Share of sector in India's factory sector GVA; UA_India = Share of Uttarakhand's sector GVA in the all India sector GVA of factory sector.

Source: (basic data) ASI 2002-03.

As a result the firms earn higher rate of profit per unit output and pay less to the workers.

- The average emolument of workers in Uttarakhand unorganised sector is almost half of the emolument obtained by an average worker in Himachal Pradesh.
- The units in Uttarakhand appear to depend more on own financial resources as compared to Himachal Pradesh and other parts of the country.
- At two digits level five groups (15, 20, 28, 18 and 36) constitute 78 per cent of the output and all these five groups demonstrate comparative advantage. This demonstrates high scope of specialisation.
- All nine two-digit groups (15, 20, 28, 18, 36, 37, 23, 14 and 30) reveal comparative advantage but the scale of operation in the last four groups are too small.

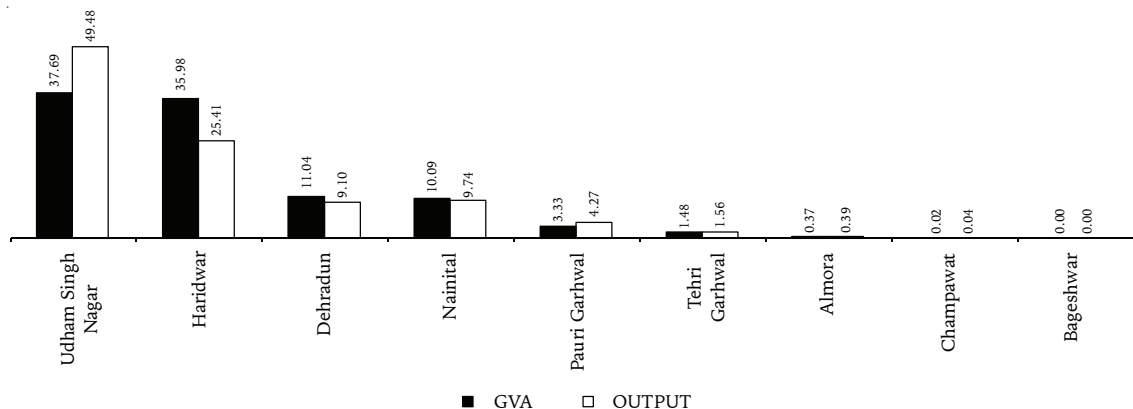
8.10 Rivalry and Synergy between Organised and Unorganised Manufacturing Sector

The pattern of the comparative advantage across sector indicate that Uttarakhand has only two sectors, namely food products and beverages (15) and wood and wood products (20), where both organised as well as unorganised sectors reveal comparative advantage. These are traditional sectors, the farmers constituting mostly of *gur*, *khandsari* and later constituting wooden furniture. The consumption pattern of these products would reveal little substitutability of unorganised manufacturing with that of organised manufacturing in the rural areas. And, even if these products are manufactured in the organised sector, the labour intensity is likely to remain unaltered.

As noted earlier, there is a large segment of sectors revealing comparative advantage under unorganised sector. Several of them such as manufacturing of data processing machines demonstrate underlying capability of promoting organised sector in these areas without losing

FIGURE 1.21

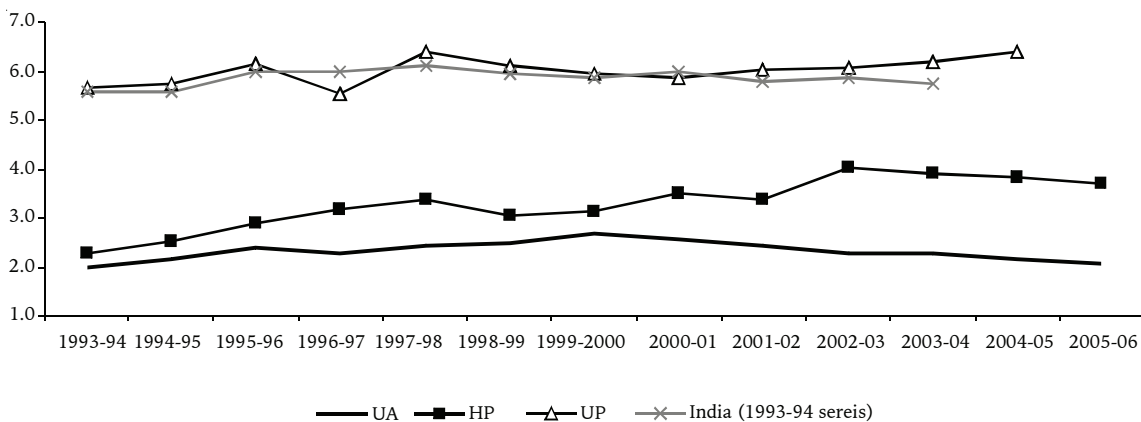
Distribution of Factory Sector Industrial Output and Gross Value Added (GVA) across Districts of Uttarakhand



Source: (basic data) ASI 2002-03.

FIGURE 1.22

Contribution of Unorganised Sector in GSDP of Uttarakhand and Selected States



Source: (basic data) CSO, National Accounts.

TABLE 1.13

Unorganised Manufacturing Sector in Selected States (2000-01)

| | Output (INR crore) | GVA (INR crore) | Number of Units (lakh) | Workers (lakh) | Emolument Per Worker (per cent) | Rent to Output (per cent) | Interest to Output (per cent) | Profit to Output |
|----------------|--------------------------|-----------------------|------------------------------|-------------------|---------------------------------------|---------------------------------|-------------------------------------|---------------------|
| UA | 760 | 320 | 1.22 | 2.20 | 2578 | 1.45 | 0.48 | 27.80 |
| HP | 1995 | 329 | 0.98 | 1.54 | 5121 | 0.42 | 6.04 | 12.74 |
| UP | 16960 | 6967 | 22.90 | 54.03 | 3319 | 0.89 | 0.47 | 27.50 |
| India | 187125 | 60169 | 170.20 | 370.70 | 4120 | 0.86 | 0.77 | 21.41 |
| Share in India | | | | | | | | |
| UA | 0.41 | 0.53 | 0.72 | 0.59 | 0.37 | 0.68 | 0.26 | 0.53 |
| HP | 1.07 | 0.55 | 0.57 | 0.42 | 0.52 | 0.52 | 8.41 | 0.63 |
| UP | 9.06 | 11.58 | 13.45 | 14.57 | 11.74 | 9.44 | 5.62 | 11.64 |

Source: (basic data) NSSO, 56th round.

TABLE 1.14
Status of Unorganised Manufacturing Sectors at Two Digits Level, Uttarakhand

| Code | Unorganised Sectors | Share in Own Unorganised Sector | | | | Share in the Respective Sector of India | | | | RCA based on | |
|-------|--------------------------------------------------------------------------------------------------|---------------------------------|------|-------|---------|-----------------------------------------|-----|-------|---------|--------------|------|
| | | Output | GVA | Units | Workers | Output | GVA | Units | Workers | Output | GVA |
| 15 | Food products and beverages | 31.1 | 24.9 | 19.9 | 22.2 | 0.5 | 0.7 | 0.8 | 0.7 | 1.3 | 1.4 |
| 20 | Wood and products of wood and cork, except furniture; articles of straw and plating materials | 13.9 | 17.6 | 20 | 13.9 | 1.0 | 1.0 | 0.9 | 0.6 | 2.4 | 1.9 |
| 28 | Fabricated metal products, except machinery and eqpt. | 13.8 | 10.3 | 7.7 | 9.3 | 1.0 | 0.9 | 1.5 | 1.3 | 2.5 | 1.6 |
| 18 | Wearing apparel, dressing and dyeing of fur | 9.9 | 16.4 | 18.5 | 14.9 | 0.6 | 0.7 | 0.8 | 0.7 | 1.5 | 1.3 |
| 36 | Furniture, and n.e.c. | 9.2 | 6.4 | 4.5 | 3.8 | 0.5 | 0.3 | 0.4 | 0.3 | 1.2 | 0.6 |
| 17 | Textiles | 7.0 | 9.7 | 16.2 | 19.4 | 0.3 | 0.4 | 0.8 | 0.7 | 0.6 | 0.7 |
| 26 | Other non-metallic mineral products | 4.8 | 4.1 | 3.6 | 6.5 | 0.3 | 0.3 | 0.5 | 0.5 | 0.7 | 0.5 |
| 24 | Chemicals and chemical products | 2.2 | 1.4 | 0.2 | 0.3 | 0.4 | 0.5 | 0.1 | 0.1 | 0.9 | 0.9 |
| 22 | Publishing, printing and reproduction of recorded media | 2.0 | 1.9 | 0.6 | 0.9 | 0.4 | 0.4 | 0.5 | 0.4 | 0.9 | 0.7 |
| 37 | Recycling | 1.2 | 1.9 | 3.6 | 3.6 | 3.8 | 7.4 | 28.5 | 21.7 | 9.3 | 14.0 |
| 25 | Rubber and plastic products | 1 | 0.7 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.4 | 0.3 |
| 31 | Electrical machinery and apparatus n.e.c. | 0.9 | 1 | 0.5 | 0.8 | 0 | 0.3 | 0.9 | 0.7 | 0.1 | 0.6 |
| 16 | Tobacco products | 0.6 | 1.2 | 3.6 | 2.4 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 |
| 21 | Paper and paper products | 0.6 | 0.5 | 0.4 | 0.5 | 0.2 | 0.3 | 0.6 | 0.4 | 0.6 | 0.6 |
| 19 | Tanning and dressing of leather, manufacture of luggage, handbags saddlery, harness and footwear | 0.5 | 0.4 | 0.3 | 0.3 | 0.1 | 0.1 | 0.2 | 0.2 | 0.4 | 0.2 |
| 29 | Machinery and equipt., n.e.c | 0.4 | 0.4 | 0 | 0.1 | 0.1 | 0.1 | 0 | 0.1 | 0.1 | 0.1 |
| 23 | Coke, refined petroleum products and nuclear fuel | 0.3 | 0.1 | 0 | 0.1 | 0.7 | 0.6 | 0.3 | 0.6 | 1.7 | 1.1 |
| 30 | Office, accounting and computing machinery | 0.3 | 0 | 0 | 0 | 7.3 | 2.2 | 5.8 | 3 | 18.1 | 4.1 |
| 14 | Other mining and quarrying | 0.2 | 0.4 | 0 | 0.5 | 2.6 | 7.5 | 0.3 | 8.1 | 6.5 | 14.2 |
| 34 | Motor vehicles, trailers and semi-trailers | 0.2 | 0.4 | 0.1 | 0.2 | 0.1 | 0.3 | 0.4 | 0.5 | 0.3 | 0.6 |
| 33 | Medical, precision and optical instruments, watches and clocks | 0.1 | 0.1 | 0 | 0.1 | 0.1 | 0.2 | 0.3 | 0.5 | 0.3 | 0.4 |
| Total | | | | | | 0.4 | 0.5 | 0.7 | 0.6 | 1 | 1 |

Source: (basic data) NSSO, 56th round.

jobs. Similarly, wearing apparels is a labour-intensive work and large-scale activities will support the unorganised sector through vertical integration.

8.11 Small Scale Sector

The size of the total SSI sector in India is estimated to be over one crore (1,05,21.190). About 42.26 per cent of these units were small-scale industries (SSIs) and the rest

were small scale service and business enterprises (SSSBEs). The number of ancillaries among SSIs was 2.98 per cent. Out of the total SSI sector, only 13 per cent of the units are registered, which constitute 59 per cent of investment and equal percentage of the total production. Among the registered² SSI sector, rice-milling industry topped the list in terms of gross output, while textile garments and clothing accessories industry was on top in terms of exports. Uttarakhand has 1.01 per cent of all

2. Registered SSI sector does not mean registration under Factories Act. Registration of manufacturing units is mandatory under sections 2m(i) and 2m(ii) of the Factory Act for units engaging 10 or more workers and using power and 20 or more workers and not using power respectively. In case of some states registration is also done under sections 85(i) and 85(ii). Registration in SSI sector is voluntary. The SSI registration is done with the District Industry Centres (DIC), first on temporary basis and then on permanent basis. Only permanently registered units are considered as registered. However, In the SSI sector the registration of SSI units have the benefit of voluntary registration under the Single Point Registration Scheme of National Small Industries Corporation (NSIC). According to the Third Census, 4.85 per cent units were registered under 2m(i) and 2m(ii), 6.05 per cent units were registered under 85(i) and 85(ii) and, only 2.27 per cent of SSI units were registered under NISC scheme.

TABLE 1.15
RCA based Synergy between Registered and Unregistered Sectors

| Code | Sectors | RCA in Unregistered Sector Based on | | RCA Registered (Based on GVA) |
|------|-----------------------------------------------------------------------------------------------|-------------------------------------|------|----------------------------------|
| | | Output | GVA | |
| 14 | Other mining and quarrying | 6.5 | 14.2 | |
| 15 | Food products and beverages | 1.3 | 1.4 | 1.38 |
| 18 | Wearing apparel, dressing and dyeing of fur | 1.5 | 1.3 | |
| 20 | Wood and products of wood and cork, except furniture, articles of straw and plating materials | 2.4 | 1.9 | 1.67 |
| 21 | Paper and paper products | | | 6.26 |
| 22 | Publishing, printing and reproduction of recorded media | 0.9 | 0.7 | 1.06 |
| 23 | Coke, refined petroleum products and nuclear fuel | 1.7 | 1.1 | |
| 24 | Chemicals and chemical products | 0.9 | 0.9 | |
| 25 | Rubber and plastic products | | | 3.1 |
| 28 | Fabricated metal products, except machinery and equipment | 2.5 | 1.6 | |
| 29 | Machinery and equipment n.e.c | | | 6.51 |
| 30 | Office, accounting and computing machinery | 18.1 | 4.1 | |
| 31 | Electrical machinery and apparatus n.e.c. | | | 5.6 |
| 32 | Radio, television and communication equipment and apparatus | | | 3.91 |
| 33 | Medical, precision and optical instruments, watches and clocks | | | 4.98 |
| 36 | Furniture, and n.e.c. | 1.2 | 0.6 | |
| 37 | Recycling | 9.3 | 14 | |

Source: (basic data) ASI 2002-03 and NSSO 56th round 2000-01.

working small-scale industries of India (Table 1.16), which are distributed as follows:

- Of the total SSI units about 20 per cent are SSSBE, and 16 per cent are ancillary units.
- The total SSI sector in Uttarakhand is spread over rural and urban areas in the ratio of 44 per cent and 56 per cent respectively.
- Manufacturing constitute about 30.2 per cent of all SSI units, of which one third of them are located in rural areas.

- Repair and maintenance constitute about 23.1 per cent of the SSI units and one-third of them are located in rural areas.
- Services constitute 46.7 per cent of the total SSI sector units and 36.4 per cent of them are located in rural areas.
- Registered SSI sector constitute about 14.4 per cent of all SSI units in the state and, 60.9 per cent of them are located in rural areas. This compares better than all-India level but lower than Himachal Pradesh (Table 1.17). However, only about two per cent of the SSI units were registered under the Factories Act.
- Uttarakhand has more number of registered units as compared to Himachal Pradesh with almost five times fixed assets, 80 per cent more value added and almost 67 per cent more employment.
- Registered SSI sector of Uttarakhand contribute almost ten times to export as compared to the registered SSI sector of Himachal Pradesh.

8.11.1 Sickness and Closure in SSI Sector

The prevalence of sickness³ in SSI sector has been a cause of concern. At the aggregate level 7.8 per cent of the total units in SSI sector are considered to be sick. The corresponding percentage in the case of Uttarakhand is 0.9, which is much less (Table 1.18). However, at the aggregate level, which includes registered and unregistered units, it is not a good comparison. In the unregistered sector, which is much larger than the registered sector, records of entries and exit are difficult to maintain. Therefore, it is more meaningful to analyse the sickness and closure in registered units in SSI sector.

The prevalence of sickness and closures in SSI sector has been more pronounced among registered units, which has been a cause of much concern and in fact, raises questions about reliability of SSI-based development agenda. The quick result of the third census reported shares of closed and sick units across different states, but the final report did not report the share of sick units. In order to get the full picture, the results reported in the quick report are presented in Table 1.19. This may have some variation with the final report but the same is ignored. According to the quick results there were 14.38 lakh working registered units as against 13.75 lakh units reported in the final report and Uttarakhand has 1.11 per

3. Sick/Incipient Units means erosion of net worth or delay in repayment of instalment of loan or continuous decline in gross output. Specifically, the Third Census has followed three criteria: (1) Continuous decline in gross output compared to the previous two financial years; (2) Delay in repayment of institutional loan, for more than 12 months; and (3) Erosion in the net worth to the extent of 50 per cent of the net worth during the previous accounting year.

TABLE 1.16
Structure of Small-scale Sector in Selected States and Uttarakhand
(Working Units)

| | Share in India | | | | Distribution in the State | | | | | | Share in India | |
|--------------|----------------|-------|-------|------|---------------------------|-------|--------|-------|----------|-------|----------------|--------------|
| | SSI sector | | | | MFG | | Repair | | Services | | Employment | Gross output |
| | Total | SSI | SSSBE | Anci | Rural | Urban | Rural | Urban | Rural | Urban | | |
| UA | 1.01 | 0.76 | 0.16 | 1.2 | 19.73 | 10.49 | 7.50 | 15.60 | 16.98 | 29.69 | 0.78 | 0.70 |
| HP | 0.72 | 0.95 | 0.32 | 0.56 | 50.76 | 3.78 | 10.68 | 3.02 | 25.08 | 6.76 | 0.52 | 0.85 |
| UP | 16.23 | | | | 30.73 | 11.47 | 10.90 | 8.16 | 22.11 | 16.63 | 16.05 | 9.72 |
| India (lakh) | 105.2 | 44.46 | 60.75 | 1.32 | | | | | | | 249.3 | 28226998 |
| Per cent | 100 | 42.26 | 57.74 | 2.98 | 25.31 | 14.38 | 8.37 | 7.99 | 21.53 | 22.42 | 100 | 100 |

Source: (basic data) Third All India Census of SSI (2001-02).

TABLE 1.17
Registered Small-scale Industries in Selected States (2001-02) (Working Units)

| | Registered Units | | Units | Fixed Assets INR crore | Value of Gross Output INR crore | Employment | Export INR crore |
|-----------------------|------------------|--------|---------|---------------------------|---------------------------------------|------------|---------------------|
| | Rural | Urban | Total | | | | |
| Uttarakhand | 9305 | 5980 | 15285 | 1065 | 1301 | 50541 | 20 |
| Himachal Pradesh | 8697 | 2194 | 10891 | 275 | 711 | 30201 | 2 |
| Uttar Pradesh | 76511 | 86427 | 162938 | 14301 | 27358 | 1122986 | 143 |
| India | 608422 | 766552 | 1374974 | 91792 | 203255 | 6163479 | 12308 |
| Share in India | | | | | | | |
| Uttarakhand | 1.53 | 0.78 | 1.11 | 1.16 | 0.64 | 0.82 | 0.16 |
| Himachal Pradesh | 1.43 | 0.29 | 0.79 | 0.30 | 0.35 | 0.49 | 0.02 |
| Uttar Pradesh | 12.58 | 11.27 | 11.85 | 15.58 | 13.46 | 18.22 | 1.16 |
| India | 100 | 100 | 100 | | | | |
| Distribution | | | | | | | |
| Uttarakhand | 60.88 | 39.12 | | | | | |
| Himachal Pradesh | 79.85 | 20.15 | | | | | |
| Uttar Pradesh | 46.96 | 53.04 | | | | | |
| India | 44.25 | 55.75 | | | | | |

Source: (basic data) Third All India Census of SSI (2001-02).

cent of all registered small-scale units of India. Out of these registered units, only 55.6 per cent units were healthy while 41.98 per cent units were closed and 4.14 per cent units were sick.

Uttarakhand has high closure rate and low sickness rate compared to several other states. Yet, when both sickness and drop out rates are considered, then the situation in Uttarakhand is not as bad as Maharashtra, Tamil Nadu, Kerala and Karnataka. Clearly, the highest percentage of healthy units is in Gujarat, followed by Bihar, Madhya Pradesh and Uttar Pradesh. The irony is that except Gujarat, none of the good performers in the

TABLE 1.18
Overall Sickness in SSI Sector

| | Total Number of SSI Units | Sick Units as Percentage of Total SSI Sector of the State | Sick Units as Percentage of Total SSI Sector of India |
|------------------|------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------|
| Uttarakhand | 106484 | 6.9 | 0.9 |
| Himachal Pradesh | 76198 | 11.8 | 1.1 |
| Uttar Pradesh | 1707977 | 1.5 | 3.1 |
| India | 10521190 | 7.8 | 7.8 |

Source: (basic data) Final Results: Third Census of Small Scale Industries 2001-02

TABLE 1.19
Status of Registered SSI Units across Selected States and Uttarakhand:
Distribution of Working, Closed and Sick Units

| State | Number of Registered SSI Units | Percentage of Registered Working Units (Percentage Share in India) | Percentage of Closed Units (Percentage Share in India) | Percentage of Sick Units (Percentage Share in India) | Percentage of Registered Working Units | Percentage of Closed Units | Percentage of Sick Units | Percentage of Healthy Units |
|------------------|--------------------------------|--------------------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------|----------------------------------------|----------------------------|--------------------------|-----------------------------|
| Tamil Nadu | 309162 | 11.72 | 16.21 | 6.88 | 54.48 | 45.52 | 7.42 | 50.4 |
| Uttar Pradesh | 289569 | 12.05 | 13.40 | 2.75 | 59.84 | 40.16 | 3.17 | 57.9 |
| Kerala | 224524 | 10.54 | 8.41 | 24.18 | 67.48 | 32.52 | 35.93 | 43.2 |
| Gujarat | 178261 | 11.26 | 1.89 | 1.9 | 90.79 | 9.21 | 3.56 | 87.6 |
| Madhya Pradesh | 171376 | 7.47 | 7.37 | 2.83 | 62.67 | 37.33 | 5.51 | 59.2 |
| Karnataka | 165341 | 9.13 | 3.93 | 15.05 | 79.38 | 20.62 | 30.37 | 55.3 |
| Punjab | 154686 | 4.95 | 9.63 | 4.41 | 45.96 | 54.04 | 9.51 | 41.6 |
| Maharashtra | 137819 | 5.31 | 7.08 | 9.86 | 55.41 | 44.58 | 23.87 | 42.2 |
| Andhra Pradesh | 102761 | 4.61 | 4.20 | 4.49 | 64.48 | 35.51 | 14.58 | 55.1 |
| Rajasthan | 84256 | 3.23 | 4.36 | 2.89 | 55.05 | 44.96 | 11.44 | 48.7 |
| Bihar | 74491 | 3.73 | 2.40 | 1.4 | 71.99 | 28.00 | 6.27 | 67.5 |
| West Bengal | 69269 | 2.79 | 3.37 | 2.41 | 57.82 | 42.18 | 11.61 | 51.1 |
| Chhattisgarh | 62979 | 2.57 | 3.01 | 12.17 | 58.58 | 41.42 | 64.47 | 20.8 |
| Uttarakhand | 27415 | 1.11 | 1.33 | 0.34 | 58.00 | 41.98 | 4.14 | 55.6 |
| Himachal Pradesh | 17432 | 0.77 | 0.73 | 0.92 | 63.67 | 36.35 | 17.61 | 52.5 |
| Others | 236384 | 8.79 | 12.68 | 7.52 | 53.44 | 46.56 | 10.61 | 47.8 |
| India | 2305725 | 1437704 (62.35) | 868021 (37.65) | 333638.4075 | | | | |

Source: (basic data) Quick results: third all-India Census of small-scale industries 2001-02, DCSSI. All-India sickness of industries is taken as 14.47 per cent on account of three factors of: (a) delay in repayment of institutional loans over one year, (b) decline in net worth by 50 per cent, and (c) decline in output during the last three years.

SSI sector is a leading industrial state or nears the leaders. Himachal Pradesh is performing much better despite poorer condition of SSI sector.

Census after census, the key factors identified to be cause of SSI units include 'marketing problem', 'financial problem' and 'could not survive competition'. These reasons would apply to the closed units all the time to come.

8.12 Industrial and Services Clusters in SSI Sector of Uttarakhand

A cluster is defined by the existence of large number of enterprises in one continuous locality making the same or similar or complimentary products. Clusters develop own support system and logistic for production process in a competitive environment. They face collective externalities, customise support services and accept heterogeneity in market conditions, scale of operation and product differentiation to meet the challenge of survival. Therefore,

clusters, due to their inherent strength, are known to provide strategic support to the development process and industrialisation due to availability of linkages between service institutions, presence of units along various points in the value chain, building relationships with big firms, developing niche markets, etc.⁴ There are more than 350 modern SME clusters and over 2,000 artisan-based, rural clusters. Roughly 60 per cent of manufactured exports emanating from the SSI sector originate in clusters.

In Uttarakhand, 25 per cent of output of registered SSI sector originates in clusters of more than 100 units in one place. However, in the unorganised SSI sector, almost 77 per cent of output originates from clusters having more than 500 units.

8.12.1 Industrial Clusters in Registered SSI Sector

There are 29 identified clusters having 100 or more units in one place in the state according to the Uttarakhand unit of the Third Census. However, the Final

4. UNIDO Report on Clusters. Mukesh Gulati et al., New Delhi.

Report of the Third Census published by the Central Ministry of SSI indicates the existence of only 17 clusters in the state, some of which could be termed as natural. All of these clusters need to be modernised and their operations increased in scale. The characteristics of registered clusters can be state as follows (refer Figure 1.23 and Table 1.20):

- Uttarkashi is the most diversified districts in terms of variety of products and number of units. It has one of the unique cluster of weaving, and manufacture of wool and wool mixture fabrics besides, tailoring, processing and grinding of grain and manufacture of furniture and fixtures made of wood, cane and reed.
- US Nagar contributes 82.5 per cent to the gross value of output and the key product is rice milling, a cluster existing only in US Nagar. The rice milling is less capital-intensive as well as less labour-intensive.
- The most capital-intensive cluster is flour milling existing mainly in Nainital and partly in Almora.
- Processing and grinding of grain, and tailoring are the most labour-intensive operations contributing to almost 52 per cent of the total employment in registered clusters. These are spread over eight districts of Uttarakhand.

8.12.2 Industrial Clusters in Unregistered SSI Sector of Uttarakhand

The Uttarakhand unit of Third Census has identified 40 clusters having 500 or more unregistered units in one place in the state. However, only a few of these could be termed as natural. In fact, the Final Report of the Third Census published by the Central Ministry of SSI does not indicate existence of any cluster in unregistered SSI sector of Uttarakhand. However, these areas need to be surveyed more closely to convert them into industrial centres of larger scale. The characteristics of registered clusters can be state as follows (refer Tables 1.21 and 1.22):

- Almost 60 per cent of the operations in terms of number of units, fixed assets, gross output and employment exist in two districts of Haridwar and Nainital and the dominant products include ISD/STD booth, for industries, tailoring job work, motor vehicle/motor cycle sales services, and furniture and fixtures. Thus, there is clear dominance of services in unorganised clusters serving the industrial workforce and their growth is tied to industrial growth.
- More interesting products include tailoring job work, and ceramic/porcelain/pottery articles, which have potential backward and forward linkages, but their contribution is very small.
- Uttarkashi and Udham Singh Nagar, which have significantly large participation in registered

FIGURE 1.23

Distribution of Registered SSI Clusters by Number of Units, Fixed Capital, Gross Output and Employment

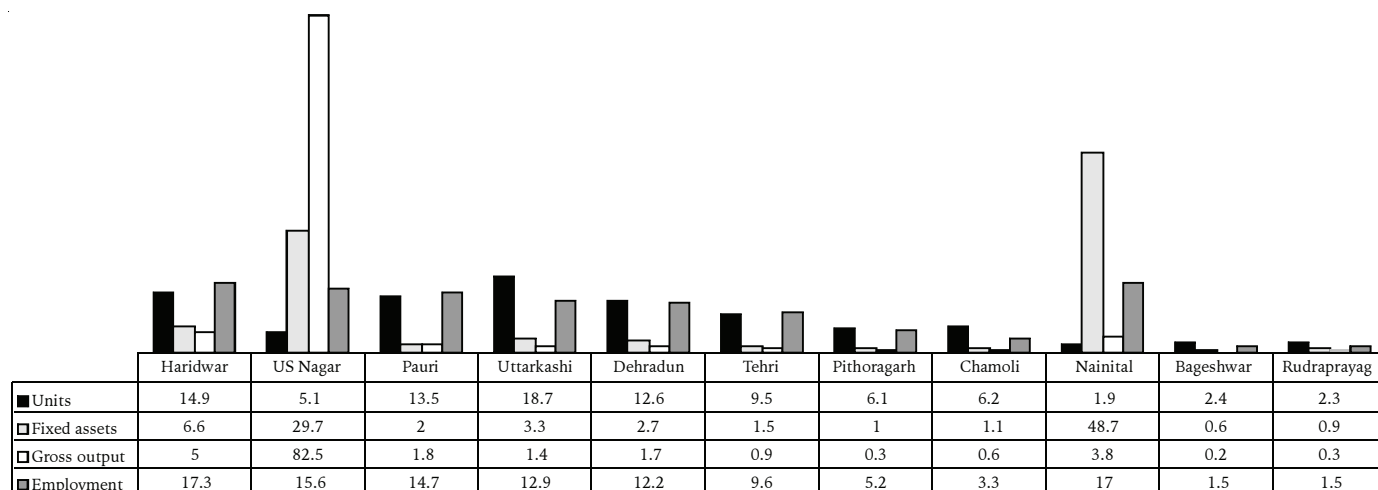


TABLE 1.20
List Products and Respective Districts having 100 or more Units Producing the Same Product/Service

| Sectors Sorted by Share in Gross Output | District Name | Share in | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------|-----------------------|-------------------------|-----------------------|
| | | Number | Fixed Assets of Units | Gross output (INR Lakh) | Employment (INR Lakh) |
| 1. Rice milling | Udham Singh Nagar | 3.27 | 27.69 | 81.06 | 12.47 |
| 2. Processing & grinding of grain | Uttarkashi, Chamoli, Rudraprayag, Dehradun, Tehri, Pauri, | 37.81 | 9.65 | 4.97 | 28.51 |
| 3. Flour milling | Pithoragarh, Nainital | 5.83 | 49.40 | 4.06 | 4.86 |
| 4. Manufacture of laboratory & scientific Instruments and apparatus, n.e.c., Microscopes other than optical Microscopes, apparatus for measuring & checking electrical quantities; For measuring & checking non electrical quantities | Haridwar | 3.63 | 3.20 | 2.86 | 6.18 |
| 5. Tailoring Services | Uttarkashi, Tehri, Dehradun, Pauri, Almora and Haridwar | 23.98 | 4.14 | 2.54 | 23.35 |
| 6. Manufacture of light agricultural & forestry machinery & equipment, other than forage press, ploughs, horrows, weeders, hoes, seeders, manure spreaders, thinners, etc. Manufacture of animal drawn machinery is included | Udham Singh Nagar | 1.86 | 2.04 | 1.46 | 3.18 |
| 7. Maintenance & repair of motor cycles, scooters & three wheelers | Haridwar, Dehradun | 3.88 | 1.16 | 1.30 | 3.99 |
| 8. Manufacture of furniture & fixtures made of wood, cane & reed | Uttarkashi, Dehradun, Haridwar | 6.88 | 1.62 | 0.97 | 7.28 |
| 9. Weaving, manufacture of wool & wool mixture fabrics | Uttarkashi | 6.47 | 0.56 | 0.43 | 4.07 |
| 10. Repair of TV, VCR, radio, tape recorder, refrigerator & other similar items | Pauri | 2.38 | 0.21 | 0.22 | 2.69 |
| 11. Manufacture of woollen carpets | Pithoragarh | 2.11 | 0.30 | 0.10 | 2.02 |
| 12. Manufacture of other rope & cordage other of jute/mesta & coir | Haridwar | 1.90 | 0.02 | 0.03 | 1.41 |
| Total | | 6059 | 20535 | 37002.4 | 11841 |
| Total SSI registered (INR) | | 15282 | 72544 | 146336 | 40845 |
| Percentage to total registered sector | | 39.65 | 28.31 | 25.29 | 28.99 |

Source: (basic data) Third All-India Census of SSI (2001-02).

TABLE 1.21
Distribution of Clusters in Unregistered SSI Sectors having 500 or more Units Producing the Same Product/Service across Districts of Uttarakhand

| | Units | Fixed Assets | Gross Output | Employment | Units | Fixed Assets | Gross Output | Employment |
|--------------------|-------|--------------|--------------|------------|-------|--------------|--------------|------------|
| Haridwar | 20220 | 28135.69 | 13066.26 | 41110 | 27.8 | 47.8 | 34.7 | 34.4 |
| Nainital | 22330 | 14836.93 | 10816.52 | 25854 | 30.7 | 25.2 | 28.7 | 21.6 |
| Pauri Garhwal | 5541 | 1275.4 | 3347.31 | 10655 | 7.6 | 2.2 | 8.9 | 8.9 |
| Dehradun | 6530 | 2251.6 | 2821.06 | 10459 | 9.0 | 3.8 | 7.5 | 8.7 |
| Udham Singh Nagar | 3655 | 2279.53 | 2069.02 | 6989 | 5.0 | 3.9 | 5.5 | 5.8 |
| Pithoragarh | 2838 | 1117.71 | 525.79 | 4333 | 3.9 | 1.9 | 1.4 | 3.6 |
| Tehri Garhwal | 2739 | 828.5 | 991.77 | 3003 | 3.8 | 1.4 | 2.6 | 2.5 |
| Uttarkashi | 982 | 515.55 | 169.4 | 982 | 1.4 | 0.9 | 0.4 | 0.8 |
| Total cluster | | | | | 79.75 | 81.82 | 77.43 | 77.47 |
| Other | 7,885 | 7,563 | 3,878 | 16,229 | 10.8 | 12.9 | 10.3 | 13.6 |
| Total unregistered | 72720 | 58803.54 | 37684.88 | 119614 | 100 | 100 | 100 | 100 |

Source: (basic data) Third All India Census of SSI (2001-02).

TABLE 1.22
List Products and Respective Districts having 500 or more Units Producing the Same Product/Service

| <i>Products Sorted by Share in Employment</i> | <i>District</i> | <i>No. of Units</i> | <i>Fixed Assets (INR Lakhs)</i> | <i>Gross Output (INR)</i> | <i>Employment</i> |
|---------------------------------------------------|-------------------------------------------------|---------------------|---------------------------------|---------------------------|-------------------|
| 97323 ISD/STD booth for industries | Dehradun, Haridwar, Nainital | 26.4 | 36.4 | 21.5 | 22.2 |
| 97920 Tailoring (job work) | Dehradun, Haridwar, Pauri, Tehri, U.S. Nagar | 14.7 | 7.9 | 15.1 | 17.0 |
| 97102 Motor vehicle/motor cycle sales services | Dehradun, Haridwar, Nainital, U.S. Nagar | 14.8 | 14.7 | 18.9 | 16.1 |
| 97189 Sales, maintenance & repair services, n.e.c | Dehradun, Haridwar, Nainital, U.S. Nagar | 11.0 | 8.3 | 10.7 | 9.8 |
| 51229 Furniture & fixtures, wooden, n.e.c | Dehradun, Haridwar, Nainital, Pauri, Uttarkashi | 5.3 | 3.5 | 6.2 | 6.8 |
| 76101 Agriculture implements | Pauri, Pithoragarh, Tehri | 4.6 | 1.4 | 5.2 | 5.1 |
| 97715 Dyeing job work by laundry | Nainital | 2.7 | 3.9 | 5.1 | 3.5 |
| 12401 Atta | Haridwar, Dehradun | 3.0 | 4.6 | 3.0 | 2.7 |
| 57199 Paper made packing materials | Haridwar | 1.4 | 0.6 | 1.2 | 2.4 |
| 17105 Flour milling | Pithoragarh | 2.4 | 1.8 | 1.1 | 2.3 |
| 97106 TV/VCR/VCP/VCD/radio repairing | Dehradun, Haridwar | 2.7 | 4.3 | 2.1 | 2.0 |
| 12403 Flours, cereals, others | Nainital | 2.3 | 5.1 | 1.5 | 1.6 |
| 97112 Watch sales/repairing services | Pauri | 1.5 | 0.5 | 1.4 | 1.5 |
| 97115 Household electrical goods sales services | Haridwar | 1.4 | 1.4 | 1.6 | 1.4 |
| 11415 Cream | | 0.8 | 1.9 | 1.4 | 1.3 |
| 76129 Other agriculture implements | Udham Singh Nagar | 0.8 | 0.8 | 0.9 | 1.2 |
| 44302 Foot wear, boot | Haridwar | 1.0 | 0.7 | 0.7 | 0.9 |
| 94389 Ceramic/porcelain/pottery articles, n.e.c | Haridwar | 1.1 | 0.7 | 0.9 | 0.9 |
| 97989 Community/social services, n.e.c | Udham Singh Nagar | 1.0 | 1.3 | 1.1 | 0.7 |
| 53104 Domestic basket & basketware | Pithoragarh | 1.0 | 0.2 | 0.2 | 0.6 |
| Total clusters | | 100.0 | 100.0 | 100.0 | 100.0 |
| Total clusters | | 63949 | 50533.7 | 33259.53 | 102002 |

Source: (basic data) Third All India Census of SSI (2001-02).

clusters, do not figure as prominently in the case of unregistered SSI clusters.

8.13 Industrial Estates of Uttarakhand

Uttarakhand, having received the status of a full-fledged special category state and having obtained 100 per cent exemption on excise duty for new industries for ten years through a Notification of the Government of India, is in an absolute advantageous position to drive its industrial growth to new heights. In fact, the state has constituted the State Industrial Development Corporation of Uttarakhand Ltd. (SIDCUL) to initiate and implement steps required towards this goal. One of them is to set up industrial estates in strategic locations in partnership with private or cooperative sector. Some of the identified industrial estates are Integrated Industrial Estate (IIE) at Haridwar, Pantnagar, and Sitarganj; Pharma City—Selaqui Industrial Area, Dehradun; Information Technology Park at Dehradun; a Growth Centre at Sigaddi, Kotdwar.

The state government is very optimistic about the outcome of IIE Sitarganj and Information Technology (IT) Park at Dehradun. The IT Park is planned to be a state-of-the-art Information Technology Park in more than 60 acres at Sahastradhara road, Dehradun, with Intelligent Buildings and a Hi-tech Habitat Centre. The product offering include ready-to-occupy hi-tech intelligent building, developed plots of varying sizes, academic zone for educational and research organisations to STPI Incubation centre to promote local entrepreneurs. The state government has already signed MOUs with leading national and international organisations for setting up of research academies.

Integrated Industrial Estate (IIE), envisaged at Sitarganj in Udham Singh Nagar district by State Industrial Development Corporation of Uttarakhand Limited (SIDCUL). The proposed site is about 300 km from Delhi and the nearest large town is Moradabad (U.P.), which is at a distance of about 80km. The

earmarked site (47,49,720.00 sq.m.) for the Integrated Industrial Estate lies 15 km north of Sitarganj town. Sitarganj town is located 40 km east of Rudrapur, which is the district headquarter of Udham Singh Nagar.

8.14 State of Tourism Industry

The tourism industry is an important contributor to the economy of Uttarakhand. The output, income and employment multipliers have been calculated for the tourism sector in Uttarakhand using the input-output table for all-India. The output multiplier of this sector is 0.65 in the tourism sector itself and 2.17 in the economy. This implies that every rupee of tourist expenditure generates an output worth INR 0.65 in the tourism sector itself and INR 2.07 in the whole economy. The direct and indirect income multiplier for tourism is 0.736. This implies that every rupee of tourism expenditure results in an income of INR 0.736 in the economy taking into account the direct and indirect effects. Similarly, the direct and indirect employment multiplier for the tourism sector is 1.126. This means that 1.126 jobs are created for INR 1.00 lakh of tourism expenditure.

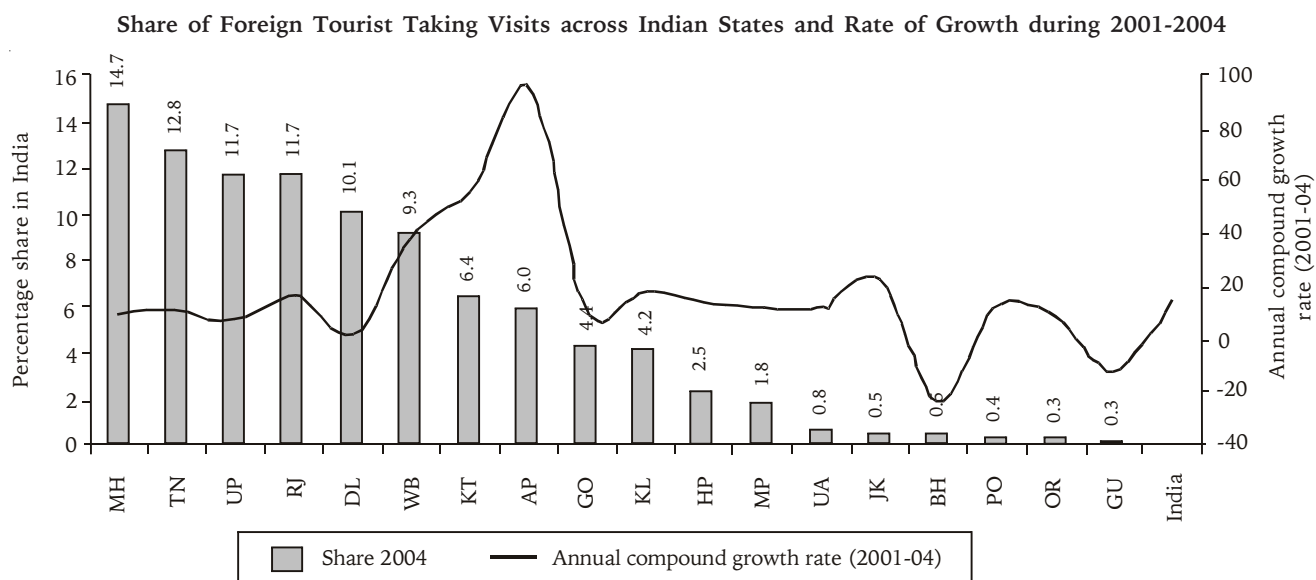
The total number of important tourist places in the state as of 2003-04 was 178. From the Raj era hill-stations at Mussoorie, Almora, Ranikhet and Nainital being some of the most frequented destinations. To this region also belong some of the holiest Hindu shrines, and for almost 2000 years now pilgrims have been visiting the temples at Haridwar, Rishikesh, Badrinath and Kedarnath in the hope of salvation and purification from sin. The

total tourist arrivals to the state in 2004 was 13.9 million of which 13.8 million were domestic tourists and the rest 0.075 million were foreigner tourists. The share of foreign tourists visiting Uttarakhand is a complete mismatch to its potential. During 2004 only 0.8 per cent of foreign tourists visited the state as compared to Himachal Pradesh where 2.5 per cent of them took visits (Figure 1.24). The flow of foreign tourists during 2001-2004 has grown at an average rate of 12 per cent as against all India growth of 15 per cent.

The maximum number of tourist arrivals has been to Haridwar in 2004. This trend has not changed over the years. Haridwar has been the most preferred destination of the Indian tourists because of the religious importance of this place for Indians. The least preferred destination for all the years has been 'Valley of Flowers' in Chamoli district. This is due to the difficulty in reaching this destination. However, there is indication of change in situation in recent years, thanks to promotional efforts of the state government.

For the foreign tourists, Dehradun remains the most preferred district. Dehradun as a district is also the second most preferred destination of the Indian tourists. Dehradun has many tourist places of interest both religious as well as destinations known for their natural beauty. Champavat district has been the least preferred district in Uttarakhand for all the years from 2000. There are not too many well-known tourist destinations in the district except for Meetha Reetha Sahib. Bageshwar and Pithoragarh districts have had the maximum increase in

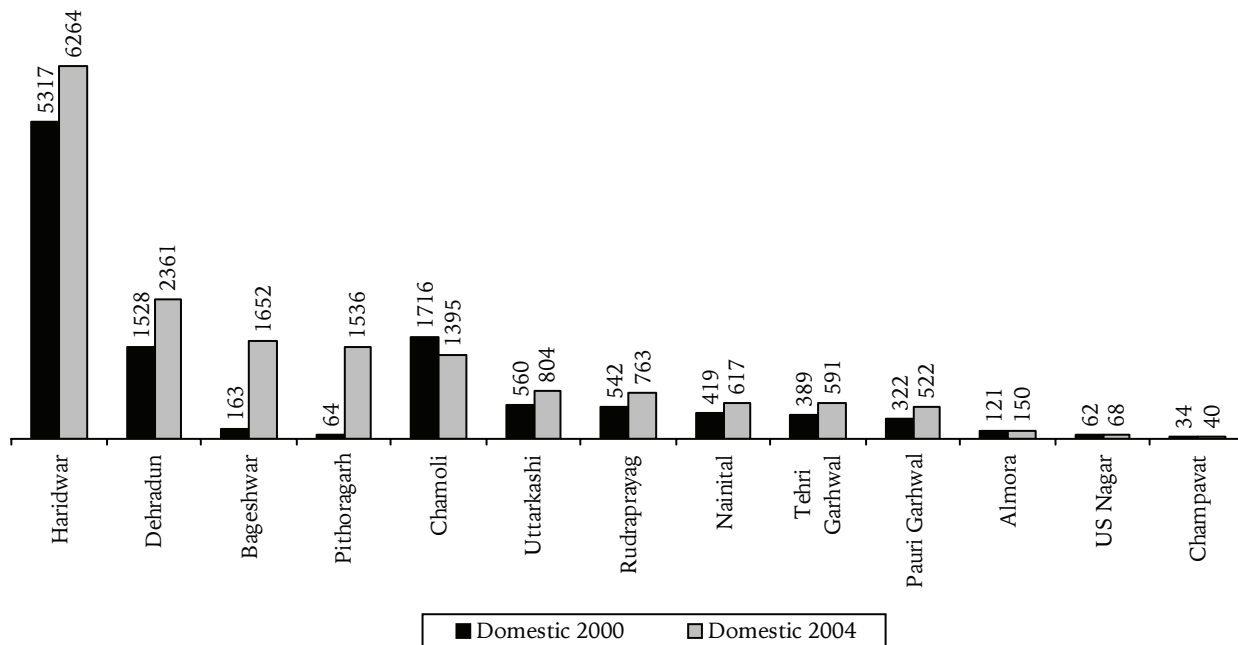
FIGURE 1.24



Source: (basic data) India data-net.

FIGURE 1.25

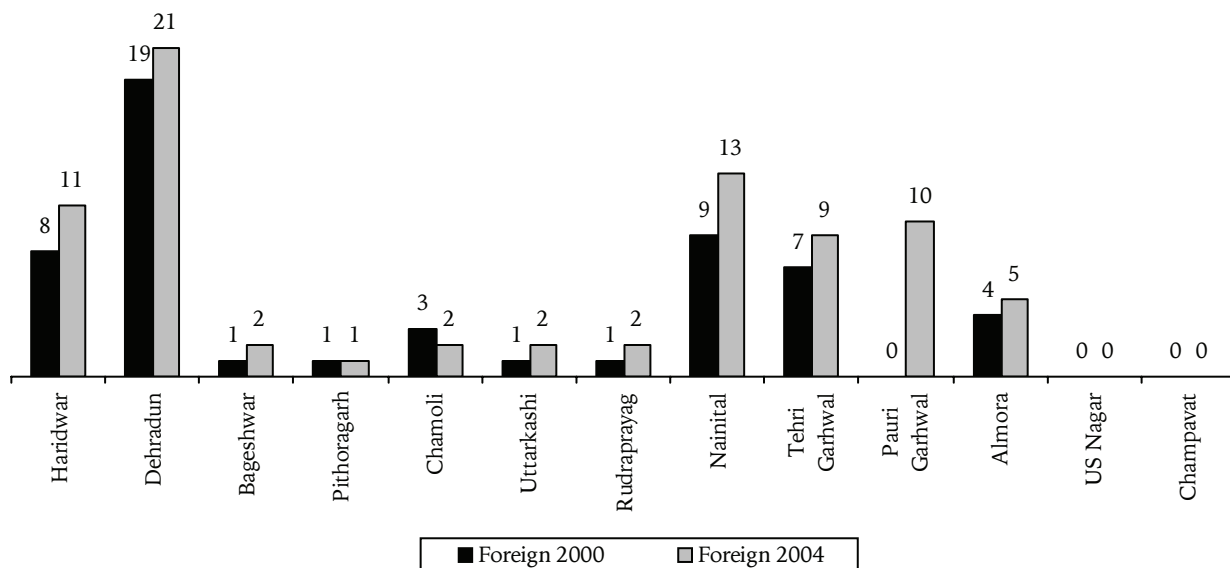
District-wise Domestic Tourist Arrivals in Uttarakhand: 2000 and 2004



Source: (basic data) Uttarakhand Tourism Development Board.

FIGURE 1.26

District-wise Foreign Tourist Arrivals in Uttarakhand: 2000 and 2004



Source: (basic data) Uttarakhand Tourism Development Board.

the tourist arrivals. In fact, the fastest growing destinations in terms of the tourist arrivals based on average growth rates of all the years to Uttarakhand was Pithoragarh district, followed by Kotdwar.

9. Financial Condition of the State

With respect to the target for the state governments, the fiscal condition of Uttarakhand is far from satisfactory. It appears that the new state has not been able to come

out of the legacy of Uttar Pradesh in terms of financial management. The conditions have deteriorated remarkably between 2001-02 and 2004-05. During this period the fiscal deficit increased from 4.6 per cent of GSDP to 8.4 per cent of GSDP and as a consequence the debt burden of the state has gone up from 26.4 per cent of GSDP in 2000-01 to 50.84 per cent of GSDP during 2004-05. The balance of current revenue (BCR)⁵, which plays critical role in determining its plan size, continues to be negative, putting a constraint on the infrastructure development.

However, the state has projected significant reduction in the revenue deficit in the revised estimate (RE) of

2005-06 and the budget estimate (BE) of 2006-07, the results of bygone years for which audited data are available indicate serious problems. The budget management has not been reliable enough to believe the projections. All the three measures of fiscal performance, the gross fiscal deficit, primary deficit and the revenue deficit are much on the higher side up to 2004-05 accounts statement. Importantly, the primary deficit has increased to 6.75 per cent of GSDP during 2004-05 and even according to the budget estimates for 2006-07 it is likely to further increase to 6.81 per cent of GSDP. This is unacceptable, requires serious corrections and casts doubts on the feasibility of long-term growth prospects.

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5. BCR is defined as: revenue receipt minus all plan grants and non-plan revenue expenditure excluding debits under 2048-Appropriation for reduction or avoidance of debt.

APPENDIX A-1.1

A Comparison of Gross State Domestic Product based on Old Series(1993-94) and New Series (1999-2000)—Uttarakhand

The new GSDP series based on 1999-2000 prices indicates a lesser growth rate of the economy as a whole for Uttarakhand as compared to the earlier series, which is based on 1993-94 prices. The two series also differ in terms of shares of sectors in the state for the corresponding period of 2001-2006. Specifically, following differences could be observed in the two series:

1. The overall average growth of Uttarakhand during 2001-2006 was 10.05 per cent at 1993-94 prices while the new series (1999-2000) indicates a growth rate of 8.47 per cent.
2. The share of primary sector and tertiary sector was 31.64 per cent and 43 per cent respectively at 1993-1994 prices. However, according to the new series

(1999-2000), the share of primary sector and tertiary sector is 26.5 and 50 per cent respectively (Appendix A-1.3c).

3. According to old series (1993-94), share of primary sector was 38.30 per cent in 1999-2000, which came down to around 28.30 per cent in 2004-05. The new series, on the other hand, shows the share of primary sector to be around 30 and 23.8 per cent respectively for the same period (Appendix A-1.3b).
4. For tertiary sector the 1999-2000 series show a steady share of around 50 per cent since 1999-2000 till 2005-06 while the 1993-94 series measures it to be around 40 per cent.

APPENDIX A-1.1a

Growth of Gross State Domestic Product at Factor Cost by Industry of Origin at 1993-94 Prices
(As on 31-01-2007)—Uttarakhand

(INR lakh)

| Sector | 1994-95 | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-2000 | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | Average 2001-05 |
|--------------------------------------------------------------|---------|---------|---------|---------|---------|-----------|---------|---------|---------|---------|---------|---------|-----------------|
| 1 Agriculture | 5.5 | 7.1 | 0.8 | -0.6 | 2.4 | -0.3 | 5.1 | -3.5 | 2.2 | 5.0 | 2.3 | | 1.5 |
| 2 Forestry & logging | -6.1 | 9.4 | -18.0 | 11.1 | 24.9 | -7.0 | -13.4 | 0.6 | 3.2 | 0.8 | 3.8 | | 2.1 |
| 3 Fishing | 5.8 | 4.0 | 2.8 | 7.1 | 14.3 | 5.3 | 1.4 | 1.2 | 6.1 | 0.6 | 0.0 | | 2.0 |
| 4 Mining & quarrying | 21.4 | -11.7 | -28.1 | -16.9 | 48.0 | 31.6 | -8.1 | 39.4 | 5.5 | 154.0 | 4.8 | | 50.9 |
| Sub-total | 4.7 | 6.6 | -2.2 | 0.1 | 5.6 | -0.1 | 2.5 | -1.6 | 2.5 | 12.3 | 2.7 | | 4.0 |
| 5 Manufacturing | 41.6 | -33.2 | 32.1 | -16.2 | -26.0 | -2.2 | 47.7 | -9.0 | 11.3 | 10.1 | 16.9 | | 7.3 |
| 5.1 Manu-registered | 45.5 | -39.1 | 39.4 | -20.6 | -32.9 | -6.4 | 66.1 | -11.7 | 13.5 | 9.9 | 19.8 | | 7.9 |
| 5.2 Manu-unregistered | 17.5 | 12.3 | 1.6 | 9.1 | 2.6 | 9.3 | 4.9 | 0.9 | 4.1 | 10.5 | 6.6 | | 5.5 |
| 6 Construction | -1.3 | 20.0 | 1.7 | 16.2 | 22.6 | -5.1 | 6.5 | 33.0 | 30.1 | 5.3 | 24.2 | | 23.1 |
| 7 Electricity, gas and water | 8.6 | 3.7 | 0.8 | 2.4 | 5.6 | -8.2 | 5.3 | 73.8 | 9.4 | 9.0 | 15.9 | | 27.0 |
| Sub-total of secondary | 25.7 | -17.7 | 18.5 | -5.0 | -5.5 | -4.2 | 24.4 | 14.6 | 19.8 | 7.6 | 20.3 | | 15.6 |
| 8 Transport, storage & communication | 5.8 | 6.3 | 4.3 | 2.2 | 4.9 | 8.9 | 38.1 | 7.6 | 12.9 | 10.9 | 14.2 | | 11.4 |
| 8.1 Railways | -6.0 | 7.7 | 3.9 | 4.9 | 9.7 | 3.9 | 0.0 | 7.3 | 5.0 | 6.4 | 6.2 | | 6.2 |
| 8.2 Transport by other means | 0.8 | 5.3 | 1.2 | 6.6 | 3.1 | 5.0 | 8.6 | 3.7 | 3.9 | 7.9 | 9.3 | | 6.2 |
| 8.3 Storage | 8.9 | 3.9 | -4.5 | 9.6 | 33.5 | 6.2 | 8.6 | 2.5 | -3.4 | 4.1 | 2.4 | | 1.4 |
| 8.4 Communication | 34.3 | 9.4 | 15.3 | -11.8 | 4.8 | 24.6 | 139.1 | 12.9 | 25.5 | 14.8 | 20.1 | | 18.3 |
| 9 Trade, hotels and restaurant | -3.8 | 1.6 | 9.6 | -0.9 | 1.3 | -0.1 | 20.3 | 6.7 | 5.0 | 14.9 | 5.7 | | 8.1 |
| 10 Banking & insurance | 9.1 | 3.5 | 41.8 | 24.6 | -11.8 | 5.1 | 7.1 | 5.4 | 20.3 | 7.4 | 11.0 | | 11.0 |
| 11 Real estate, ownership of dwellings and business services | 3.3 | 3.5 | 3.0 | 3.9 | 5.0 | 5.3 | 7.0 | 4.7 | 4.6 | 4.9 | 6.6 | | 5.2 |
| 12 Public administration | -2.8 | 15.0 | -0.2 | 16.7 | 0.9 | 9.6 | 0.1 | 21.4 | -1.6 | 4.0 | 27.9 | | 12.9 |
| 13 Other services | 6.6 | 6.9 | 3.5 | 4.3 | 12.8 | 1.3 | 5.8 | 2.8 | 20.9 | 33.5 | 13.8 | | 17.7 |
| Sub-total of tertiary | 2.6 | 5.9 | 8.9 | 8.0 | 2.1 | 4.5 | 11.5 | 7.6 | 10.5 | 14.1 | 12.9 | | 11.3 |
| 14 State domestic product (INR Lacs) | 8.8 | -0.2 | 6.4 | 1.8 | 1.7 | 0.8 | 10.7 | 5.9 | 10.2 | 11.8 | 11.7 | | 9.9 |
| 15 Calculated domestic product (INR Lacs) | 8.8 | -0.2 | 6.4 | 1.8 | 1.7 | 0.8 | 10.7 | 5.9 | 10.2 | 11.8 | 11.7 | | 9.9 |
| 16 Population | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.7 | 1.7 | 1.7 | | 1.7 |
| 17 State per capita income (INR) | 6.8 | -2.0 | 4.5 | 0.0 | -0.2 | -1.0 | 8.8 | 4.1 | 8.3 | 9.9 | 9.9 | | 8.0 |
| 18 Calculated per capita income (INR) | 6.8 | -2.0 | 4.5 | 0.0 | -0.2 | -1.0 | 8.8 | 4.1 | 8.3 | 9.9 | 9.9 | | 8.0 |

Source: (Basic Data) CSO, National Accounts.

APPENDIX A-1.1b

Growth of Gross State Domestic Product at Factor Cost by Industry of Origin at 1999-2000 Prices
(As on 31-01-2007)—Uttarakhand

(INR lakh)

| Sector | 1994-95 | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-2000 | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | Average 2001-2005 |
|--------------------------------------------------------------|---------|---------|---------|---------|---------|-----------|---------|---------|---------|---------|---------|---------|-------------------|
| 1 Agriculture | | | | | | | 8.0 | -6.0 | 2.6 | 5.9 | 4.5 | 0.7 | 1.7 |
| 2 Forestry & logging | | | | | | | -19.1 | 4.0 | 8.0 | 2.7 | 5.8 | 11.5 | 5.2 |
| 3 Fishing | | | | | | | 1.3 | 1.4 | 6.0 | 0.5 | 0.1 | 0.3 | 2.0 |
| 4 Mining & quarrying | | | | | | | -34.7 | 19.6 | -2.6 | 137.0 | -10.7 | 63.9 | 35.8 |
| Sub-Total | | | | | | | 4.1 | -4.7 | 2.8 | 9.2 | 3.7 | 4.7 | 2.8 |
| 5 Manufacturing | | | | | | | 37.8 | -8.1 | 32.7 | 8.1 | 8.3 | 6.5 | 10.2 |
| 5.1 Manu-registered | | | | | | | 64.2 | -11.7 | 49.5 | 7.7 | 10.5 | 6.6 | 14.0 |
| 5.2 Manu-unregistered | | | | | | | 7.8 | -1.9 | 6.5 | 8.9 | 3.7 | 6.1 | 4.3 |
| 6 Construction | | | | | | | 27.7 | 27.9 | 14.2 | 1.6 | 23.9 | 18.2 | 16.9 |
| 7 Electricity, gas and water | | | | | | | 4.4 | 77.1 | 9.6 | 9.3 | 14.5 | 30.0 | 27.6 |
| Sub-total of secondary | | | | | | | 30.1 | 13.4 | 21.4 | 5.6 | 15.3 | 14.5 | 13.9 |
| 8 Transport, storage & communication | | | | | | | 13.2 | 10.6 | 11.6 | 12.2 | 11.4 | 12.0 | 11.4 |
| 8.1 Railways | | | | | | | 0.7 | 9.7 | 5.0 | 6.4 | 5.7 | 7.7 | 6.7 |
| 8.2 Transport by other means | | | | | | | 15.6 | 10.2 | 11.2 | 11.5 | 11.2 | 12.9 | 11.0 |
| 8.3 Storage | | | | | | | 19.2 | 9.2 | -7.2 | -4.3 | 6.4 | 5.5 | 1.0 |
| 8.4 Communication | | | | | | | 21.9 | 12.7 | 20.6 | 19.6 | 16.8 | 13.5 | 17.4 |
| 9 Trade, hotels and restaurant | | | | | | | 14.8 | 1.8 | 4.8 | 9.3 | 5.2 | 12.1 | 5.3 |
| 10 Banking & insurance | | | | | | | 7.1 | 7.4 | 14.8 | -1.0 | 9.2 | 8.4 | 7.6 |
| 11 Real estate, ownership of dwellings and business services | | | | | | | 5.0 | 3.9 | 3.8 | 3.7 | 3.9 | 4.8 | 3.8 |
| 12 Public administration | | | | | | | 5.0 | 10.0 | 6.3 | 11.2 | 4.0 | 15.6 | 7.9 |
| 13 Other services | | | | | | | 6.4 | 18.3 | 9.0 | 7.2 | 4.3 | 8.5 | 9.7 |
| Sub-total of tertiary | | | | | | | 9.9 | 8.0 | 7.5 | 8.1 | 6.0 | 10.7 | 7.4 |
| 14 State domestic product (INR Lakh) | | | | | | | 11.8 | 5.5 | 9.5 | 7.7 | 7.8 | 10.3 | 7.6 |
| 15 Calculated domestic product (INR Lakh) | | | | | | | 11.8 | 5.5 | 9.5 | 7.7 | 7.8 | 10.3 | 7.6 |
| 16 Population | | | | | | | 1.8 | 1.8 | 1.6 | 1.7 | 1.7 | 1.6 | 1.7 |
| 17 State per capita income (INR) | | | | | | | 9.9 | 3.6 | 7.7 | 5.9 | 6.0 | 8.5 | 5.8 |
| 18 Calculated per capita income (INR) | | | | | | | 9.9 | 3.6 | 7.7 | 5.9 | 6.0 | 8.5 | 5.8 |

Note: These are the new series data (at 1999-2000 prices) and therefore would not furnish the data before 1999-2000.

Source: (Basic Data) CSO, National Accounts.

APPENDIX A-1.2a

Share of Gross State Domestic Product at Factor Cost by Industry of Origin at 1993-94 Prices
(As on 31-01-2007)—Uttarakhand

(INR lakh)

| Sector | 1993-94 | 1994-95 | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-2000 | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | Average 2001-2005 |
|--------------------------------------------------------------|---------|---------|---------|---------|---------|---------|-----------|---------|---------|---------|---------|---------|---------|-------------------|
| 1 Agriculture | 33.8 | 32.8 | 35.2 | 33.4 | 32.6 | 32.8 | 32.5 | 30.8 | 28.1 | 26.0 | 24.5 | 22.4 | | 25.3 |
| 2 Forestry & logging | 4.7 | 4.1 | 4.5 | 3.4 | 3.8 | 4.6 | 4.2 | 3.3 | 3.2 | 3.0 | 2.7 | 2.5 | | 2.8 |
| 3 Fishing | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | | 0.1 |
| 4 Mining & quarrying | 1.5 | 1.6 | 1.4 | 1.0 | 0.8 | 1.2 | 1.5 | 1.2 | 1.6 | 1.6 | 3.6 | 3.4 | | 2.5 |
| Sub-total | 40.1 | 38.6 | 41.2 | 37.9 | 37.2 | 38.7 | 38.3 | 35.5 | 33.0 | 30.7 | 30.8 | 28.3 | | 30.7 |
| 5 Manufacturing | 14.2 | 18.5 | 12.4 | 15.3 | 12.6 | 9.2 | 8.9 | 11.9 | 10.2 | 10.3 | 10.2 | 10.6 | | 10.3 |
| 5.1 Manu-registered | 12.2 | 16.3 | 10.0 | 13.1 | 10.2 | 6.7 | 6.2 | 9.4 | 7.8 | 8.0 | 7.9 | 8.5 | | 8.1 |
| 5.2 Manu-unregistered | 2.0 | 2.1 | 2.4 | 2.3 | 2.4 | 2.5 | 2.7 | 2.5 | 2.4 | 2.3 | 2.3 | 2.2 | | 2.3 |
| 6 Construction | 7.0 | 6.4 | 7.7 | 7.3 | 8.4 | 10.1 | 9.5 | 9.1 | 11.4 | 13.5 | 12.7 | 14.2 | | 13.0 |
| 7 Electricity, gas and water | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.2 | 2.0 | 1.9 | 3.1 | 3.1 | 3.0 | 3.1 | | 3.1 |
| Sub-total of secondary | 23.4 | 27.0 | 22.2 | 24.8 | 23.1 | 21.5 | 20.4 | 22.9 | 24.8 | 26.9 | 25.9 | 28.0 | | 26.4 |
| 8 Transport, storage & communication | 4.3 | 4.1 | 4.4 | 4.3 | 4.3 | 4.5 | 4.8 | 6.0 | 6.1 | 6.3 | 6.2 | 6.4 | | 6.3 |
| 8.1 Railways | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | | 0.4 |
| 8.2 Transport by other means | 3.0 | 2.8 | 2.9 | 2.8 | 2.9 | 3.0 | 3.1 | 3.0 | 3.0 | 2.8 | 2.7 | 2.6 | | 2.8 |
| 8.3 Storage | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | | 0.1 |
| 8.4 Communication | 0.7 | 0.9 | 0.9 | 1.0 | 0.9 | 0.9 | 1.1 | 2.4 | 2.6 | 2.9 | 3.0 | 3.3 | | 3.0 |
| 9 Trade, hotels and restaurant | 7.8 | 6.9 | 7.0 | 7.2 | 7.0 | 7.0 | 6.9 | 7.5 | 7.6 | 7.2 | 7.4 | 7.0 | | 7.3 |
| 10 Banking & insurance | 4.4 | 4.4 | 4.6 | 6.1 | 7.4 | 6.4 | 6.7 | 6.5 | 6.5 | 7.1 | 6.8 | 6.7 | | 6.8 |
| 11 Real estate, ownership of dwellings and business services | 6.8 | 6.4 | 6.7 | 6.5 | 6.6 | 6.8 | 7.1 | 6.9 | 6.8 | 6.5 | 6.1 | 5.8 | | 6.3 |
| 12 Public administration | 5.5 | 4.9 | 5.7 | 5.3 | 6.1 | 6.1 | 6.6 | 6.0 | 6.9 | 6.1 | 5.7 | 6.5 | | 6.3 |
| 13 Other services | 7.8 | 7.7 | 8.2 | 8.0 | 8.2 | 9.1 | 9.1 | 8.7 | 8.4 | 9.3 | 11.1 | 11.3 | | 10.0 |
| Sub-total of tertiary | 36.5 | 34.4 | 36.5 | 37.4 | 39.7 | 39.9 | 41.3 | 41.6 | 42.3 | 42.4 | 43.3 | 43.7 | | 42.9 |
| 14 State domestic product (INR Lakh) | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | | |
| 15 Calculated domestic product (INR Lakh) | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | | |
| 16 Population | 1303.1 | 1220.2 | 1245.7 | 1192.2 | 1192.7 | 1194.6 | 1206.2 | 1109.0 | 1065.5 | 983.6 | 895.3 | 814.8 | | 939.8 |
| 17 State per capita income (INR) | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 | 1.1 | | 1.1 |
| 18 Calculated per capita income (INR) | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 | 1.1 | | 1.1 |

Source: (Basic Data) CSO, National Accounts.

APPENDIX A-1.2b

Share of Gross State Domestic Product at Factor Cost by Industry of Origin at 1999-2000 Prices
(As on 31-01-2007)—Uttarakhand

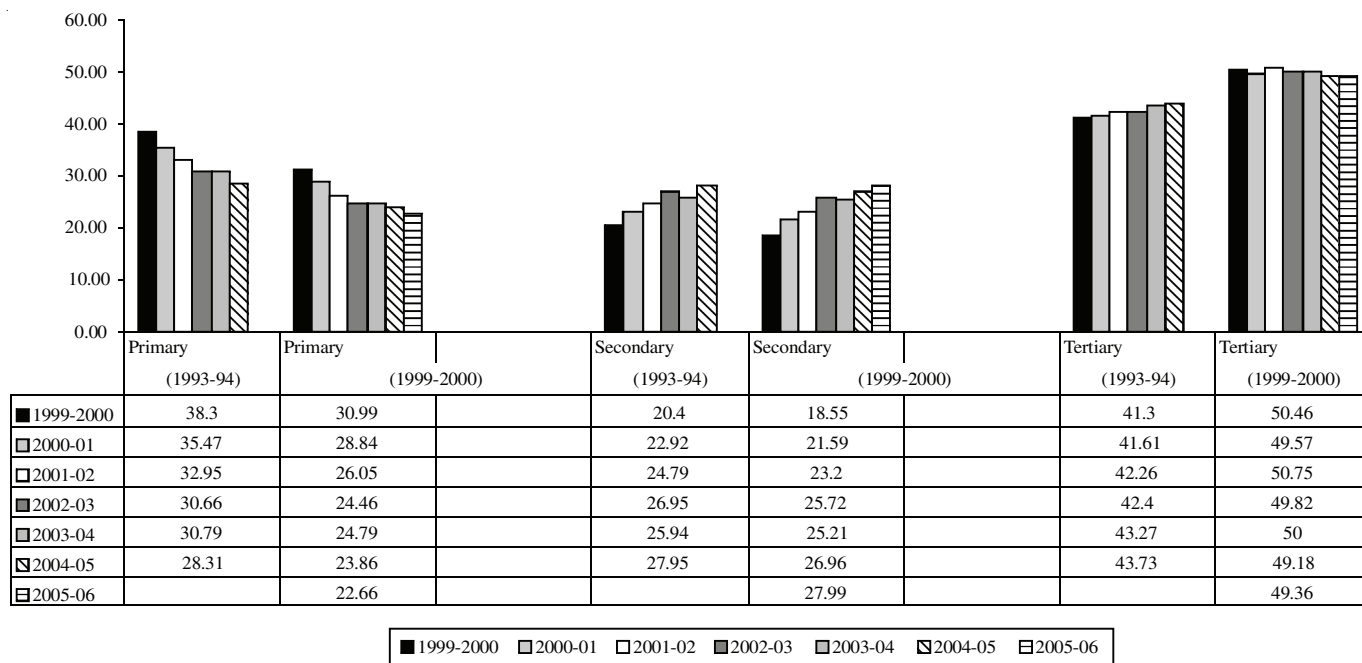
(INR Lakh)

| Sector | 1993-94 | 1994-95 | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-2000 | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | Average 2001-2005 |
|--------------------------------------------------------------|---------|---------|---------|---------|---------|---------|-----------|---------|---------|---------|---------|---------|---------|-------------------|
| 1 Agriculture | | | | | | | 27.1 | 26.2 | 23.3 | 21.8 | 21.5 | 20.8 | 19.0 | 21.9 |
| 2 Forestry & logging | | | | | | | 2.7 | 2.0 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.9 |
| 3 Fishing | | | | | | | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4 Mining & quarrying | | | | | | | 1.1 | 0.7 | 0.7 | 0.7 | 1.5 | 1.2 | 1.8 | 1.0 |
| Sub-total | | | | | | | 31.0 | 28.8 | 26.0 | 24.5 | 24.8 | 23.9 | 22.7 | 24.8 |
| 5 Manufacturing | | | | | | | 9.2 | 11.3 | 9.9 | 11.9 | 12.0 | 12.0 | 11.6 | 11.5 |
| 5.1 Manu-registered | | | | | | | 4.9 | 7.2 | 6.0 | 8.2 | 8.2 | 8.4 | 8.1 | 7.7 |
| 5.2 Manu-unregistered | | | | | | | 4.3 | 4.2 | 3.9 | 3.8 | 3.8 | 3.7 | 3.5 | 3.8 |
| 6 Construction | | | | | | | 7.3 | 8.4 | 10.2 | 10.6 | 10.0 | 11.5 | 12.3 | 10.5 |
| 7 Electricity, gas and water | | | | | | | 2.0 | 1.9 | 3.2 | 3.2 | 3.2 | 3.4 | 4.1 | 3.3 |
| Sub-total of secondary | | | | | | | 18.6 | 21.6 | 23.2 | 25.7 | 25.2 | 27.0 | 28.0 | 25.3 |
| 8 Transport, storage & communication | | | | | | | 7.3 | 7.4 | 7.8 | 7.9 | 8.2 | 8.5 | 8.7 | 8.1 |
| 8.1 Railways | | | | | | | 1.8 | 1.6 | 1.7 | 1.6 | 1.6 | 1.5 | 1.5 | 1.6 |
| 8.2 Transport by other means | | | | | | | 4.1 | 4.2 | 4.4 | 4.5 | 4.6 | 4.8 | 4.9 | 4.6 |
| 8.3 Storage | | | | | | | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 8.4 Communication | | | | | | | 1.4 | 1.5 | 1.6 | 1.8 | 2.0 | 2.1 | 2.2 | 1.9 |
| 9 Trade, hotels and restaurant | | | | | | | 16.6 | 17.1 | 16.5 | 15.8 | 16.0 | 15.6 | 15.9 | 16.0 |
| 10 Banking & insurance | | | | | | | 3.5 | 3.4 | 3.4 | 3.6 | 3.3 | 3.3 | 3.3 | 3.4 |
| 11 Real estate, ownership of dwellings and business services | | | | | | | 6.5 | 6.1 | 6.0 | 5.7 | 5.5 | 5.3 | 5.0 | 5.6 |
| 12 Public administration | | | | | | | 6.0 | 5.7 | 5.9 | 5.8 | 5.9 | 5.7 | 6.0 | 5.8 |
| 13 Other services | | | | | | | 10.5 | 10.0 | 11.2 | 11.1 | 11.1 | 10.7 | 10.5 | 11.0 |
| Sub-total of tertiary | | | | | | | 50.5 | 49.6 | 50.7 | 49.8 | 50.0 | 49.2 | 49.4 | 49.9 |
| 14 State domestic product (INR Lakh) | | | | | | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 15 Calculated domestic product (INR Lakh) | | | | | | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 16 Population | | | | | | | 647.3 | 589.3 | 568.7 | 527.9 | 498.2 | 470.0 | 433.0 | 516.2 |
| 17 State per capita income (INR) | | | | | | | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 18 Calculated per capita income (INR) | | | | | | | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |

Source: (Basic Data) CSO, National Accounts.

APPENDIX A-1.3a

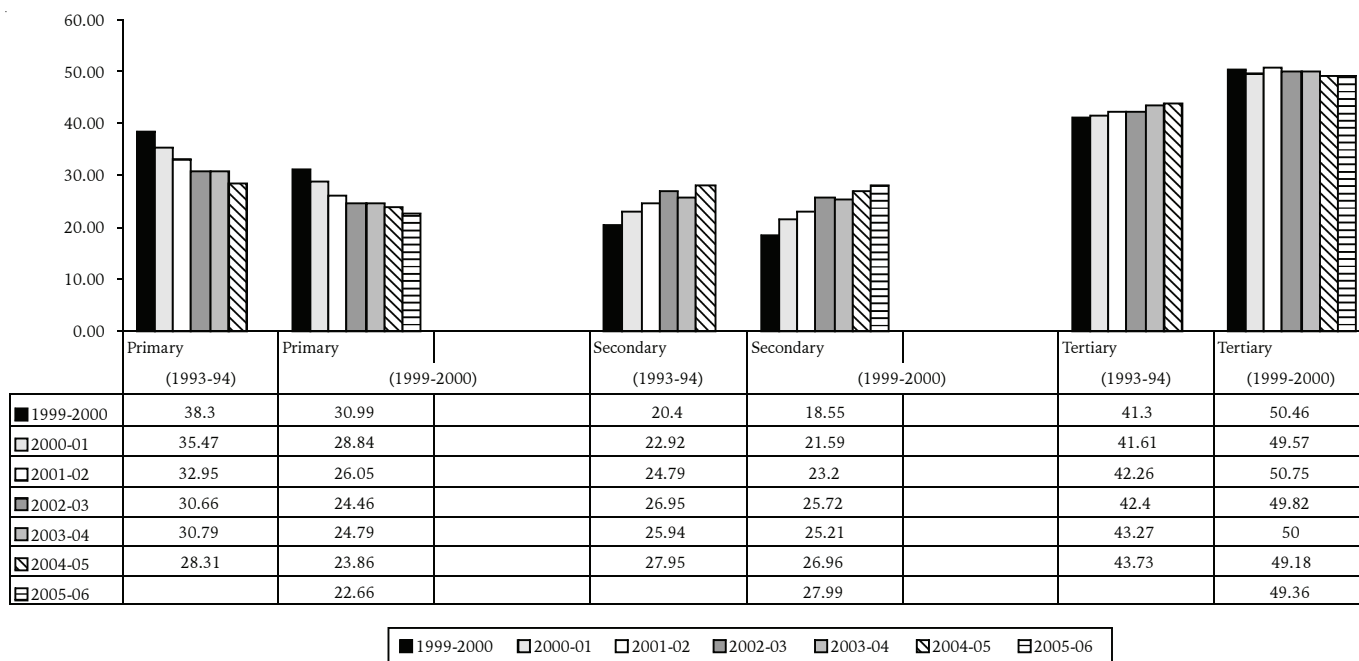
Comparison of 1999-2000 and 1993-94 base GSDP Series (Share)



Source: Authors' computation.

APPENDIX A-1.3b

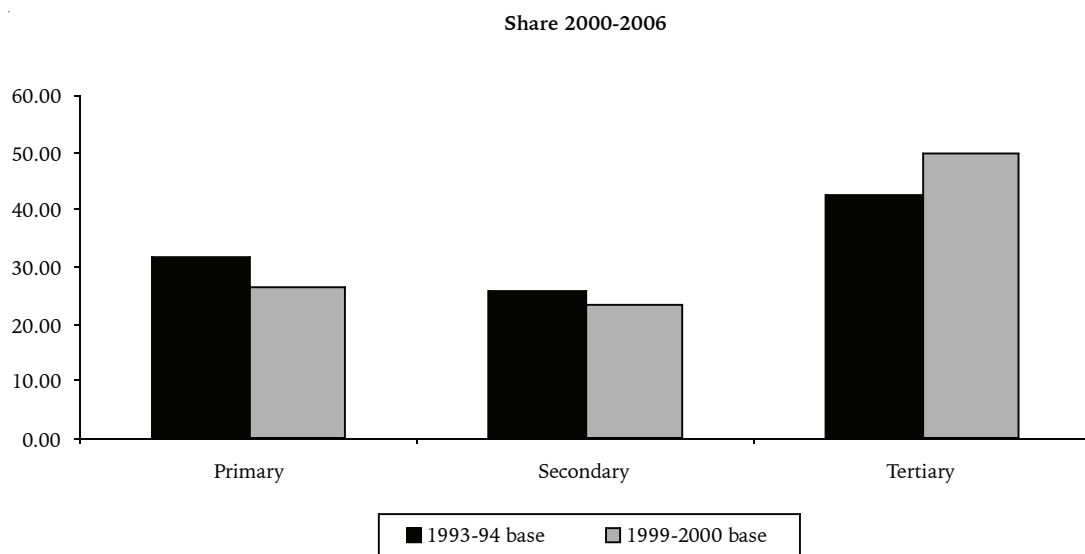
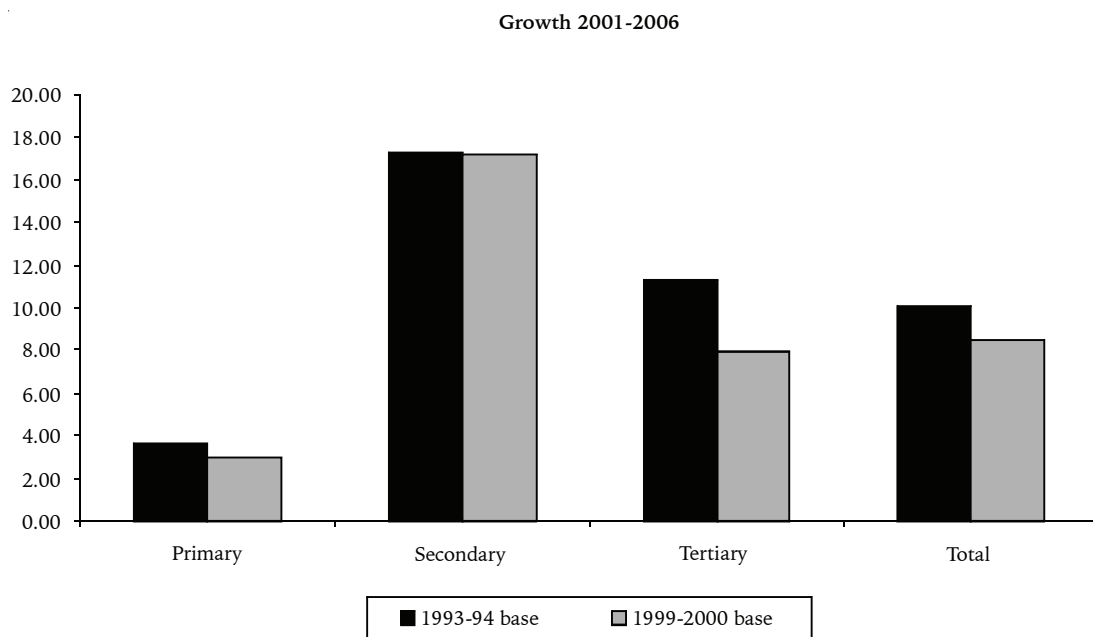
Comparison of 1999-2000 and 1993-94 base GSDP Series (Growth)



Source: Authors' computation.

APPENDIX A-1.3c

Comparison of 1999-2000 and 1993-94 base GSDP Series (Average Growth and Share)



Source: Authors' computation.

Chapter 2

Economic Growth and Development Strategy

1. Robust Growth

The growth performance of Uttarakhand appears to fully justify its formation as a separate state and vindicates the arguments favouring smaller states in the country. The new state is fast closing the gap with national average (Chapter 1, Figure 1.12). While Uttar Pradesh continues to lag behind the national average in terms of annual economic growth, Uttarakhand has demonstrated robust growth on a sustained basis (Figure 2.1). For the last four years beginning 2002-03, it has recorded double-digit growth. This is a much better performance even in comparison with Himachal Pradesh, as also with all other special category states.

Sector Contribution to Growth

There has been a clear shift in the sector-wise contribution to the GSDP growth of Uttarakhand. Unlike,

the period prior to 1999-2000, most of the recent growth has come from secondary and the services sectors (Figure 2.2). A shrinking secondary sector during the late nineties has now become a significant contributor to the economy of the state, contributing to the extent of 31 to 50 per cent of the growth during 2001-2004. In comparison to the all India average, this looks to be an impressive performance. The country needs to do much better in secondary sector, to sustain the services led growth and Uttarakhand is able to achieve the same.

However, analysis at the more disaggregate level reveal the following:

- During the period of 2003/04-2005/06, the largest contributors to GSDP growth include construction (27.3 per cent) followed by public administration (11.4 per cent). Thus, almost 40 per cent of the

FIGURE 2.1

Average Growth Rates of Gross State Domestic Product at 1993-94 Prices: Uttarakhand, Selected States and All India

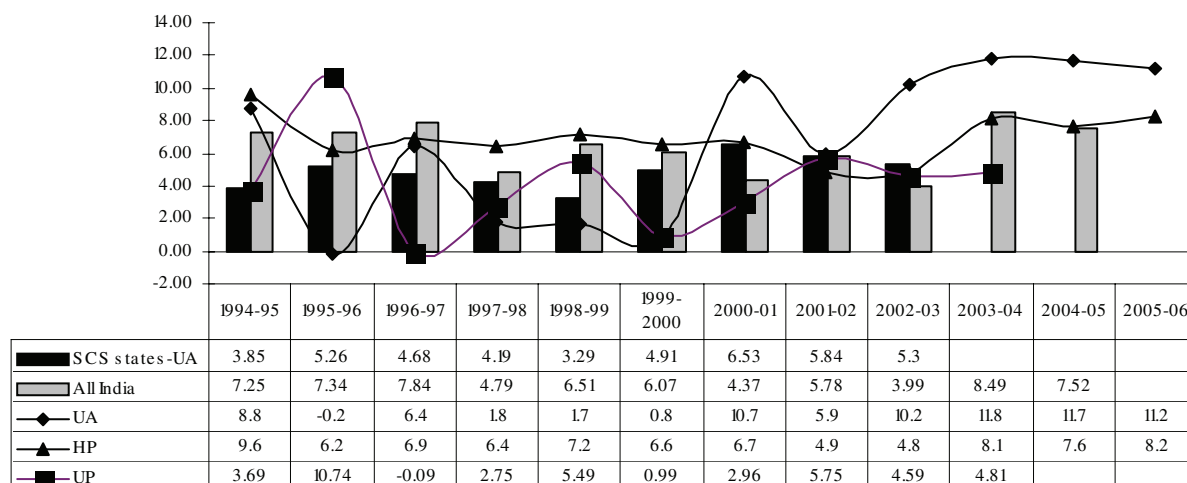
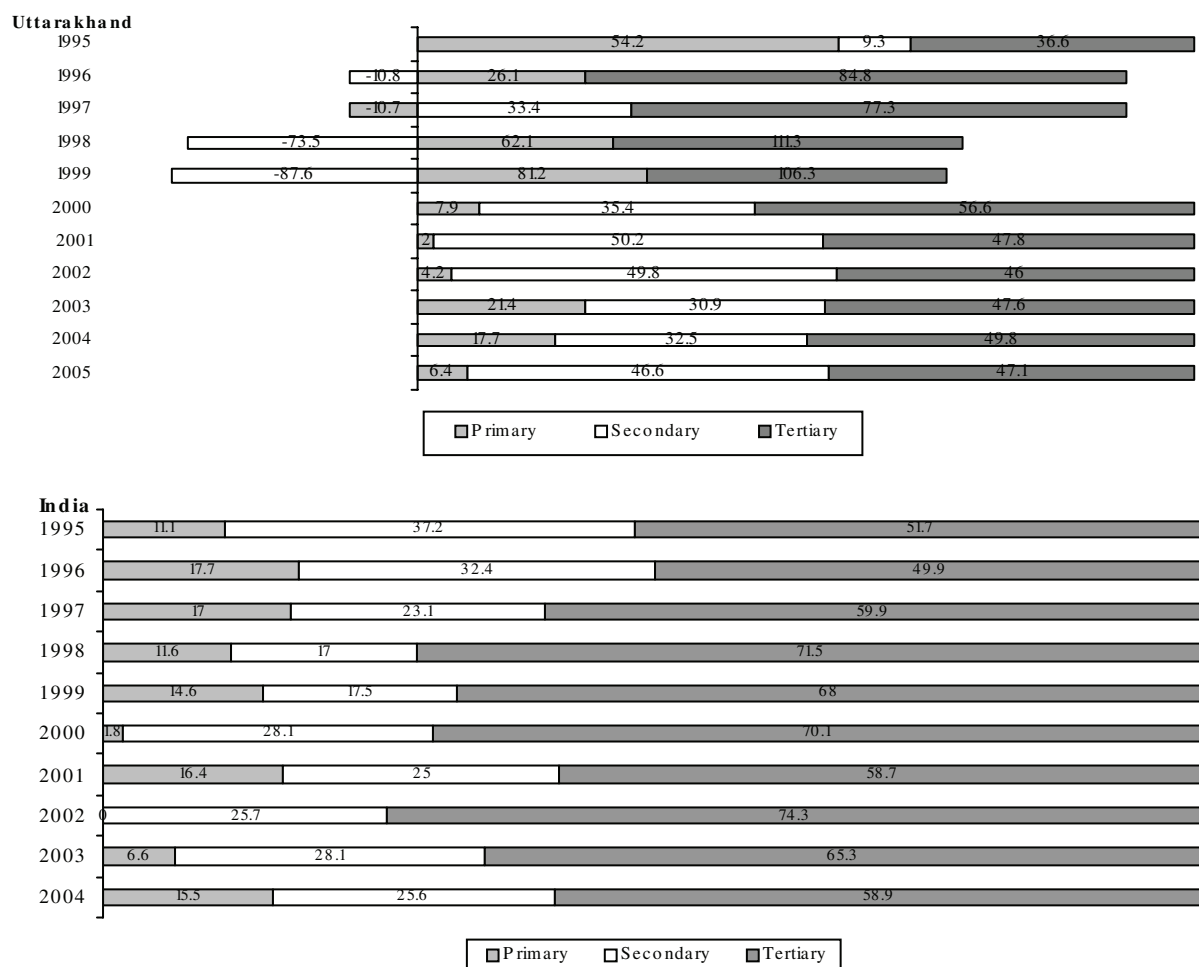


FIGURE 2.2

Sector Contribution to Growth (Three-year Moving Average): Uttarakhand and India



Source: (basic data) CSO.

growth has come from possibly the activities related to building human and physical infrastructure for the new state. This is in contrast with the results of all-India average, Himachal Pradesh and Uttar Pradesh, where contributions of public administration and construction sectors contribute only in the range of 12-21 per cent. While excessive expenditure on public administration leads to fiscal problems, construction activities cannot be sustained in absence of growth in other segments.

- The contribution of the manufacturing sector during 2003/04-2005/06 has been almost at the same level as that of all India average, Himachal Pradesh and Uttar Pradesh, which fall in the range of 15-16 per cent. However, Uttarakhand has an advantage of having more contribution coming from the registered sector rather than unregistered sector.

Thus, organised sector, which provides stable employment, is performing better in Uttarakhand. This could be the outcome of recent policy initiatives of the Central government, whereby the special category status (SCS) states have been granted 10-year holiday for excise collection to new units and expansion programmes. The same benefits are available to Himachal Pradesh also but there, the change is not as revealing because of the fact that the contribution of registered sector in Himachal Pradesh has been more stable at higher level for last several years.

- Importantly, the contribution of trade, hotels and restaurants in the GSDP growth of Uttarakhand has gone down substantially, which is not a good sign given the fact that the state is pursuing tourism as the key driver of the economy.

TABLE 2.1
Sector Contribution to Growth (Three-year Moving End Period Average)

| | UA | | | HP | | | UP | | | India | | |
|----------------------------------------------|-------|------|------|------|------|------|------|------|------|-------|------|------|
| | 1995 | 2000 | 2005 | 1995 | 2000 | 2005 | 1995 | 2000 | 2004 | 1995 | 2000 | 2004 |
| Primary | 54.2 | 7.9 | 6.4 | 7.0 | 3.5 | 26.5 | 20.8 | 44.6 | 13.1 | 11.1 | 1.8 | 15.5 |
| 1 Agriculture, forestry & fishing | 53.0 | 5.9 | 5.8 | 4.7 | 2.8 | 24.9 | 18.4 | 42.7 | 13.8 | 8.4 | 0.5 | 13.9 |
| 1.1 Agriculture | 51.4 | 13.5 | 4.8 | 5.9 | 3.3 | 22.0 | 21.0 | 39.9 | 12.3 | 7.3 | -1.2 | 13.4 |
| 1.2 Forestry & logging | 1.5 | -7.7 | 1.0 | -1.1 | -0.5 | 2.8 | -3.2 | 1.6 | 0.8 | 0.2 | 0.7 | 0.2 |
| 1.3 Fishing | 0.1 | 0.1 | 0.0 | -0.2 | 0.1 | 0.2 | 0.5 | 1.2 | 0.7 | 0.9 | 1.0 | 0.4 |
| 2 Mining & quarrying | 1.2 | 2.1 | 0.6 | 2.4 | 0.7 | 1.5 | 2.5 | 1.9 | -0.7 | 2.7 | 1.3 | 1.6 |
| Secondary | 9.3 | 35.4 | 46.6 | 69.0 | 51.1 | 32.8 | 45.8 | 3.7 | 27.8 | 37.2 | 28.1 | 25.6 |
| 3 Manufacturing | -8.9 | 35.2 | 15.4 | 30.8 | 31.3 | 15.1 | 33.9 | -4.1 | 16.2 | 30.4 | 18.7 | 16.4 |
| 3.1 Registered | -16.2 | 32.1 | 14.1 | 24.2 | 24.4 | 12.7 | 23.0 | -6.1 | 6.2 | 21.6 | 12.3 | 11.7 |
| 3.2 Unregistered | 7.3 | 3.1 | 1.2 | 6.6 | 6.8 | 2.4 | 10.9 | 2.0 | 10.0 | 8.8 | 6.4 | 4.6 |
| 4 Electricity, gas & water supply | 3.1 | -0.6 | 3.9 | 21.1 | 4.3 | 3.0 | 5.0 | -3.2 | 4.2 | 2.7 | 2.3 | 1.3 |
| 5 Construction | 15.0 | 0.9 | 27.3 | 17.1 | 15.6 | 14.7 | 6.9 | 11.1 | 7.4 | 4.1 | 7.1 | 7.9 |
| Tertiary | 36.6 | 56.6 | 47.1 | 23.9 | 45.5 | 40.7 | 33.3 | 51.7 | 59.1 | 51.7 | 70.1 | 58.9 |
| 6 Trade, hotels & restaurants | -2.0 | 12.1 | 3.2 | 8.5 | 6.2 | 7.5 | 10.3 | 9.6 | 6.4 | 22.4 | 15.6 | 18.0 |
| 7 Transport, storage & comm. | 6.2 | 19.4 | 7.4 | 4.3 | 5.3 | 5.5 | 6.3 | 16.5 | 17.7 | 9.5 | 16.8 | 17.8 |
| 7.1 Railways | 0.1 | 0.1 | 0.2 | -0.1 | 0.1 | 0.0 | 0.2 | 1.1 | 2.5 | 0.9 | 1.4 | 0.8 |
| 7.2 Transport by other means | 2.2 | 3.6 | 2.0 | 2.3 | 3.0 | 1.8 | 2.9 | 7.5 | 4.2 | 5.5 | 5.4 | 6.8 |
| 7.3 Storage | 0.2 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 |
| 7.4 Communication | 3.8 | 15.5 | 5.1 | 2.0 | 2.2 | 3.6 | 3.2 | 8.0 | 11.1 | 3.1 | 9.9 | 11.6 |
| 8 Financing, insurance, real estate & BS | 12.1 | 14.5 | 10.4 | 4.1 | 10.4 | 15.9 | 6.2 | 11.2 | 14.4 | 10.8 | 16.4 | 11.0 |
| 8.1 Banking & insurance | 6.6 | 7.0 | 7.1 | 1.7 | 7.5 | 14.3 | 3.4 | 6.9 | 7.1 | 7.1 | 7.3 | 4.6 |
| 8.2 Real estate, ownership of dwellings & BS | 5.5 | 7.5 | 3.3 | 2.4 | 2.9 | 1.6 | 2.8 | 4.3 | 7.3 | 3.6 | 9.1 | 6.1 |
| 9 Community, social & personal services | 20.3 | 10.6 | 26.1 | 7.0 | 23.5 | 11.9 | 10.5 | 14.3 | 20.6 | 9.0 | 21.3 | 12.1 |
| 9.1 Public administration & defence | 7.6 | 5.1 | 11.4 | -0.7 | 10.7 | 6.3 | 2.8 | 6.8 | 10.6 | 3.0 | 8.5 | 4.5 |
| 9.2 Other services | 12.7 | 5.6 | 14.7 | 7.7 | 12.8 | 5.6 | 7.7 | 7.5 | 10.0 | 6.0 | 12.8 | 7.6 |

Note: BS: business services.

Source: (basic data) CSO.

2. Structure of the Economy and Revealed Advantages

Uttarakhand is still an agriculture dominant economy. Tables 2.2 and 2.3 present average distribution of sector contribution in total GSDP of Uttarakhand and selected states along with the revealed comparative advantage (RCA) and average growth rate during 2001/02-2004/05. RCA greater than one indicates, whether a particular sector has higher share in state's total GSDP than average share of the sector in national economy. It is often argued that states with higher level of industrialisation grow faster and their dependence on the primary sector has limitation in providing greater thrust to growth. From this point of view it is desirable to have RCA greater than one in manufacturing, and also in financial and physical infrastructure. Both Uttarakhand and Himachal Pradesh reveal advantage in secondary sector and slackness in tertiary sector at the aggregate level. Uttarakhand has advantage in both primary as well as secondary sector and

this advantage is supported with higher than national growth in both these sectors.

At a more disaggregated level the analysis indicates the following:

- The RCA of Uttarakhand in primary sector is widely spread across major components of agriculture, forestry, and mining. This is clear advantage in terms of self-sufficiency in food production and consumption, an issue discussed earlier, but the per capita production is not enough to export to other regions in large quantities as it is in the case of Haryana and Punjab (see Chapter 1, Figure 1.17). However, the sluggish growth rate of less than 2 per cent in almost all components of primary sector including agriculture, which constitutes 81 per cent of primary sector, is more alarming. Only forestry and logging has growth rate above national average. In contrast, the growth rates in Himachal Pradesh

TABLE 2.2
Structure of the Economy and Average Growth during 2001/02-2005/06
(Selected States)

| | Share | | | | RCA | | | Growth | | | |
|---------------------|-------|------|------|------|-----|-----|-----|--------|-----|------|------|
| | UA | HP | UP | IN | UA | HP | UP | UA | HP | UP | IN |
| Primary | 29.4 | 22.2 | 34.9 | 24.2 | 1.3 | 0.9 | 1.4 | 3.6 | 6.8 | 2.2 | 2.8 |
| Secondary | 27.4 | 35.7 | 23.3 | 24.8 | 1.1 | 1.4 | 0.9 | 16.3 | 6.3 | 5.1 | 6.6 |
| Tertiary | 43.2 | 42.2 | 41.8 | 51.0 | 0.8 | 0.8 | 0.8 | 11.4 | 7.1 | 6.2 | 8.3 |
| GDP at factor price | | | | | | | | 10.2 | 6.7 | 4.5 | 6.4 |
| Infrastructure | 9.4 | 10.8 | 11.1 | 11.8 | 0.8 | 0.9 | 0.9 | 14.6 | 7.3 | 10.1 | 11.1 |
| Population | 0.9 | 0.7 | 1.5 | 0.1 | | | | 1.7 | 1.7 | 2.1 | 1.7 |
| Per capita GDP | | | | | | | | 8.3 | 4.9 | 2.4 | 4.6 |

Note: Data for UP and India pertain to 2001/02-2004/05.

Source: (basic data) CSO.

TABLE 2.3
Disaggregated Structure of the Economy and Average Growth during
2001/02-2005/06 (Selected States)

| | | Share | | | | RCA | | | Growth | | | |
|------------------|------------------------------------------|-------|------|------|------|-----|-----|-----|--------|------|------|------|
| | | UA | HP | UP | IN | UA | HP | UP | UA | HP | UP | IN |
| Primary | | | | | | | | | | | | |
| 1 | Agriculture, forestry & fishing | 26.7 | 21.2 | 33.9 | 21.9 | 1.3 | 1.0 | 1.6 | 1.8 | 6.8 | 2.1 | 2.5 |
| 1.1 | Agriculture | 23.9 | 17.4 | 31.9 | 19.9 | 1.3 | 0.9 | 1.6 | 1.7 | 7.8 | 2.0 | 2.5 |
| 1.2 | Forestry & logging | 2.7 | 3.6 | 1.4 | 1.0 | 3.0 | 3.8 | 1.4 | 3.0 | 2.5 | 2.7 | 1.4 |
| 1.3 | Fishing | 0.1 | 0.2 | 0.6 | 1.0 | 0.1 | 0.2 | 0.6 | 1.9 | 2.3 | 7.4 | 5.4 |
| 2 | Mining & quarrying | 2.7 | 1.0 | 1.0 | 2.3 | 1.2 | 0.4 | 0.4 | 40.6 | 8.3 | 5.0 | 5.7 |
| Secondary | | | | | | | | | | | | |
| 3 | Manufacturing | 10.6 | 15.9 | 14.3 | 17.1 | 0.6 | 0.9 | 0.8 | 9.2 | 6.6 | 5.2 | 6.3 |
| 3.1 | Registered | 8.3 | 12.1 | 8.2 | 11.3 | 0.7 | 1.1 | 0.7 | 10.3 | 6.3 | 4.0 | 7.0 |
| 3.2 | Unregistered | 2.2 | 3.8 | 6.2 | 5.8 | 0.4 | 0.7 | 1.1 | 5.7 | 8.2 | 6.8 | 5.0 |
| 4 | Elect., gas & water supply | 3.1 | 5.7 | 3.1 | 2.3 | 1.3 | 2.5 | 1.3 | 24.3 | 3.7 | 3.7 | 4.0 |
| 5 | Construction | 13.7 | 14.1 | 5.9 | 5.4 | 2.4 | 2.6 | 1.1 | 23.0 | 7.0 | 5.8 | 8.7 |
| Tertiary | | | | | | | | | | | | |
| 6 | Trade, hotels & restaurant | 7.1 | 8.3 | 12.2 | 15.6 | 0.5 | 0.5 | 0.8 | 7.4 | 6.0 | 2.6 | 8.8 |
| 7 | Transport, storage & comm. | 6.3 | 5.1 | 8.0 | 9.5 | 0.7 | 0.5 | 0.8 | 11.7 | 12.2 | 13.0 | 13.0 |
| 7.1 | Railways | 0.4 | 0.1 | 1.8 | 1.1 | 0.4 | 0.1 | 1.7 | 6.2 | 0.0 | 6.3 | 6.1 |
| 7.2 | Transport by other means | 2.7 | 3.3 | 3.3 | 4.5 | 0.6 | 0.7 | 0.8 | 6.5 | 11.6 | 4.0 | 8.6 |
| 7.4 | Communication | 3.1 | 1.7 | 2.8 | 4.0 | 0.8 | 0.4 | 0.7 | 18.2 | 14.1 | 37.0 | 22.7 |
| 8 | Financing, insurance, real estate & BS | 12.8 | 10.3 | 10.2 | 12.7 | 1.0 | 0.8 | 0.8 | 8.5 | 10.2 | 6.7 | 6.7 |
| 8.1 | Banking & insurance | 6.8 | 5.7 | 4.4 | 6.6 | 1.0 | 0.8 | 0.7 | 11.4 | 17.1 | 10.2 | 6.5 |
| 8.2 | Real estate, ownership of dwellings & BS | 6.1 | 4.6 | 5.9 | 6.1 | 1.0 | 0.8 | 1.0 | 5.4 | 2.8 | 4.4 | 6.9 |
| 9 | Community, social & personal services | 17.0 | 18.6 | 11.4 | 13.2 | 1.2 | 1.4 | 0.9 | 15.5 | 4.8 | 5.6 | 5.9 |
| 9.1 | Public administration & defence | 6.4 | 8.1 | 4.7 | 5.6 | 1.1 | 1.5 | 0.8 | 13.6 | 6.5 | 5.8 | 4.3 |
| 9.2 | Other services | 10.5 | 10.5 | 6.8 | 7.6 | 1.3 | 1.4 | 0.9 | 17.4 | 3.6 | 5.6 | 7.1 |
| 10 | Gross domestic product at factor price | | | | | | | | 10.2 | 6.7 | 4.5 | 6.4 |

Note: BS: business services. Data for UP and India pertain to 2001/02-2004/05.

Source: (basic data) CSO.

and all India have been 7.8 per cent and 2.5 per cent, respectively.

- The state revealed advantage in the secondary sector mainly due to high contribution of two components, namely construction and electricity, and gas and water supply. Uttarakhand has great potential to enhance its advantage in producing and selling electricity given vast resources of hydropower.
- Registered as well as unregistered manufacturing sectors have very low base in the state as compared to the national economy, Himachal Pradesh and Uttar Pradesh. However, during the recent years the registered sector has contributed heavily to the economy due to high growth rate. If such growth continues, the state can shortly convert its disadvantage in to advantage.
- In the tertiary sector, Uttarakhand reveals clear advantage in community and social services, possibly due to high expenditure on account of public administration. But, as noted earlier, it lacks in critical areas such as trade, hotels and restaurants, transport and communication. Growths have also been poorer in these sectors in comparison to the national average.

3. Investment and Growth Linkage

Investment is an important factor in the growth process of all the sectors. However, variations in growth due to investment alone may be low, as other factors, and characteristics, of the state are also important in impacting differential growth patterns. It is obvious that an industrial investment made in more developed areas with better infrastructure are expected to yield a superior outcome compared to a scenario in which the same

investment is made in a highly backward area. Similarly, in the agriculture sector, one has to be judicious in identifying the critical areas of demand/need. In addition, the location of investment depends on its source and the motivation. Often, public investments in the past were alleged to have many non-economic considerations but these too are now becoming more competitive across states in order to yield better results, particularly in attracting private investment, which are driven by the availability of human and physical infrastructure, enabling factors, governance issues and incentives.

Considering an incremental capital output ratio (ICOR) of 3.85, Uttarakhand will need an investment of more than INR 73,000 crore at 2006-07 prices during the Eleventh Five Year Plan in order to maintain real growth rate of about 11 per cent. Out of this, roughly, the private sector would be required to contribute INR 45,000 crore, and the contributions of the Central government and the state government are likely to be restricted to INR 16,000 crore and INR 11,000 crore respectively. These are high targets but not impossible, given the performance of the past years, and the incentive extended to private sector. It is also up to the negotiating skill of the prevailing state government to obtain commensurate plan size from the Planning Commission. However, some analysis of the public investment undertaken during the Tenth Five Year Plan period (TFYP) and the private sector trends during recent years is in order to throw light on the way investments have affected growths in respective areas.

Tenth Plan Investment

During the TFYP, Uttarakhand has demonstrated dynamism in securing and utilising the plan outlays. In fact, the approved plan outlay for Uttarakhand was increased by about 34.5 per cent and all of that was spent in addition to the original outlays (Table 2.4). The total

TABLE 2.4
Tenth Plan Outlays, Approvals and Actual Expenditure in Selected States
(INR Crore at 2001-02 Prices)

| | Tenth Plan Projected Outlay (At 2001-02 prices) | Total Approved Outlay | Total Actual/ Likely Expenditure | Share | | Utilisation (Per cent) | | |
|------------------------------------|----------------------------------------------------------|-----------------------------|----------------------------------------|----------------|----------|------------------------|-------------------------------|---------------------------------------|
| | | | | Plan Outlay | Approved | Actual/ Likely | Utilisation of Approved | Utilisation of Projected Outlay |
| Himachal Pradesh | 10,300 | 7,041 | 7,440 | 1.74 | 1.25 | 1.43 | 105.67 | 72.23 |
| Uttar Pradesh | 59,708 | 49,270 | 42,351 | 10.10 | 8.72 | 8.12 | 85.96 | 70.93 |
| Uttarakhand | 7,630 | 10,014 | 10,263 | 1.29 | 1.77 | 1.97 | 102.48 | 134.51 |
| Total (States & Union Territories) | 590,948 | 565,327 | 521,369 | | | | 92.22 | 88.23 |
| SCS State | 61,130 | 62,395 | 57,383 | 10.34 | 11.04 | 11.01 | 91.97 | 93.87 |

Source: (basic data) Planning Commission.

expenditure during the TFYP was of the order of INR 10,263 crore at 2001-02 prices. This is a much higher plan size by normal measures. Clearly, such high level of support from the Plan outlays would have compensated for the shortfalls in private investment and translated in to the growth that is obtained. It may be noticed that approved outlay of Himachal Pradesh was reduced by

almost 34 per cent and that must have cost its growth (Table 2.4). Support of public investment is critical for smaller states as compared to the larger states with high degree of private investment.

During the TFYP period there has been major shifts in allocation and utilisation across sectors, which have affected the growth of the respective sectors (Table 2.5).

TABLE 2.5
Tenth Plan Outlays, Approvals and Actual Expenditure in Selected Sectors of Uttarakhand
(INR Crore at 2001-02 Prices)

| Sl. No. | Major Heads/Minor Heads of Development | Tenth Plan 2002-2007 Projected Outlay | Revised/ Approved Outlay | Actual/ Likely Expenditure | Share (Per cent of Total) | | |
|---------|--------------------------------------------|---------------------------------------|--------------------------|----------------------------|---------------------------|--------------------------|----------------------------|
| | | | | | TFYP Projected Outlay | Revised/ Approved Outlay | Actual/ Likely Expenditure |
| I. | Agriculture & allied activities | 69492 | 120732 | 135834 | 9.11 | 10.29 | 11.53 |
| | 1. Crop husbandry | 14483 | 14660 | 12920 | 1.90 | 1.25 | 1.10 |
| | 2. Horticulture | 0 | 7536 | 9122 | 0.00 | 0.64 | 0.77 |
| | 3. Soil and water conservation | 26099 | 16766 | 19933 | 3.42 | 1.43 | 1.69 |
| | 4. Animal husbandry | 1771 | 9767 | 4923 | 0.23 | 0.83 | 0.42 |
| | 5. Dairy development | 2281 | 3328 | 5037 | 0.30 | 0.28 | 0.43 |
| | 7. Forestry & wildlife | 20693 | 50194 | 62063 | 2.71 | 4.28 | 5.27 |
| II. | Rural development | 42052 | 76733 | 84337 | 5.51 | 6.54 | 7.16 |
| | 1. Special programme for rural development | 0 | 11042 | 38876 | 0.00 | 0.94 | 3.30 |
| | 2. Rural employment | 0 | 32076 | 17548 | 0.00 | 2.73 | 1.49 |
| III. | Special areas programmes | 388 | 3281 | 2292 | 0.05 | 0.28 | 0.19 |
| IV. | Irrigation & flood control | 17853 | 57276 | 60224 | 2.34 | 4.88 | 5.11 |
| | 1. Major and medium irrigation | 10328 | 20518 | 23666 | 1.35 | 1.75 | 2.01 |
| | 2. Minor irrigation | 5986 | 31074 | 29871 | 0.78 | 2.65 | 2.54 |
| V. | Energy | 194368 | 176672 | 152025 | 25.47 | 15.06 | 12.91 |
| | 1. Power | 184705 | 169053 | 145948 | 24.21 | 14.41 | 12.39 |
| | 2. Non-conventional sources of energy | 9663 | 7619 | 6077 | 1.27 | 0.65 | 0.52 |
| VI. | Industry & minerals | 8302 | 67353 | 62290 | 1.09 | 5.74 | 5.29 |
| | 1. Village & small industries | 1233 | 32655 | 34828 | 0.16 | 2.78 | 2.96 |
| | 2. Other industries (other than VSI) | 6851 | 34381 | 27188 | 0.90 | 2.93 | 2.31 |
| | 4. Minerals | 218 | 317 | 274 | 0.03 | 0.03 | 0.02 |
| VII. | Transport | 108906 | 153150 | 178262 | 14.27 | 13.06 | 15.14 |
| | 2. Civil aviation | 1518 | 8135 | 9229 | 0.20 | 0.69 | 0.78 |
| | 3. Roads and bridges | 106600 | 141152 | 164472 | 13.97 | 12.03 | 13.97 |
| VIII. | Communications | | | | | | 0.00 |
| IX. | Science, technology & environment | 6206 | 5786 | 4091 | 0.81 | 0.49 | 0.35 |
| | 1. Scientific research | 304 | 2386 | 2091 | 0.04 | 0.20 | 0.18 |
| | 2. Ecology & environment | 5902 | 3400 | 2000 | 0.77 | 0.29 | 0.17 |
| X. | General economic services | 23535 | 43116 | 40115 | 3.08 | 3.68 | 3.41 |
| | 1. Secretariat economic services | 843 | 22526 | 18846 | 0.11 | 1.92 | 1.60 |
| | 2. Tourism | 21077 | 19190 | 20177 | 2.76 | 1.64 | 1.71 |
| XI. | Social services | 284085 | 414411 | 413594 | 37.23 | 35.33 | 35.12 |
| | 1. General education | 85459 | 118572 | 112139 | 11.20 | 10.11 | 9.52 |
| | 2. Technical education | 14790 | 17051 | 15761 | 1.94 | 1.45 | 1.34 |
| | 5. Medical & public health | 38767 | 47045 | 48595 | 5.08 | 4.01 | 4.13 |
| | 6. Water supply & sanitation | 106356 | 66507 | 67735 | 13.94 | 5.67 | 5.75 |
| | 8. Urban development | 14506 | 56832 | 65988 | 1.90 | 4.85 | 5.60 |
| | 10. Welfare of SC, ST & OBC | 6524 | 65365 | 59076 | 0.86 | 5.57 | 5.02 |
| | 12. Social security & social welfare | 2160 | 12192 | 12734 | 0.28 | 1.04 | 1.08 |
| | 13. Nutrition | 1391 | 9733 | 14473 | 0.18 | 0.83 | 1.23 |
| XII. | General services | 7813 | 54416 | 44544 | 1.02 | 4.64 | 3.78 |
| | Grand total | 763000 | 1172925 | 1177608 | 100 | 100 | 100 |

Note: The total of Tables 2.4 and 2.5 do not match due to status difference for the last two years.

Source: (basic data) Planning Commission Website.

- Expenditures planned for soil and water conservation; water supply and sanitation; energy; education; and health were withdrawn in favour of other sectors. These withdrawals are reflected in lower growth of the agriculture sector. For agriculture, soil and water conservation are as critical as irrigation, seed and fertiliser. Such withdrawals need to be compensated during the Eleventh Five Year Plan (EFYP).
- Plan expenditure on forestry; rural development; irrigation and flood control; industry; welfare of SC/ST/OBC and urban development were increased significantly.
- Across major sectors maximum allocation was done for the social sector. Nearly 37 per cent of the outlay was allocated but finally it constituted about 35 per cent of the utilised outlay.
- Road transportation appears to be the single most preferred sector with almost 14 per cent of the TFYP utilisation going to it. In fact, this is one sector where no change has taken place in shares of allocation and utilisation. Given this situation, the GSDP growth of the construction sector is not surprising.

Investment by the Private Sector

There is no clear data to compare private investment flows across states. However, recent trends and

movements in the investment shares of major states in the factory sector using Annual Survey of Industries (ASI) data, the proposed/implemented Industrial Entrepreneurs Memorandum (IEM) for Investment in the de-licensed Sector by the domestic private sector, and FDI approvals could indicate the potential of different states and sectors in attracting private investment.

Table 2.6 indicates recent share and growth of invested capital of selected states in total fixed capital of factory sector of India. Clearly, Uttarakhand appears to be a laggard state when compared to Himachal Pradesh. Its industries are relatively less capital intensive with more GVA per unit fixed capital and more GVA per worker. During the period of 2001/02 to 2003/04, the nominal fixed capital has grown at an average rate 5.35 per cent as compared to 4.66 per cent growth in India and 17.88 per cent growth in Himachal Pradesh (Table 2.6 and Figure 2.3). Clearly, there is scope of improvement in the performance of Uttarakhand in attracting investment, given the incentive structure prevailing in the SCS state in terms of excise exemption.

Since the ASI data is available only up to 2003-04, it is not possible to comment on the performance of the new incentive schemes in attracting investments in factory sector. Nevertheless, it appears after the creation of the new state, the productivity of the capital (GVA/FC) and worker (GVA/worker) in the factories of Uttarakhand have improved more than the national average.

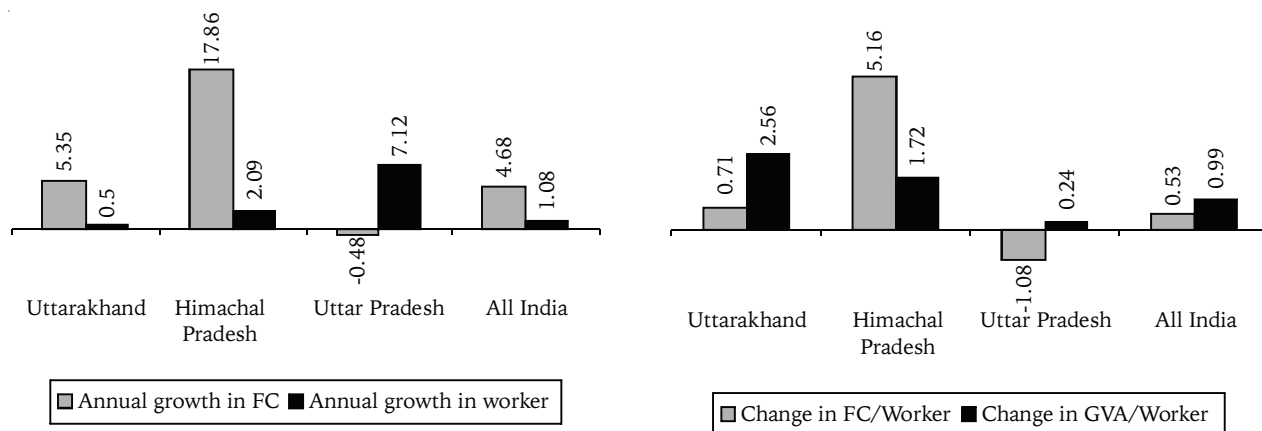
TABLE 2.6
Factory Sector Investment in Uttarakhand and Selected States

| Parameter | Investment variable | UA | HP | UP | All | AS India | MH | GU | TN | KT |
|------------------------------|-------------------------|------|-------|-------|------|-------------|-------|-------|-------|------|
| Shares 2003-04 | Fixed capital | 0.46 | 1.21 | 6.32 | 1.41 | 17.64 | 18.12 | 9.81 | 7.49 | |
| | FC formation | 0.52 | 3.87 | -0.70 | 7.47 | 35.04 | -3.12 | 25.44 | 9.23 | |
| | Workers | 0.45 | 0.45 | 7.22 | 1.58 | 12.72 | 8.84 | 15.57 | 6.38 | |
| | GVA | 0.70 | 0.87 | 6.32 | 1.70 | 19.98 | 14.90 | 9.63 | 6.88 | |
| Ratio 2003-04 | FC/Factory | 321 | 1078 | 324 | 367 | 426 | 478 | 670 | 229 | 501 |
| | FC/Worker | 7.91 | 20.68 | 6.81 | 7.78 | 6.98 | 10.78 | 15.94 | 4.90 | 9.13 |
| | GVA/FC | 0.79 | 0.38 | 0.52 | 0.52 | 0.63 | 0.59 | 0.43 | 0.51 | 0.48 |
| | GVA/Worker | 6.29 | 7.76 | 3.56 | 4.07 | 4.39 | 6.40 | 6.86 | 2.52 | 4.39 |
| Growth 2001/02 to 2003/04 | Annual growth in FC | 5.35 | 17.86 | -0.48 | 4.68 | 36.30 | 10.01 | -0.74 | 13.72 | 5.87 |
| | Annual growth in worker | 0.50 | 2.09 | 7.12 | 1.08 | 1.37 | -2.64 | 1.57 | 2.80 | 2.93 |
| | Change in FC/Worker | 0.71 | 5.16 | -1.08 | 0.53 | 3.12 | 2.34 | -0.75 | 0.90 | 0.50 |
| | Change in GVA/Worker | 2.56 | 1.72 | 0.24 | 0.99 | 3.08 | 1.97 | 2.15 | 0.49 | 1.04 |
| | Change in GVA/FC | 0.28 | -0.01 | 0.10 | 0.10 | 0.29 | 0.07 | 0.15 | 0.01 | 0.09 |

Source: (basic data) CSO-ASI (2001/02 to 2003/04).

FIGURE 2.3

Annual Growth in Fixed Capital and Worker, and Changes in Fixed Capital per Worker and GVA per Worker during 2001-02 to 2003-04 in Selected States, Uttarakhand and India



Source: (basic data) CSO-ASI (2001/02 to 2003/04).

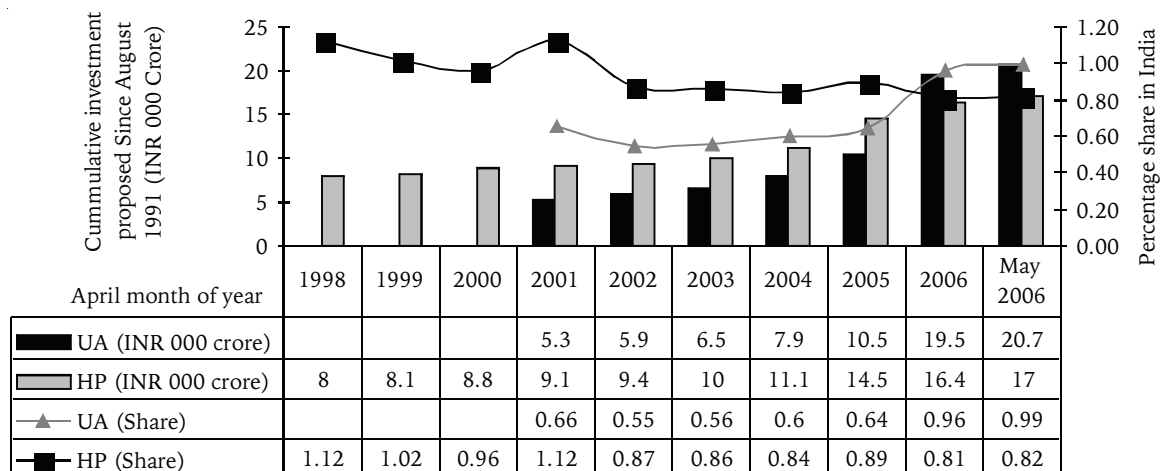
During the last two years, Uttarakhand has attracted attention of domestic investors at a large scale. Figure 2.4 presents total investment proposed through IEMs and letter of intent (LOI). The shares of investment proposals for Uttarakhand have increased systematically over time and it has crossed Himachal Pradesh.

However, when it comes to implementation of the proposals, Uttarakhand appears to lag far behind (Figure 2.5). The state government authorities need to make more efforts in promoting the state and creating infrastructure, enabling conditions to convert the intentions in to reality. There are several sectors, where the state has demonstrated

comparative advantage in attracting proposals. Table 2.7 presents RCA of the state in several sectors. During the recent years, soaps, cosmetics and toiletries; glass; transportation; timber products; drugs and pharmaceuticals; medical and surgical instruments; miscellaneous mechanical and engineering industry; food processing industry; prime movers; leather; fermentation industries; miscellaneous industry; paper and pulp; industrial machinery; scientific instruments; and rubber goods have attracted more share of Uttarakhand proposals than they have in all India proposals. State governments could take a note of the constraints in implementation.

FIGURE 2.4

Industrial Investment Proposals (State-wise) August 1991-June 2006

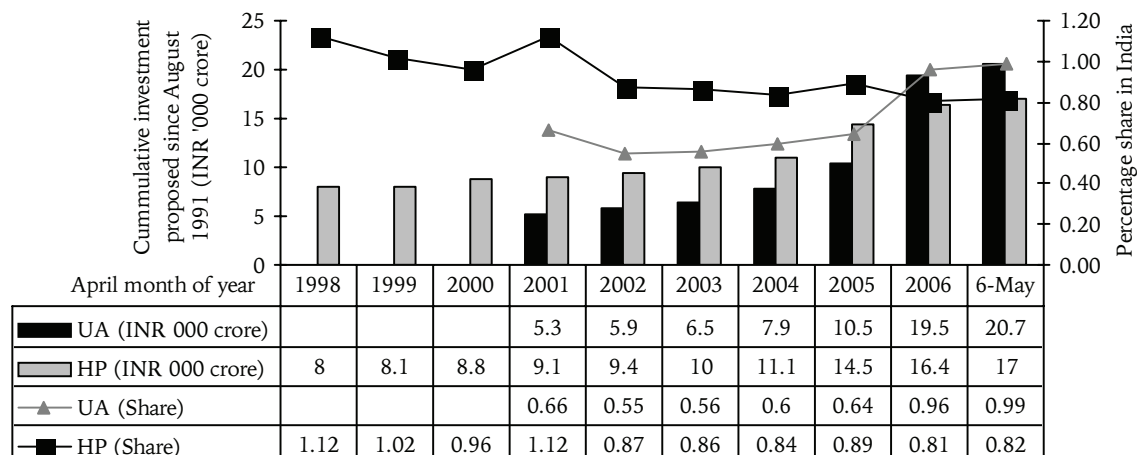


Note: The anchor is 1991 and rest of the data presented is cumulative.

Source: (basic data) SIA Statistics (various), Secretariat for Industrial Assistance (SIA), Ministry of Commerce and Industry.

FIGURE 2.5

State-wise Details of IEM Implemented from August 1991 to June 2006 based on Part-B of IEM Form Filed by Entrepreneurs



Note: The anchor is 1991 and rest of the data presented is cumulative.

Source: (basic data) SIA Statistics (various), Secretariat for Industrial Assistance (SIA), Ministry of Commerce and Industry

TABLE 2.7

Revealed Comparative Attractiveness of Investment based on Proposed Investment during 2001-2006

| Name of Industry (Sorted by RCA) | Sector-wise Percentage Share in UA to Total Investment in UA | Sector-wise Percentage Share in India to Total Investment in India | Revealed Comparative Attractiveness (RCA) |
|-------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------|-------------------------------------------|
| Soaps, cosmetics and toiletries | 6.59 | 0.39 | 16.79 |
| Glass | 7.13 | 0.54 | 13.11 |
| Transportation | 19.69 | 1.64 | 11.97 |
| Timber products | 1.04 | 0.10 | 10.81 |
| Drugs and pharmaceuticals | 7.21 | 0.97 | 7.43 |
| Medical and surgical inst | 0.16 | 0.03 | 4.54 |
| Miscellaneous mechanical & engineering industry | 5.58 | 1.32 | 4.21 |
| Food processing industry | 7.58 | 1.98 | 3.82 |
| Prime movers | 3.09 | 0.81 | 3.80 |
| Leather | 0.29 | 0.09 | 3.31 |
| Fermentation industries | 2.42 | 1.00 | 2.41 |
| Miscellaneous industry | 0.35 | 0.22 | 1.60 |
| Paper and pulp | 4.77 | 3.10 | 1.54 |
| Industrial machinery | 1.61 | 1.18 | 1.36 |
| Scientific instruments | 0.28 | 0.22 | 1.28 |
| Rubber goods | 0.87 | 0.70 | 1.24 |
| Sugar | 5.71 | 6.24 | 0.92 |
| Glue and gelatine | 0.03 | 0.04 | 0.75 |
| Telecommunications | 1.13 | 1.76 | 0.64 |
| Textiles | 3.87 | 8.06 | 0.48 |
| Chemicals (except fertilisers) | 4.72 | 10.86 | 0.44 |
| Electrical equipments | 4.81 | 12.18 | 0.40 |
| Others (non-scheduled industries/services) | 2.90 | 8.24 | 0.35 |
| Metallurgical industries | 6.96 | 21.35 | 0.33 |
| Vegetable oil & vanaspati | 0.35 | 1.16 | 0.30 |
| Agricultural machinery | 0.03 | 0.15 | 0.22 |
| Cement and gypsum | 0.72 | 5.07 | 0.14 |
| Comm./office/hand hold equipment | 0.02 | 0.23 | 0.08 |
| Fertilisers | 0.09 | 1.28 | 0.07 |

Source: (basic data) SIA.

This problem is also reflected in the inability of Uttarakhand to attract Foreign Direct Investment (FDI) proposals. The competing states are far ahead. Data indicates that 90 per cent of the FDI is concentrated in sectors that cover electrical equipment, miscellaneous industries, telecommunications, transportation industry, service sector, fuels (power and oil refinery), chemicals (other than fertilisers), food processing industries, drugs and pharmaceuticals, cement and gypsum products, metallurgical industries, miscellaneous mechanical and engineering. As noted earlier, domestic investors have already shown interest in most of these areas. It is a question of implementation and initiative at the part of the state government to provide adequate facilitation.

XIth Five-Year Plan Proposal for Investment by the Uttarakhand Government

Uttarakhand Government has proposed to spend INR 42012.19 Crores during the XIth Plan Period (2007-2012), which is 2.57 times higher than the actual expenditure incurred by the state during the Xth Plan Period (Table 2.8). This appears to be too ambitious, while Plan document itself, is conspicuously silent on the sources of funding. Of the total proposed expenditure, 60 per cent has been kept for general economic services whereas 39 per cent has been allocated for social service sector.

The plan has clear shift in emphasis from general services towards social services, agriculture and transport.

The strategy for the agriculture sector envisions introduction of HYVs as well as changing the cropping pattern. In addition, efforts are to be made to gradually replace the subsistence level crops with high return alternative crops. Sugarcane being the most important cash crop in the state, there is a need to increase its productivity. Cash crops need irrigation, while agriculture in Uttarakhand is highly rain-dependent. Therefore, the XIth Plan has rightly advocated for rain water harvesting along with sprinklers & drip irrigation system. Along with the traditional agriculture, the sectors like horticulture, development of herbal & aromatic plants etc., also have been proposed in this plan.

A number of schemes have been proposed in almost all the sectors along with attractive fiscal incentives. However, industry is the only sector where sectoral allocation has decreased in the XIth Plan as compared to the actual expenditure incurred in the Xth Plan in the state. At the same time the plan expects that a set of new industries will come up in the state during the period 2007-2012 by private/non-government initiative.

4. SWOT Analysis of the Economy

Uttarakhand is a landlocked state, which creates disadvantage in competing with other states, particularly in exportable goods. Its rural mass has fragmented land with small landholding generating negligible or no surplus, leading to constrained use of innovative methods.

TABLE 2.8
Plan Outlay in Five Year Plans for Uttarakhand

| Major Heads of Development | Plan Outlay (INR crore) | | Distribution (Per cent) | | (Per cent Change over the Previous Plan) |
|------------------------------------------|-------------------------|-----------------|-------------------------|------------|------------------------------------------|
| | Xth Plan | XIth Plan | Xth Plan | XIth Plan | |
| Economic services | 7086.41 | 25124.75 | 60 | 60 | 254.55 |
| Agriculture & allied activities | 1207.32 | 4480.66 | 10 | 11 | 271.12 |
| Rural Dev. & BADP | 843.48 | 2498.29 | 7 | 6 | 196.19 |
| Irrigation & flood control | 574.76 | 2612.24 | 5 | 6 | 354.49 |
| Energy | 1766.81 | 4874.87 | 15 | 12 | 175.91 |
| Industry & minerals | 329.72 | 318.3 | 3 | 1 | -3.45 |
| Transport | 1531.5 | 8222.53 | 13 | 20 | 436.89 |
| Science, technology & IT | 401.67 | 579.29 | 3 | 1 | 44.22 |
| General economic services | 431.16 | 1538.57 | 4 | 4 | 256.84 |
| Social service | 4110.77 | 16244.06 | 35 | 39 | 295.16 |
| Education, culture, sports youth welfare | 1437.5 | 4244.46 | 12 | 10 | 195.27 |
| Medical & public health | 470.45 | 2148.82 | 4 | 5 | 356.75 |
| Water supply & sanitation | 665.07 | 2535.3 | 6 | 6 | 281.12 |
| General services | 544.16 | 643.38 | 5 | 2 | 18.23 |
| Grand total | 11741.35 | 42012.19 | 100 | 100 | 257.81 |

Source: Draft XI Five Year Plan prepared by the Government of Uttarakhand.

On top of that, village and town level industrialisation is very poor. In such an underdeveloped democratic society, political compulsions and doubts about reforms are obstacles to implementation of progressive policies.

The foregoing discussion and the review presented in Chapter 1 reveal major advantages, but also perennial weaknesses and severe threats to the economic prospects of Uttarakhand. The development strategy for the state needs to be inclusive of all factors related to social, environmental and economic issues. In order to summarise major prospects and problems, a SWOT analysis is summarised in Table 2.9. The planning process can be greatly improved if it is based on fuller information about the strengths and weaknesses of the economy, the potential opportunities and looming threats.

Under the foregoing situation, often, as in the many parts of the mountain world, the choice falls back on promoting tourism. Uttarakhand has a long history, with a sustainable civilisation that dates back to ancient times; a wealth of landscape, with mountains and lakes that evoke a deep sense of spirituality. It has something to offer to the adventure-seeker, spiritualist and casual tourist alike. Uttarakhand has some of the most attractive tourist spots of the country with high concentration of visitors, which need to be developed with a holistic approach. However, a modern tourism industry as one like Goa may not be desired due to various social, cultural and environmental reasons (Ajitha, 2005).

It is often argued that the distinct geographical features of Uttarakhand with mountains, Bhabar & Terai regions, it is uniquely suitable to grow varieties of horticultural and cash rich crops. However, it is difficult to shift from traditional farming to new farming quickly. Moreover, technological changes if not monitored properly, could lead to farmers' suicides being experienced in several parts of the country these days.

Rural population demonstrates slower growth rate as compared to the urban population, indicating large-scale migration from farm sector to the non-farm sector creating pressure on cities and towns and leading to increasing slum population. Therefore, urban planning process and development needs to be farsighted led by the development of transport and services network plans and strict adherence to rules.

One of the preferred agriculture based industry of the state is the sugar industry but that too is faced with a challenging situation due to the competition from other states, complex pricing mechanism and political sensitivity. There are also issues related to permission to produce ethanol and adapting technologies to facilitate co-generation of energy. It may be timely that state government commission conducts a comprehensive study of the sugar sector in Uttarakhand for better insight.

Thus, even with cash rich agro-industries, the development strategy primarily based on dominant

TABLE 2.9
SWOT Analysis for the Economy of Uttarakhand

| <i>Strengths</i> | <i>Weaknesses</i> | <i>Opportunities</i> | <i>Threats</i> |
|------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------|
| High literacy rate | Inadequate educational infrastructure for higher education | Tourism in most farms | Natural calamity including land slides |
| Good health indicators | | Potential cluster based development | Environmental degradation due to possible tourist pressure |
| Low population density | Low workers participation | High potential for horticulture and medicinal plants | Unsustainable debt and persistent primary deficit |
| Large number of river outlets | Hilly, difficult and land locked terrain | Large potential for hydro power | Regional disparity |
| High grade natural resource of tourist hot spots | Low urbanisation and thin local market | Climatic and location advantage for higher learning and research | Skewed industrialisation |
| Rich and high level of forest cover and biodiversity | Fragmented, rainfed and low yield agriculture | Special category status state and exemption of central excise for industrial growth | Poor informal sector in manufacturing |
| Growing registered manufacturing | Low access to road, power and credit | New state and committed state machinery | |
| Peaceful social and industrial environment | Poor mineral resources | | |
| Proximity to Delhi | Poor infrastructure to support high value tourists | | |

Source: Author's compilation.

primary sector has limitations specifically, due to poor terms of trade. It is therefore, difficult to ignore the importance of fast and diversified industrialisation in order to absorb the surplus labour. In this context, private sector participation is crucial as they are better placed to effect changes.

With high literacy rate, and congenial environment for learning and research, the potential for developing educational centres, high-end information technology centres, could also be a sustainable plan.

Finally, poverty reduction and equitable distribution needs to be the natural outcome of economic development. It has to be more than simple trickle-down effects. While infrastructure facilities to feed industrial centres are important, provisioning of connectivity to rural mass and facilitation to get them market access, and better prices cannot be ignored.

5. Development Strategies

In the literature on poverty, it is widely accepted that poverty reduction is best addressed by sustained economic growth. Bhagwati (1988), argued that the growth-oriented reform strategy is an activist strategy for impacting on poverty. More recent work of Dollar and Kraay (2000), Bidani and Martin (1995) and Sudhir and Ravallion (1993) also suggest that level of poverty falls with overall economic growth and that the progress in reducing income poverty is crucial to reduce most non-income dimensions of poverty, which are major concerns of Sen (1992). Poverty may not be adequately reflected in income or consumption-based measures. Areas with a large concentration of poor are also those with low levels of income, low nutritional levels, low literacy rates, low life expectancy and high rates of infant mortality. They also have low standards of physical and social infrastructure, particularly in rural areas and low levels of public expenditure on them (Sen, 1992). Given the fact that most of the population in the poor countries reside in rural sector, therefore, it is argued that the growth in agriculture has direct effect in reducing poverty of a larger segment of population (Kalirajan and Singh, 2006). However, in the case of Uttarakhand there are acute urban problems as well. At least in two of the major districts of US Nagar and Nainital, more than half of the poor reside in urban areas. Thus, poverty is a multi-dimensional problem and in the case of Uttarakhand, both agriculture and non-agriculture growth are crucial.

Ahluwalia (2000) emphasises the need for developing a better understanding of the reasons for the superior performance of some of the better performing states.

Therefore, often cross-sectional analyses are found to be quite insightful. In a cross-country analysis, variables such as the initial level of income, investment rate, various measures of education, population growth, terms of trade, some policy indicators like inflation, black market premium, fiscal surplus and many other variables have been found significant. Across the states, variables such as geographical location, proximity to industrial conglomerates and differential policies of government become important (Demurger *et al.*, 2002). The studies of Barro (1991) and Barro and Sala-i-Martin (1995) and several other studies have clearly brought out that successful explanations of economic performance have to go beyond narrow measures of economic variables to incorporate political and social forces. Some researchers such as Landes (1999), Inglehart and Baker (2000), Huntington (1991) argue that explanations for economic growth should go further to include a region's culture, which is thought to influence economic outcomes by affecting personal traits such as honesty, thrift, willingness to work and openness to strangers. Even intensity of religious beliefs can be studied to measure economic outcomes (see Barro and McCleary, 2003) In a cross-sectional analysis of Indian states (*Uttar Pradesh Development Report, Volume-1*), level of industrialisation is found to be the highest contributor to GSDP growth.

Thus, a structured approach is required to address the development problems depending upon the strengths and weaknesses of the region. The need for rapid industrialisation, and the need to improve yields of agriculture products cannot be overemphasised. The solution lies in better investment climate, public private-partnerships, involvement of local bodies to a greater degree, a change in attitude of the administration, increasing education and health facilities, modernising the cities, and improving the connectivity, power supply and communication. A sense of competition among the bureaucrats and leadership against other states must continue.

Given the strengths and weaknesses of the state, Uttarakhand has a number of options to pursue. And, in fact, various documents of the state government consider tourism, agriculture and horticulture, medicinal plants/herbal wealth, generation of hydro energy, information technology, and biotechnology as the key GDP drivers of Uttarakhand and hence, thrust areas. However, one has to be careful from being overwhelmed by certain fixed ideas and at the same time there should be clear differentiation between driver and enablers. For example, Uttarakhand has tourism potential but from the analysis of sector-wise growth performance, there is nothing to suggest that this

sector is driving the economy and could change the destiny of the state any quickly (see Tables 2.1 and 2.3). Similar is the case of hydropower, which, at this stage should be developed as essential component of enabler rather than the main driver of the GDP. The access to power and per capita consumption of electricity has to increase further to the level of richer states as Uttarakhand strives to increase its per capita GSDP. And, the state has rightly come out with the policy on hydropower favouring private sector privatisation and has already identified 47 small hydro sites with less than or equal to 25 megawatts capacity.

On the other hand manufacturing, construction and agriculture keep contributing half of the growth. Nevertheless, potential avenues of growth must be part of the focus area programme. There are a number of recommendations on sector specific problems in respective chapters of this report. Only a broad classification and discussion of some of the selected issues is presented here.

Focus Area Programme

- (1) Support system for fragmented farming towards improving yield and price.
- (2) Rapid industrialisation.
- (3) Sustainable mountain tourism with strict adherence to master plan based mountain urbanisation and exclusion of sacred locations.
- (4) Research and high-end information and biotechnology hubs.
- (5) Governance.

Wider Area Programmes

- (1) Reorientation to poverty and inequality assessment and anti-poverty programmes.
- (2) Urban and rural infrastructure development under integrated master plans.
- (3) Application of public private partnership mode.
- (4) Application of concepts of growth centres to rural development.
- (5) Control on primary deficit.
- (6) Development of urban local bodies and Panchayati Raj Institutions for efficient and intensive participation.
- (7) Hydro-power development and export.
- (8) Research and high-end information and biotechnology hubs.

5.1 Support System for Fragmented Farming

Three aspects of agriculture sector need to be factored in overall development strategy. First, and as noted earlier the agriculture yield and the terms of trade are poor and in fact, appear to be deteriorating over time. Second, with growing urbanisation prime farmland is getting diverted for non-farm purposes. These two factors will put enormous pressure on food security and poverty alleviation programmes. With increasing income, demand for food will also increase. This means, every unit of available arable land will have to produce more food and other agricultural products. But, ever increasing fragmentation of agriculture land is likely to worsen the situation and make it more daunting. Therefore, the future strategy for the agriculture sector needs to be directed towards increasing productivity of the marginal farm as much as the large farms. Simultaneous efforts are also needed to create mechanisms of *de facto* consolidation of the farming operations to harness economies of scale. It may be noted, only households with landholding of 4 ha and above have a surplus of income over expenditure (Kisan-Ayog, 2006, Fifth Report of the Farmers' Commission 2006: 229). In the case of Uttarakhand, only 22.3 per cent of the areas of agriculture farm, which constitutes about 3.1 per cent of the farm holding, have farm size above 4 ha. Therefore, a majority of farmers in Uttarakhand need support system to enhance farm productivity and income.

The agricultural sector continues to depend heavily on rainfall. The main reason appears to lie in management of water resources and technology choices for irrigation. Irrigation in Uttarakhand is dominated by privately owned tubewells as against canal-based irrigation in several other states. With predominant use of tubewells, replenishment of groundwater is critically dependent upon rain, which is not the case with canal-based irrigation. Canals also help in replenishing groundwater utilised by the tubewells. Thus, a strategy of optimal combination of tubewells and canals may reduce dependence on regional rain. It is in this context that contribution from the governments (Centre as well as state) is lacking compared to several other agriculture dominant states. In addition, currently most of the tubewells in the state are diesel-powered, which need to be replaced by electric or solar power in order to increase profitability of the farmers. However, this requires fast and efficient rural electrification.

Thus, the key areas of policy intervention include the following:

- Well laid down and farmer friendly cooperative and contract farming legislation;

- Facilities for soil testing and estimation of status of micronutrients at block level;
- Facilities of low cost refrigeration for perishable commodities and small but secure storage silos at the block level;
- Promotion of efficient irrigation systems at the farm level;
- Ease of access to market (*mandis*) at block level;
- Creation of agriculture price stabilisation fund;
- Bio-parks to convert available biomass into economic products, including energy and manure;
- Advisory service cooperatives at block level covering technology dissemination and crop selection;
- Monitoring and regulating implementation of new technology through establishment of a National Biotechnology Regulatory Authority;
- Promotion of application of information technology for knowledge dissemination and market intelligence services;
- Promotion of micro-financing in a productive way;
- Crop insurance to cover weather and market risks.

The Uttarakhand government has already set up Krishi Vigyan Kendras at district level. They could be extended to block level given the connectivity problems in hilly areas. Initiatives are also undertaken to promote agro-industries and increase value addition by launching a litchi export-processing zone at Ramnagar, a proposed Floriculture Park in Dhakrani (Dehradun), a Biotechnology Park near Pantnagar and a Medicinal and Aromatic Plants Export Zone covering seven districts. The state has constituted a High Level Biotechnology Board and State Medicinal and Aromatic Plant Board to provide policy guidelines. There are high expectations and it would be interesting to see how far these organisations are able to solve the basic problems of the small farmers and increase their income, which is the ultimate goal.

5.2 Sustainable Mountain Tourism

In several parts of the world, the mountain regions have greatly benefited from the rise of tourism (Mountain Agenda, 1999). With increasing demand or increasing potential demand for tourism, such regions acquire modern connectivity and new technologies. Tourism being highly labour intensive with a range of career options, helps in increasing the income of the local people. And, if the area happens to produce traditional goods of cultural

importance, the marketing problems are greatly resolved with the promotion of tourism, which brings the market to the doorstep of manufacturers.

However, it is often argued that tourism exhibits tendency to destroy the basic foundation on which it was developed during the initial phase and, in absence of checks and balances lead to highly distorted state of the local culture and value system, the landscape and the environment at large. A badly planned tourism development could lead to undue pressure on land use, water resources, electricity supply, forests, native plants, leading to ecological disruptions. The increasing urban population also leads to excessive generation of waste water discharge, garbage, air/water and visual pollution. It may be noted that tourists generate many times more waste, consume many times more water and electricity than the local residents (Mak, 2004).

There are plenty of tourism options for Uttarakhand as discussed in Chapter 11 of this report and all of them should be encouraged. However, in order to avoid adverse effects of rapidly growing tourism, it is important that certain normative principles on command and control and market based instruments are fixed sooner than later to cover at least the following aspects of local area development:

- Integrated time scaled master plan covering long term future demand assessment, design and provisioning of futuristic facilities such as transport, water, electricity, communication, building layout, open space requirements, market layout.
- Protection of green belts, forests, plantation and ecosystem.
- Legislative provisioning to ensure recycling as integral part of development process, application of resource efficient appliances and disposal of garbage.
- Sustainable management of natural resources including limits on resource use.
- Gradual change giving balanced consideration to the needs of the local population and the interests of tourists.
- Appropriate taxation/resource use charges to be used exclusively for sustainability of tourism industry.
- Prohibited activities and prohibited areas to maintain sanctity of sacred places, places of worship and religious conglomerations and to preserve ecosystem.

- Adequate incentives for best practices and commensurate/stringent penalties against defaulters.

The state government has already constituted autonomous institutions such as the Uttarakhand Tourism Development Board, Special Committee for Pilgrimage and Adventure Tourism Committee. It is expected that these institutions work towards a common goal to provide sustainability to the tourism and attractiveness of the region in long term. The state government has hired consultants to frame master plans for eco-tourism. Given the intensity of risks, it would be a prudent idea to discuss such plans in open forum and also get them vetted by alternative agencies, possibly academicians or semi-academic organisations to ensure that above objectives are adequately incorporated.

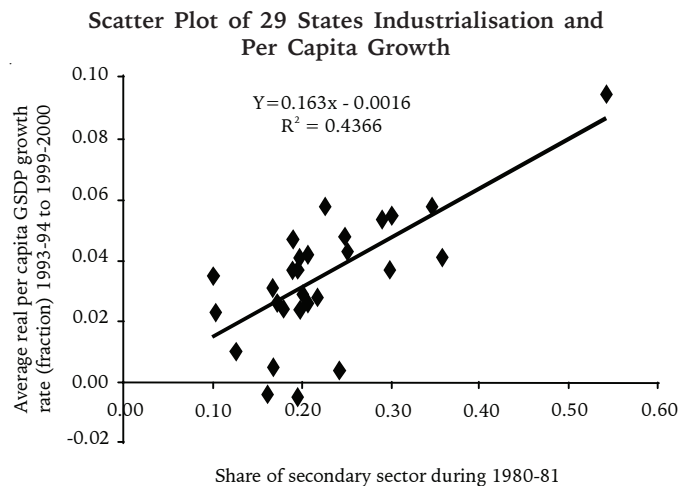
5.3 Rapid Industrialisation

“Industrialise or Perish”, said Mokshagundam Visvesvarayya in the context of Karnataka, even before Independence. Several decades later and after grappling with different models, most recently Buddhadev Bhattacharya, the Communist Chief Minister declared in the context of West Bengal “I am willing to go to hell to get industries here”. What is happening is not something that people did not know but it is a question of accepting some hard facts. If today China is able to provide better life to its citizens, the world’s largest population, it is because they mastered the art of manufacturing early on and went all out to attract investment in industrial sector. Surplus agricultural labour has to be absorbed in more productive operations, which have potential to grow faster than agriculture income. Abundance of natural resources is not a guarantee of growth unless there is significant value addition. In the case of India too, states with a higher industrial orientation have grown faster because industrial growth absorbs more direct and indirect employment and raises the consumption level of products from other sectors of economy. This is particularly true during the process of economic liberalisation (Figure 2.6). The effects of reforms in external and financial sectors are more likely to transmit through the industrial sector. Industrial growth also motivates growth in services and helps in the cost-efficient mechanisation of agriculture and food processing.

Industrialisation also helps in financial self-reliance. States displaying a high share of manufacturing in their GSDP are able to maintain higher self-reliance (Figure 2.7). This is obvious as agricultural sector, which dominates the Uttarakhand economy, is almost untaxed. The services sector, which is now under the tax-base, is a potential

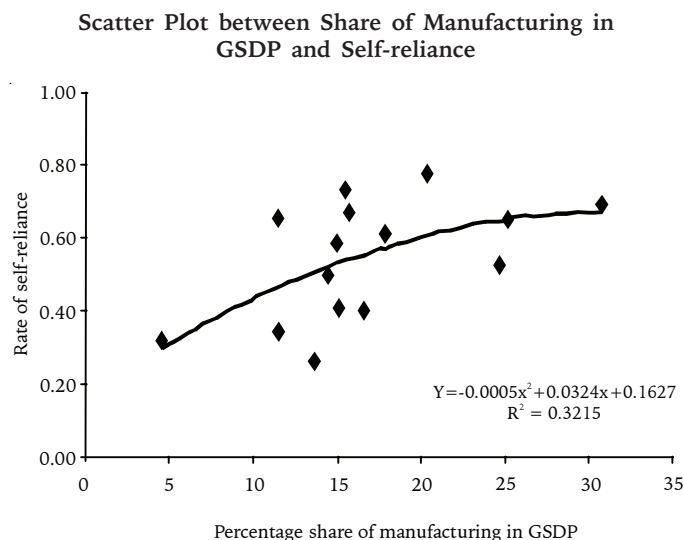
alternative through which state could improve its fiscal self-reliance but it has not yet evolved fully. This makes it even more imperative for Uttarakhand to emphasise its development strategy based on vigorous industrialisation or think in terms of taxing agriculture.

FIGURE 2.6



Source: (basic data) CSO.

FIGURE 2.7



Source: (basic data) CSO and RBI.

Rapid industrialisation, however, requires huge investments by the private sector. Therefore, strategies to attract investment are central to industrial development. There are several qualitative and quantitative variables that go into the considerations of private sector investors. Investment programmes of the Central and state governments may also guide the decision process of the private sector. The problem can be summarised under two

heads. First, the strategies to give orientation to the industrialisation process and second, addressing the factors that go in to the decision process of the investors.

Any strategy of industrialisation could be good if it can sustain itself under competing environment without much of state intervention during the post promotion phase. The failure of SSI-based strategy in most case could be traced to their inherent fragility requiring persistent state support. However, this does not mean that states have not been responsible for the failure. The shortages of essential infrastructure, namely power, water and road and exploitative attitude of administration and poor governance practices are also equally responsible. In such situations, industrialisation through Special Economic Zones (SEZ¹) and Technology/Industrial Parks is considered to be effective ways to grow industry. SEZ, technology/industrial parks could be planned even in the backward areas, with special incentives and provisioning of adequate transport and communication facilities. As discussed in Chapter 1, Uttarakhand has already planned one SEZ at Pantnagar and two integrated industrial estates (IIE), one each at Haridwar and Pantnagar. Other parks linked to biotechnology, medicinal plants and horticulture are also under consideration/development.

There is a problem of identification and acquisition of land for SEZ and parks. In this context the state may like to work out a model in which as an alternative strategy, the farmers are made permanent stakeholders through equity participation in the total developmental investment. Such equity should be transferable from generation to generation just like landholding. This will provide them a source of perpetual income until they sell their rights. In yet another possible model, the government could work as facilitator where the landholder themselves became joint developers of the SEZ with clear contracts and lease provisioning.

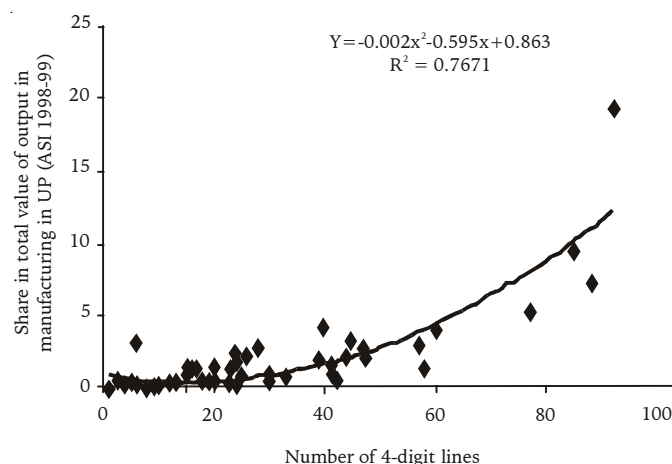
Mega Projects and Diversified Production

With large-scale industrialisation, the area develops faster and many small industries find it attractive to open

for business with or without incentives. Figure 2.8 plots share in total value of output in 70 districts in Uttar Pradesh against the number of 4-digit lines in that district (*UP Development Report, Volume-1*).

FIGURE 2.8

Scatter Plot between Number of 4-digit Lines and Share in Total Value of Output in Uttar Pradesh across Districts



Clearly, more the number of lines a district has, the more likely it is to contribute a higher share in manufactured output. This means that, it is more important to promote diverse industries, with multiple product lines. Such industrial activities are invariably associated with mega projects and develop quickly in the local area. In order to target mega investors under a strategic plan the state should identify a competent and skilful advisor to the Chief Minister, and assign growth targets to key officials. Possibly, hire an agency to market the strengths of Uttarakhand and mobilise mega projects. Mega projects could be given special packages if they agree to locate in industrially backward areas.

Assign Targets to Investment Promotion Boards

In most states, bureaucrats, with no implicit or explicit targets and incentives, head the investment promotion boards. One possible way to ensure the performance of

1. The incentives offered under the SEZ scheme include duty-free importation/domestic procurement of goods for the development of SEZ and setting up of units, 100 per cent FDI in the manufacturing sector under the automatic route, 100 per cent income tax exemption for the first five years and 50 per cent tax for two years thereafter. Other incentives include sub-contracting of part of production abroad, reimbursement/exemption of Central sales tax on domestic purchases by the SEZ units and retention of 100 per cent foreign exchange earnings in the Exchange Earners Foreign Currency (EEFC) Account. In the EXIM policy for 2002-2007 as announced in March 2002, SEZs were given the following concessions: overseas banking units (OBUs) which would, *inter alia*, be exempt from CRR and SLR requirements, would be permitted to be set up in SEZs. These OBUs would be given access to SEZ units and SEZ developers to international finance at international rates. SEZ units would be extended income tax exemptions and would be exempt from external commercial borrowing (ECB) restrictions and would be allowed to make overseas investment and carry out commodity hedging. SEZs would be exempted from Central sales tax in respect of supplies from domestic tariff area (DTA) and transactions from DTA to SEZs would be treated as exports under the Indian Income Tax and Customs Acts. So far, eight existing export promotion zones have been converted into SEZs and approval (initially) were given for the setting up of 17 SEZs in Gujarat, Maharashtra, Tamil Nadu, West Bengal, Orissa, Uttar Pradesh, Andhra Pradesh, Madhya Pradesh and Karnataka (RBI, 2003). As of 2006, approval has been given for 42 SEZ in various parts of the country including Indore, Salt Lake and Jaipur (which is operational now). Since October 2003, the labour laws are being relaxed for SEZs whereby employers in SEZ will not be required to contribute towards provident fund and state insurance schemes. The states are permitted to declare the SEZ as zone of public utility. Accordingly, states such as Andhra Pradesh, Maharashtra, Karnataka, Uttar Pradesh, Madhya Pradesh and Gujarat have amended the laws with respect to SEZ.

these boards is to utilise the dual measures of actual investment and the ratio of investment implemented to the investment proposed. The latter is a measure of follow-up action and commitment. Good performers need to be compensated through performance-linked payment.

Modernise Industrial Clusters

Modernisation of the existing small-scale clusters along with scientifically planned urbanisation can also be equally helpful. The problem with clusters is low wage syndrome. The middlemen siphon out most of the margins, while the actual worker remain hand to mouth. In this context, development of industrial corridors and modernisation of existing clusters for better quality and scale benefits and organised system of production may be extremely helpful in increasing the labour income. (Sonobe and Ptsuka, 2006) have argued for provisioning of institutional infrastructure to impart training to technicians, engineers and merchants with focus on exportability of the product from the clusters. However, given that the investment potential of aspiring members in the clusters could be highly limited, the efforts have also to be made to translate such aspiration in to more dynamic stage of manufacturing. It is here, that the government interventions are important in the form of provisioning of high-end parks with required infrastructure support for the products being manufactured in the clusters concerned.

Recently, the Government of India has announced a scheme for establishment of high-tech weaving parks involving modernised power-looms through assistance under three existing schemes for power-looms namely, Technology Up-gradation Fund (TUFS), the Group Work Shed Scheme (GWSS) and the Textiles Centre Infrastructure Development Scheme (TCIDS). Five such high-tech parks are already approved, one in Karnataka, and two each in Tamil Nadu and Andhra Pradesh (PIB Press release, May 6, 2005). This should set a good example for Uttarakhand to follow in terms of modernisation of its own clusters, particularly those in the textiles sector in order to remain competitive in the international market and reap the benefits arising out of abolition of quota regime in textiles and increasing influence of World Trade Organization's (WTO) commitments. Uttarakhand is developing three large industrial clusters at Pantnagar, Haridwar and Sitarganj. However, there is need to consider areas such as Uttarkashi, Nainital, Pauri Garhwal and Dehradun also,

where large employment in registered or unregistered SSI exist (see Chapter 1).

Promote Human Capital and Intellectual Development

Human capital is the composite effect of human development and intellectual disposition, both of which are essential for attracting investment and achieving faster growth. Therefore, the strategy of accumulating human capital should concentrate on health, hygiene, nutrition as well as intellectual development. Some states have built up a reputation for their skilled workers. Uttarakhand has a good record in literacy rate and health indicators but when it comes to facilities for higher and technical education, there are serious deficiencies. The state has recently embarked upon raising the output of IT professionals to 12,000 (MCA equivalent) per annum by 2006.² Along with this it is important to create a human capital to support manufacturing and other services as stated above. In this context the example of Karnataka is worth noting, which has been developing a network of Centres for Entrepreneurship Development of Karnataka (CEDOK) and a chain of Rural Development and Self-Employment Training Institutes (RUDSETIs), with the direct involvement of industry and communities. CEDOK utilises the creative capabilities of the local community, particularly in less industrialised districts. Uttarakhand could do better by creating such centres with extended facility of training in business management, information technology and also using them as a source of critical information and dissemination.

Re-orient the Rural Manufacturing through the Concept of Growth Centres

Uttarakhand has relatively high share of small scale manufacturing in rural sector as compared to the urban sector. However, this potential of rural entrepreneurship has not been fully exploited because of a very low level of operations. The State could formulate policies for village level enterprises according to prevailing specialisation to increase scale of operation based on the Chinese models of village and town level enterprises. However, the government should not indulge itself in managing such activities. Instead, the management should be in the hands of private or duly formed self-help groups.

Choosing between Keynesian Stimulus and Fiscal Consolidation

With implementation of reforms, states are competing

2. Uttarakhand signed a Memorandum of Understanding with Microsoft to jointly develop and deploy an array of technology solutions for e-governance in February 2004, which include project AAROHI, computer education to be imparted to all secondary schools and project SHIKHAR, training pre-graduate students.

for private sector investment by offering sops such as tax exemptions, subsidised land and government guarantees. All these policies lead to fiscal deficits but they do help in attracting investment. In addition, states' own capital expenditure on developmental programmes also have spill-over effects on the volume of private investment. However, there is a limit to such exuberance. When a Keynesian stimulus is given to the economy, fiscal deficit may increase due to increased expenditure as well as tax loss. Against this fact, it is argued that the debt and deficit conditions of several states are unhealthy and unsustainable. High debt ridden states lose capacity to provide fiscal stimulus to economy. Also, it is not always the case that deficits are incurred due only to capital expenditures; more often, it is due to unproductive or less productive wasteful revenue expenditure. Therefore, fiscal discipline is important. It is also argued that professional management of fiscal problems particularly, that of primary deficit is a sign of good governance.

Choice between Incentives and Enablers

Andhra Pradesh, which attracted almost 5 per cent of FDI during 1991-2001, is known to offer some of the largest fiscal and infrastructure incentives for investment. On the other hand, states such as Karnataka do not mention any tax-based incentives in their policy document and prefers to focus on enabling factors. The Government of Karnataka has withdrawn all exemptions on stamp duties and standardised the rates.

Uttarakhand has come up with incentives for the IT industry like exemption on electricity duty on generator sets, stamp duty concessions and rationalisation of land use and conversion charges. In addition, fiscal incentives like 100 per cent income tax exemption for the initial five years, 100 per cent outright exemption of excise duty for initial 10 years, eligibility for capital investment subsidy at 15 per cent of their investment in plant and machinery even for the existing units etc., have already been declared in Uttarakhand. As a result, there has been shift of production base from other parts of the country to Uttarakhand.

However, of late, Andhra Pradesh also is moving away from tax-based incentive to enablers in the large and medium scale segment. Enablers are more sustainable than incentives. Once a facility is created it will continue to exist but incentives are likely to be withdrawn under fiscal pressure. In that case, it is not guaranteed that the investors would be kept tied to the location. Therefore, incentive schemes must be designed carefully. However, the case of mega projects where investment is long-term, the basis for considering incentives can be different.

Review Incentives to Small Scale Industries

Several products are still reserved for SSI and even if a sector is taken out of reserved list, the barrier arising out of differential treatment between an SSI unit and a non-SSI unit in the same sector continues. This effectively blocks the expansion of scale of operation. Therefore, it is important that scale of SSI operations be raised sufficiently. Alternatively, the concept of SSI could be abolished altogether leaving behind only tiny industries for preferential treatment such as preferential purchases and governments help in marketing tiny sector products through equity participation in agencies constituted for the purpose.

It is argued that deferral and exemption of interest rates, taxes and duties are inherently less sustainable policies. Instead, SSI should be freed from procedural hassles and permitted to develop competitively. A preferential purchase policy reduces the pressure on SSIs to maintain quality.

Improve Drivers of Investment Decision

Investment in social, physical and financial infrastructure, both in urban and rural areas are critical to industrial development. Studies on factors affecting investment decision indicate that availability of skilled labour, infrastructure, supplier base, presence of metropolitan cities, perception about governance and fiscal/non-fiscal incentives are important considerations for the private investors. These factors are essential for both small as well as large industries, only the scale of demand vary. In fact, it is the larger investors, who are better equipped to differentiate between locations, are more concerned about higher level of attainments to match the stakes.

Infrastructure Development: Growth in infrastructure is clear indication of the state's resolve for long-term growth plans. Development of airport, water supply, power, roads, educational institutions, communication (earth stations, fibre cable and exchanges) and financial institutions should get priority in developmental expenditure and the strategy should be such as to reduce government's involvement in operating such programme. Connectivity is extremely important. One of the possible reasons for faster growth of Gurgaon and Noida is the proximity to the international airport and a market as large as Delhi. However, any plan for an international airport requires adequate traffic. In this context, international airports at Dehradun and Pantnagar are distant possibilities. However, upgradation to allow frequent domestic flights is essential. Similarly, more

airstrips need to be planned and constructed to allow high altitude tourism by airways.

Despite significant increase in investment in road sector and IT related infrastructure such as STPI Earth Station at Dehradun, Roorkee and Pantnagar, WIMAX computer network system, Uttarakhand keep lagging in both basic urban infrastructure. Agriculture infrastructure and rural connectivity also needs to be brought to equitable level across all the blocks. All this requires large finances.

The state may need to set up Infrastructure Development Fund like those by others states viz., Andhra Pradesh and Gujarat and strike BOT and PPP contracts. However, the success of PPP model depends on pragmatism and long-term approach. A long-term planning approach would suggest roads to be made for longer life cycle, which ultimately require selection of cement, concrete as the building material. A PPP with such long-term contract would ensure application of scientific and better technology for road construction.

Tailor-made Infrastructure: In creating connectivity, there are two types of facilities that are important. First, facilities that connects regions and big business centres. Second, type of facility includes connections between industrial centres of the state and the local system. Both are important in decision functions of the investors. Taking advantage of flexibility in realising efficiency gains from infrastructure development, states are implementing tailor-made policies for different target industries. Here, it is important to identify the type of industrialisation suitable for an area and then the right kind of infrastructure is created such that investors are automatically motivated to go to that area. This calls for a spatial strategy of industrial development through specialised agencies, which can take up industrial area development projects at large scale. For example, Karnataka Industrial Area Development Board (KIADB) has been assigned responsibility to develop sector-specific and location-specific industrial parks in Karnataka. Several such initiatives are needed in Uttarakhand where responsibility lies with the infrastructure development commissioner under the Chief Secretary.

Financial Infrastructure: The financial infrastructure is closely related to all economic industrial and trade activities, which require extensive support in terms of financial markets. It includes not only the development of commercial and rural banks, but also, clearing houses, commodity exchanges, trade centres, world exposition centres and exhibition parks, particularly suitable to showcase strengths of Uttarakhand in yoga,

biotechnology, medicinal and herbal plants, tourism and higher learning. State should plan such financial and commercial complexes at Dehradun and Pantnagar with modern amenities, connectivity and research facilities through public private participation. This will help attract major corporate houses to the city.

Credit to the small and tiny sector has been a chronic problem. This needs to be solved through the mechanisms of self-help groups and incentives to local bodies for developing successful arrangements with rural banks.

Ensuring Adequate and High Quality Human Capital to take on the Challenges of Managing Modern Capital is Vital: It is a truism that physical capital can be better utilised with better human capital. Private investors factor literacy rate into their investment function.

Free migration allows companies to hire the best people from across the country even if the state concerned has a low literacy rate. Further, it is not necessary that the most literate state will have the best pool of human capital. Despite these two facts, there is little doubt that literacy is too important to be neglected. A high-class literacy rate ensures cheap, readily available and educated manpower at the grassroots level. Literacy also changes the general outlook and awareness of people and cultivates a sense of competition and the desire to grow economically. Therefore, in general, states that have better human capital are likely to attract more investment.

Systematise Urban Development and bring Major Cities to Modern Standards: The state should create a comprehensive policy for urban development. Any area falling under urbanisation schemes must follow set norms, which should be enforceable. Basis of these norms should be a mandatory master plan including projected demand, basis of calculation and design of roads, water, sewage systems, electrification and communication. Importantly, the master plan should be widely disseminated for the knowledge of the people and the likely schedule of implementation. Often, growth planning overlooks the management issues related to growth outcomes. For example, growth brings prosperity and leads to more cars and better houses for every unit, family or adult individual, which require more water, electricity, wider roads, more parking space and better service along with higher rate of garbage and waste generation. A disconnect between these futuristic demand and present growth plans lead to chaos and congestion (Singh, 2006).

Growth of cities cannot be avoided, in fact there are several virtues in developing cities. Transport, storage, communication, hotels, restaurants, banking, insurance,

real estate, dwellings, business services, public administration and other services components grow faster in and around metropolitan cities. The influence of a large city on employment opportunities and lifestyle aspirations goes well beyond city limits and extends into surrounding areas. This suggests that Uttarakhand should concentrate on building a few large business centres, one of them possibly at Gairsen to reduce regional disparity in the state.

It is heartening to note that the state has recently taken up initiative to prepare master plans for some of the urban areas and the central government has selected Dehradun, Haridwar and Nainital to be considered under Jawahar Lal Nehru Urban Renewal Mission (JLNURM). It is expected, implementation of these schemes would bring long term-solutions, instead of short-term patch work.

Initiate Labour Reforms: The need for labour reforms is felt by the most progressive states. Significant changes have already been made in selected sectors such as information technology, special economic zones and export processing zones. States such as Maharashtra and Karnataka have already initiated reforms on a limited scale. Besides, the Central government is also in the process of changing legislation. Labour reforms are needed to meet new economic challenges, where efficiency and competition are the key considerations in policy formulation. The reforms include amendments in working time, exit policy, contractual labour, minimum wage, inspections related to labour disputes, trade unions and prevention of unfair labour practices and paper works related to labour laws.

State's Initiatives: Towards Improved Facilitation

The state government has recognised the importance of facilitation and promotion. Udyog Mitra has been set up in the state under the Chairmanship of the Chief Minister for providing a forum for continuous interaction with the industry associations and to enable timely policy interventions and other measures as may be necessary. Single Window Clearance facility is available with a provision for deemed/online clearances and approvals. The single window contract facility would be available at the District Industrial Centres (DICs) at the district level and State Industrial Development Corporation of Uttarakhand (SIDCUL) at the state level.

However, there is no legal backing to the single window programme as is the case in Andhra Pradesh. Nevertheless, if the system is efficient without legal binding, it could be still better, provided it remained so.

Apart from providing information and escort services to the entrepreneurs, the centres will also be maintaining a data bank. An NRI and NRU (Non-Resident Uttarakhandi) investment cell has also been formed in the state to foster investment and single window access.

6. Sector-specific Policies

Different states have identified specific promotional activities or focus areas for industrial development and achieving high growth. These policies bring about clarity in the decision-making process. Sector-specific policies are also helpful in giving a direction to implementing authorities. In this endeavour, export promotion should be at the heart of overall policy frameworks. There is a galaxy of policies, which can be simplified and compiled for public consumption. To enumerate some of these a list is presented below:

6.1 Facilitation and Knowledge Management Related Policies

1. Entrepreneurship development
2. Awards for meritorious entrepreneurs
3. Education policy
4. Environment and pollution control
5. Export promotion
6. Financial infrastructure
7. Simplification and streamlining of rules and procedures in administration
8. Development of industrial parks, complexes, estates and special economic zones and trade centres
9. Infrastructure development policy
10. Industrial policy
11. Investment policy
12. Land allotment policy
13. Labour laws and related procedures
14. Natural resources and conservation policies
15. Procedures and clearance to set up units
16. R&D policy
17. Human resource development
18. Tax related procedures
19. Sick industry policy

20. Women entrepreneurs
21. Single window system of project clearance

6.2 Promotional Policies

1. Agro and food processing policy
2. Electronic policy
3. Information technology policy
4. Transport policy
5. Telecommunication policy
6. Forest-based industries policy
7. Handloom and handicraft policy
8. Biotechnology policy
9. Medical and medical college policy
10. Mineral and mineral based industries policy
11. Rice export policy
12. Road policy
13. Power policy
14. Rural non-farm sector policy
15. Sericulture policy
16. Tourism policy
17. PSU related policies
18. Small scale industry policy

7. Institutions

There is ample literature to support the view that institutional development and long-term growth are positively correlated. However, institutions are known by their quality of work, delivery system and human resources manning them. Therefore, a proper environment is necessary to attract the right people to the right place. Private investment in education and institutional development, ranging from basic education to R&D needs to be encouraged.

The need for institutional development has been recognised by most state governments, but Maharashtra and Karnataka are frontrunners in this respect. Maharashtra is providing land in industrial areas for institutes for higher learning, including business schools, at nominal or subsidised rates.

There are many areas such as banking, legal system and constitutional matters where states have supportive roles in implementing central reforms. However, subjects

such as business rules, law and order, state finances, state financial institutions, industrial development, rural development, statistics, education system, local body programmes, academic research, economic analysis, which are at the heart of development, fall entirely under the state's purview. These institutions need to evolve continuously because of a changing economic environment and new challenges.

Develop Centres of Excellence

Centres of excellence help build the image of the state as an attractive investment destination. The focus should be on promoting original research, and attracting the best staff. These should be merit-based and free from bureaucratic interference. Uttarakhand already has some of the important learning centres such as Roorkee Engineering University and Pantnagar University, while new centres of excellence housing IBM, Microsoft, Oracle and D-Link academies is underway at Nainital. Uttarakhand has great opportunity to slowly build a chain of centres of excellence and learning due to advantage of climatic conditions and proximity to Delhi including a research centres for biotechnology. State should be generous in this endeavour, as it will definitely pay back in long term.

Research activities from all key institutions should be documented and published to generate a sense of competition and awareness. An advisory body can be set up to publish and promote research in all areas of interest being contributed from the state.

Strengthen Statistical Analysis

Good decisions are helped by good analysis and high-quality data is the backbone of any meaningful analysis. If economic research is to be improved, special emphasis must be given to collection and analysis of data. States are moving to estimate district level domestic product. Karnataka, through its institutions has also initiated a process of building extensive and credible databases on WTO matters, and its implications for various sectors, to be disseminated throughout industry for awareness. Uttarakhand is in the process of creating a fiscal database with the help of USAID and NCAER. However, the usefulness of this exercise lies in implementation and continuance of the analysis and the database.

8. Governance

The goal of good governance is to make the citizens' life more peaceful, trustful, secure and efficient by enforcing property rights, preventing crime, corruption

and complacency in government as well as corporate sector and thereby, helping in creating efficiency of private business functions as well as implementation of government plans and programmes. Therefore, it is argued that dilemma between commitment and accountability is the central theme of all governance related problems (Bardhan, 2006). Even the most down-to-earth and essential programmes of poverty alleviation suffer from poor governance. Governance is the outcome of composite behaviour of the complete chain of government or corporate machinery. A recent study by the World Bank (World Bank, 2006) has brought out a comparative analysis of India's regulatory environment with that present in China. Procedures in India are more complex, more numerous, and cause greater delays.

Good governance has become a prerequisite for attracting investment. Some analysts argue that political organisation and the administrative competence of government, which mirror governance, are important explanatory variables of development. There are multiple strategies to create these features in the system of governance. Some of these can be implemented.

Empower People with Information and Right to Information

Empowering people with information and the right to information could be the most effective way of improving governance. However, the moot question is about the mechanism to get information and justice against offences. The legal system is so slow and non-transparent that it is almost impossible to secure redress.

One way to get some reprieve is to involve local bodies in development activity effectively. The provisions of the 73rd and 74th amendments must be implemented to reform management of revenue and expenditure. The First State Finance Commission had made a number of recommendations regarding financial power to local bodies. The state government needs to pursue the recommendations of the SFC aggressively and give autonomy to Urban and Rural Local Bodies (ULBs). Transparency can be achieved through:

- Public disclosures of the revenue and expenditure statements at the local body level.
- Involve media and independent NGOs in dissemination of information about policies and programmes of the government so that the lapses at the middle level can be brought to public knowledge.
- Wider dissemination of citizens' rights.

Institute Focused Advisory Committees

It may be helpful to rely on focused advisory committees comprising top class professionals, industrialists, social scientists and journalists, instead of a bureaucracy-loaded system, to get advice on industrial/scientific/social developments. If governance through committees is to be successful then advice of the expert bodies should be made binding by the law unless refuted with convincing reasons. It may be noted that in today's time getting best of the professional advice requires compensation and therefore, the state needs to make such provisions for advisory bodies and ask them to produce significant opinion. It should not be decorative exercise by some renowned people.

Introduce Comprehensive Computerisation

Extensive use of IT can bring about transparency and accountability in all areas including online clearances of projects, taxation, information dissemination, land record, statistical data on all issues of development.

The "India: E-Readiness Assessment Report 2004" (Department of Information Technology, Government of India) has shown no improvement in the state's ranking in e-readiness over 2003 when Uttarakhand was placed among the group of 'below average achievers'. The reason for below average performance is lack of usage and readiness in terms of penetration of the technology among people at large and the government in particular. The government has made efforts to create a conducive environment by formulating laws, initiating IT-related projects and equipping schools with hardware but that is not adequate compared to what other states are doing in popularising the application of IT through projects such as e-Choupal and Community Information Centres (CIC). Uttarakhand was a late starter in computerisation of land records. However, the Dev Bhoomi Project, initiated in 2005 was completed in nine months and won an e-governance award in 2005. With this possibly, the 2005 ranking of the state in e-Readiness would improve.

The state could do better by adopting some of the innovative programmes undertaken in various states. These include: CARD (Computer-Aided Administration of Registration Department); e-Seva, a one-stop-shop for citizen services providing a wide spectrum of services under one roof like payment of public utilities bills, tax payments, issue of certificates, licences/permits, reservations; FAST (Fully-Automated System for Transport); and RASI, which facilitates dissemination of all kinds of useful information to the villagers at a low cost, enabling the villagers to obtain crop-related help

from agricultural universities, and use of tele-medicine to treat rural patients.

The efficiency of implementation could be improved by manning the Information Technology Authority with top quality IT professionals with clear vision of the systems needed, and the freedom to plan and execute these systems. The state machinery should be assigned the job of a facilitator. Such programme should be directly under the Chief Minister for efficient and quick execution.

Simplify the System in All Spheres of Administration

Simplification of procedures and reduction of red tape barriers can go a long way in reducing corruption. For example, Karnataka has already passed a Karnataka Industry Facilitation Bill, focused on simplifying procedures and reducing bureaucratic controls. Choice of factories for inspection will be through random numbers and all inspections will be joint inspections so that factory inspectors, boiler inspectors, excise inspectors or whoever is required to inspect, will go together and finish the inspection at the same time. Similarly, the multiplicity of application forms is to be replaced by a Combined Application Form (CAF) in order to simplify the business operations. The focus of the programmes is not only to compete with the other Indian states, but also to compete globally. Therefore, quality, delivery, services and product all are getting due consideration in the policy design.

Adopt Positive Approaches and Manage through Negative List

The state government should promote a culture of self-regulation of projects through a negative list by emphasising what is not permitted. Get commitments from the private sector on infringement of regulations, and set up a system of enforceable penalties. This will also act to reduce paperwork. The projects should be cleared automatically if the officials processing the proposal did not meet deadlines. And, the responsibility should lie with the concerned official to explain the delays.

Legislate to Reduce Moral Hazards

Recently, the Indian Parliament has passed a bill that permits fund raising from private corporate sector for election under specified procedures. This is a good example of arriving at better policies by legalising the illegal. Recently, the Prime Minister has echoed similar idea to formulate a system to include middlemen in the defence purchases, as it appears difficult to avoid them. To consider another example, if driving licences are provided smoothly just on the recommendation of recognised motor training institutes with proper recording system, then monitoring the quality of driving will become far simpler. The police just have to record the driving licence numbers into the monitoring system while penalising the defaulters. This information can be used for de-listing institutes from which more defaulters graduate. Thus, the risk of getting de-recognised will ensure that institutes do not illegally sell licences. Technology needs to be used in order to make this possible.

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Chapter 3

State Finances

1. Introduction

The Uttar Pradesh Reorganisation (UPR) Act, 2000 demarcated the criteria of distribution of revenues, authorisation of expenditure and apportionment of assets and liabilities. Accordingly, the state was born with a total liability of INR 3185.91 crore, which included INR 1113.86 crore of internal debt, INR 1619.74 crore of loans and advances from Central government and small savings, and INR 432.31 crore from provident fund, etc. This led to an accumulated deficit of INR 3630.27 crore at the end of the (part) Financial Year 2000-01 (see CAG_UA, 2001). The assets comprised of capital outlays, loans and advances given by the state government and the cash balances. However, the process of appropriation of pre-November 2000 assets and liabilities of the composite state of Uttar Pradesh and of other financial adjustments, to be done in each case with reference to the provisions of the Uttar Pradesh Reorganisation Act, 2000 is not yet complete (CAG, 2006). The state took little time in obtaining the 'Special Category Status' (SCS) by the National Development Council in the context of centre-state fiscal relations. However, despite all such advantages, the state has not been able to come out of the legacy of fiscal problems associated with the erstwhile state of Uttar Pradesh and the liabilities have shown alarming rate of increase.

The rest of the chapter is organised as follows: Section 2 takes a stock of the fiscal health of the state and discusses the key trends. Section 3 discusses about the tax and non-tax revenue receipts. Section 4 presents trends in revenue expenditure. Section 5 deals with the performance of the budgetary process. Reforms and fiscal prospects are discussed in Section 6.

Most of the discussion is based on the data obtained from official documents including: (1) Reports of Comptroller and Auditor General (CAG) of India for

Uttarakhand (CAG_UA), (2) budget documents of Uttarakhand, (3) RBI's analysis of state budgets (State Finances: A Study of the Budgets), (4) reports of the Finance Commission (FC) and (5) reports of the first and second State Finance Commission (SFC-1 & 2). However, the status of the state finances is drawn from the information contained in the audited statements of the CAG, while the inter-state comparisons are made based on the data available in RBI document on the state finances. In view of the fact that RBI data, budget documents and the CAG data do not match exactly, some discrepancies could not be avoided.

The analysis covers the period of 2001-02 to 2006-07 budget estimate. The subsequent two budgets, for the years 2007-08 and 2008-09, presented in quick succession have not been analysed but significant changes, particularly improvements in the financial conditions have been noted appropriately. 2000-01 being fractional year, the same is ignored for the purpose of the trend analysis. Audited accounts are available up to 2004-05. GSDP has been compiled for the period of 1993-94 to 2005-06(A) and for the remaining periods, it is estimated based on past trend. Finally, it is important to state that the data set is too small to predict underlying trends, yet attempt has been made to draw meaningful inferences. Therefore, wherever used, the term 'trend' should be read carefully in this chapter.

2. Overview of the State Finances

The Twelfth Finance Commission (FC12) has set certain milestone targets for the states and the Central government to arrest the deterioration in the fiscal health of the governments observed during the post reform period. Some of these targets listed in Table 3.1 can be a good reference point to discuss the performance of the fiscal achievements of the Uttarakhand government.

TABLE 3.1
Selected Fiscal Targets of Twelfth Finance Commission

| Sl. No. | Fiscal Measure | Target |
|---------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Fiscal deficit | 3 per cent of GDP |
| 2. | Revenue deficit | Zero by 2008-09 |
| 3. | Interest payments | 15 per cent of revenue receipts by 2009-10. |
| 4. | Fiscal responsibility legislation (FRL) | (a) Eliminating revenue deficit by 2008-09; (b) Reducing fiscal deficit to 3 per cent of GSDP or its equivalent, defined as the ratio of interest payment to revenue receipts; (c) Bringing out annual reduction targets of revenue and fiscal deficits; (d) Bringing out annual statement giving prospects for the state economy and related fiscal strategy; and (e) Bringing out special statements along with the budget giving in detail the number of employees in government, public sector, and aided institutions and related salaries. |
| 5. | Wage policy | Total salary bill relative to revenue expenditure net of interest payments and pensions not to exceed 35 per cent |
| 6. | The Panchayati Raj Institutions (PRIs) | (a) PRI to take over the assets relating to water supply and sanitation and utilise the grants for repairs/rejuvenation as also the O&M costs. (b) The PRIs should, however, recover at least 50 percent of the recurring costs in the form of user charges. |
| 7. | Critical merit services | Education and health |

Source: Report of the Twelfth Finance Commission (2005).

Uttarakhand has not yet enacted required laws towards implementation of Panchayati Raj. The first report of the state finance commission (SFC) was submitted in 2001 and the second SFC report in 2006. There were no indications of substantial improvement in the functioning of the PRIs, mainly due to lack of clarity in the roles and responsibilities of the executive and the elected bodies (SFC 2001). However, Uttarakhand has implemented the system of value added tax (VAT) in line with the expectations of the central government. The second SFC report has, however, complimented the Uttarakhand government for enacting FRBM legislation, which aims at targeting 'nil' revenue deficit and 3 percent Fiscal Deficit by 2008-09 and promises reduction of total outstanding liabilities to 25 per cent of GSDP by 2014-15. The second SFC has recommended Uttarakhand to frame its own acts for the PRIs and ULBs and, to rationalise the design of VAT structure to explore possibilities of increasing tax rates for some of commodities.

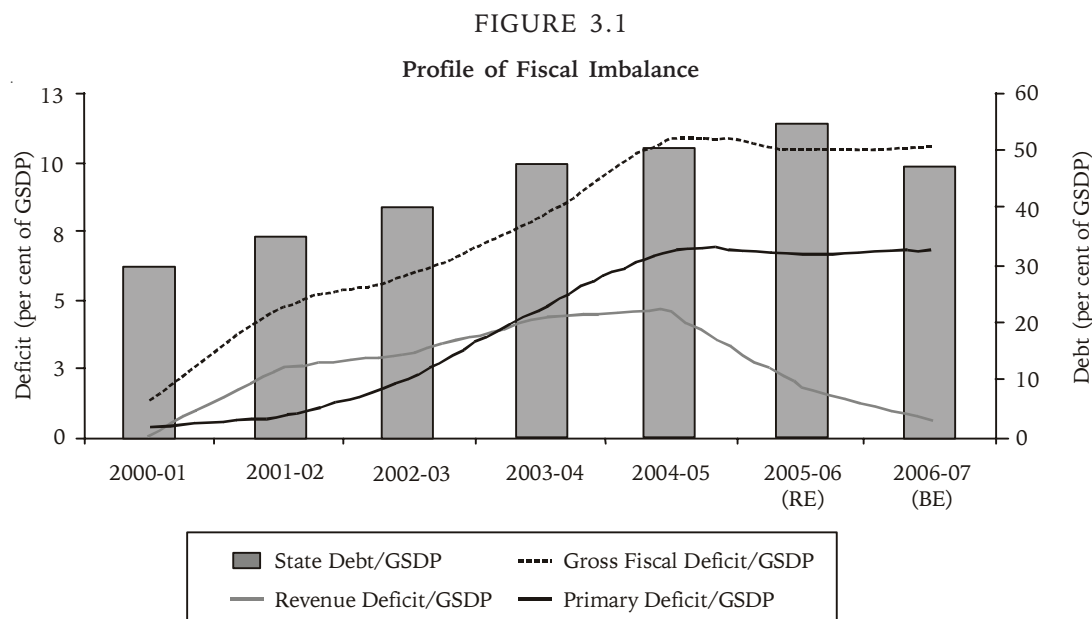
2.1 Fiscal Condition: Signs of Reducing Imbalances

With respect to the target for the state governments, the fiscal condition of Uttarakhand is encouraging the fiscal condition deteriorated remarkably between 2001-02

and 2004-05. During this period the fiscal deficit increased from 4.6 per cent of GSDP to 8.4 per cent of GSDP (Figure 3.1 and Table 3.2) and as a consequence, the debt burden of the state has gone up from 26.4 per cent of GSDP in 2000-01 to 50.84 per cent of GSDP during 2004-05. The balance of current revenue (BCR)¹, which plays critical role in determining its plan size, continues to be negative (Table 3.2), putting a constraint on the infrastructure development. However, the most recent data on debt to GSDP data improvement in indebtedness, which stood at about 46 percent as of end March 2007.

During the subsequent years, more promising budgets have been presented with significant reduction in the revenue deficit in the revised estimate (RE) of 2005-06 and the budget estimate (BE) of 2006-07 (Figure 3.1 and Table 3.2). All the three measures of fiscal performance, the gross fiscal deficit, primary deficit and the revenue deficit are much on the higher side up to 2004-05 accounts statement. Importantly, the primary deficit has increased to 6.75 per cent of GSDP during 2004-05 and even according to the budget estimates for 2006-07 it is likely to further increase to 6.81 per cent of GSDP. This is unacceptable and requires serious corrections.

1. BCR is defined as: revenue receipt minus all plan grants and Non-Plan Revenue Expenditure excluding debits under 2048-Appropriation for reduction or avoidance of debt.



Sources: (basic data) *Finance and Budgets Accounts of Uttarakhand*.

TABLE 3.2
Deficit Indicators of State Government

| Resource Gap | (Per cent) | | | | | | |
|-------------------------------------------------------------------------|------------|---------|---------|---------|---------|--------------|--------------|
| | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) |
| Gross fiscal deficit/GSDP | 1.37 | 4.64 | 5.91 | 8.09 | 10.79 | 10.45 | 10.55 |
| Revenue deficit/GSDP | 0.08 | 2.50 | 3.05 | 4.38 | 4.70 | 1.82 | 0.58 |
| Primary deficit/GSDP | 0.42 | 0.80 | 2.24 | 4.65 | 6.75 | 6.65 | 6.81 |
| Debt/GSDP | 29.64 | 35.28 | 39.95 | 47.73 | 50.84 | 54.92 | 47.62 |
| Interest payments/GSDP | 0.96 | 3.85 | 3.67 | 3.44 | 4.04 | 3.80 | 3.74 |
| Interest payment/revenue receipt | | 19.44 | 17.20 | 16.58 | 19.97 | 13.86 | 13.52 |
| Balance from the current revenue (INR crore) | | -1067 | -821 | -1107 | -1128 | | |
| Non-tax revenue/stock of capital outlay | | 45 | 54 | 30 | 23 | | |
| Financial assets/financial liability | | 23 | 33 | 42 | 44 | | |
| Return on investment (statutory corp., joint stock co., & cooperatives) | | 0.40 | 0.14 | 0.10 | 0.08 | | |

Sources: (basic data) *Report of CAG of India for Uttarakhand Financial Accounts* (various years).

In fact, the genesis of indebtedness of Uttarakhand can also be linked to the timing of the creation of the State and, the confirmation of special category status, which happened to be the beginning of the post-award period of 11th Finance Commission. Though Uttarakhand was declared a SCS State soon after its creation but, as the EFC had already given its recommendation, Uttarakhand was deprived of the benefit of Revenue Deficit Grants admissible to other SCS States. Even a state like Himachal Pradesh, got a sum of around INR 2400 crore as revenue deficit grant. To fund the plans expenditure, the Central government allowed Uttarakhand additional market

borrowings and borrowing from other sources leading to increase in the indebtedness of the state.

The revenue deficit increased from 2.5 per cent of GSDP during 2001-02 to 4.7 per cent of GSDP in 2004-05. However, the state government has demonstrated more commitment towards reducing revenue deficit as reflected in the subsequent budget proposals and revised estimates. In fact the latest budget documents for the years 2007-08 and 2008-09 presented in quick succession recently indicate almost complete turnaround with an achievement of revenue surplus.

The problem of Uttarakhand also appeared to be the contagion effect of the deteriorating condition of Himachal Pradesh, another SCS state in the neighbourhood, even while the aggregate performance of the SCS states as well as non-SCS states improved during this period. The combined primary deficit of the special category states during 2003-04 was just about 0.34 per cent as against the 1.67 per cent achieved by all states (Table 3.3). However, the debt is increasing in almost all the categories of the states.

TABLE 3.3

Deficit Indicators in Comparison to all States and Special Category States

| | Year | As Percentage of GSDP | | | |
|-------------------------|---------|-----------------------|-----------------|-----------------|-------|
| | | Gross Fiscal Deficit | Revenue Deficit | Primary Deficit | Debt |
| Uttarakhand | 2001-02 | 4.64 | 2.50 | 0.80 | 35.28 |
| | 2002-03 | 5.91 | 3.05 | 2.24 | 39.95 |
| | 2003-04 | 8.09 | 4.38 | 4.65 | 47.73 |
| Special category states | 2001-02 | 6.23 | 1.17 | 1.40 | 46.89 |
| | 2002-03 | 6.95 | 1.64 | 2.07 | 53.50 |
| | 2003-04 | 5.19 | 0.02 | 0.34 | 54.81 |
| All states | 2001-02 | 4.59 | 2.83 | 1.60 | 32.78 |
| | 2002-03 | 4.53 | 2.44 | 1.42 | 35.38 |
| | 2003-04 | 4.92 | 2.43 | 1.67 | 36.60 |
| Himachal Pradesh | 2001-02 | 10.10 | 5.75 | 3.14 | 73.11 |
| | 2002-03 | 14.57 | 9.22 | 7.28 | 82.81 |
| | 2003-04 | 13.29 | 8.96 | 5.08 | 85.60 |
| Uttar Pradesh | 2001-02 | 5.46 | 3.41 | 0.93 | 52.17 |
| | 2002-03 | 4.86 | 2.62 | 1.25 | 53.93 |
| | 2003-04 | 7.65 | 8.54 | 3.00 | 56.09 |

Source: (basic data) Uttarakhand data is from Report of CAG for Uttarakhand Financial Accounts (various years), other data from RBI Reports on State Finances.

In terms of the contribution to gross fiscal deficit, the share of revenue deficit in the gross fiscal deficit is expected to fall from a high of 54.1 per cent during 2003-2004 to 5.5 per cent during 2006-07 (Table 3.4 & Figure 3.2). Clearly, huge capital investments are being made, which are also reflected in the high growth rate obtained in the gross domestic product. However, increasing gross fiscal deficit and a shift from revenue expenditure to the capital expenditure raises few doubts about the transparency in accounting system/standards.

TABLE 3.4

Decomposition of Fiscal Deficit: INR Crore

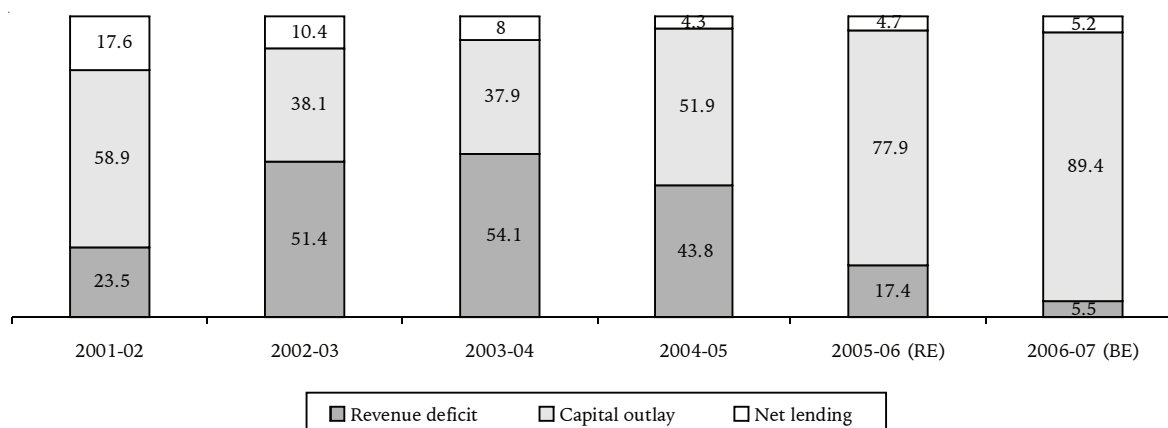
| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) |
|----------------------|---------|---------|---------|---------|--------------|--------------|
| Capital outlay | 208 | 339 | 533 | 1136 | 1897 | 2536 |
| Net lending | 74 | 93 | 112 | 187 | 115 | 115 |
| Revenue deficit | 330 | 459 | 760 | 950 | 423 | 156 |
| Gross fiscal deficit | 612 | 891 | 1405 | 2273 | 2436 | 2807 |

Source: (basic data) Report of CAG for Uttarakhand Financial Accounts.

The Model Fiscal Responsibility Legislation at the state level requires revenue deficit to be brought down to zero in a specified span of time. However, this requirement in the absence of transparency in accounting may lead to distortions. In fact, revenue surpluses and high incidences of capital expenditure are very common features of the deficit composition in almost all the SCS states (Table 3.5). Only Assam, Himachal Pradesh and Uttarakhand had revenue account in deficit, which too are headed towards revenue surplus states.

FIGURE 3.2

Decomposition of Fiscal Deficit: Share (Per cent)



Source: (basic data) Report of CAG for Uttarakhand Financial Accounts.

A natural question arises, with so much of capital expenditure responsible for the fiscal deficit, what is the return to the exchequer. The ratio of non-tax revenue to the stock of capital outlays has fallen from 0.45 to 0.23 and the return on investment has fallen from 0.40 to 0.08 between 2001-02 and 2004-05 (Table 3.2). Another measure of cost recovery calculated as the ratio (per cent) of non-tax revenue receipt to the revenue expenditure is very low in social as well as general services, while it is decreasing in the case of economic services (Table 3.6). These factors together point towards need for fiscally more efficient utilisation of expenditures.

TABLE 3.5

Composition of Fiscal Deficit across Selected States

| As Percentage of GFD | 2003-04 | | | 2005-06 (BE) | | |
|----------------------|-----------------|----------------|-------------|-----------------|----------------|-------------|
| | Revenue Deficit | Capital Outlay | Net Lending | Revenue Deficit | Capital Outlay | Net Lending |
| Uttarakhand | 54.1 | 37.9 | 8.0 | 19.6 | 75.2 | 5.2 |
| Arunachal Pradesh | -73.6 | 173.2 | 0.4 | 33.8 | 65.7 | 0.4 |
| Assam | 49.1 | 44.6 | 6.2 | 14.2 | 81.0 | 4.8 |
| Himachal | 67.4 | 32.9 | -0.3 | 6.2 | 92.4 | 1.4 |
| Jammu & Kashmir | -11235.3 | 10817.6 | 317.6 | -167.1 | 263.7 | 3.4 |
| Manipur | 15.4 | 84.2 | 0.4 | -708.0 | 706.7 | 101.3 |
| Meghalaya | -42.1 | 116.3 | 25.7 | -39.9 | 127.4 | 12.5 |
| Mizoram | -27.1 | 121.6 | 5.6 | -58.1 | 146.9 | 11.3 |
| Nagaland | -346.2 | 247.5 | -1.3 | -84.4 | 185.8 | -1.4 |
| Sikkim | -320.0 | 422.0 | -2.0 | -232.0 | 332.8 | -0.8 |
| Tripura | -31.1 | 130.5 | 0.6 | -50.9 | 150.7 | 0.2 |
| Uttar Pradesh | 111.6 | 56.0 | -67.6 | 39.9 | 58.4 | 1.7 |
| All states | 49.7 | 42.6 | 7.7 | 22.5 | 69.7 | 7.8 |
| SCS states | 0.34 | 94.75 | 4.90 | -28.80 | 124.08 | 4.72 |

Source: RBI (2006).

TABLE 3.6

Indicator of Cost Recovery in Uttarakhand: Percentage Share of Non-tax Revenue Receipt to Revenue Expenditure

| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) | Average 2001-05 |
|--------------------------------------|---------|---------|---------|---------|--------------|--------------|-----------------|
| Social services | 2.15 | 2.29 | 2.04 | 1.65 | 1.56 | 1.46 | 2.03 |
| Economic services | 16.78 | 32.95 | 26.74 | 38.96 | 28.98 | 32.21 | 28.85 |
| Non-developmental (general services) | 1.91 | 2.04 | 2.54 | 3.67 | 3.45 | 7.11 | 2.54 |

Source: (basic data) Budget documents (various years).

Finally, the health of financial management of government can also be to some extent assessed by

looking at its financial assets to liability ratio. There is some improvement as this ratio increased from 0.23 in 2001-02 to 0.44 in 2004-05 but it remained much below unity (Table 3.2). However, in view of the fact that the Central as well as the state governments follow cash accounting system, several kinds of liabilities such as dues on pension payments, subsidies, expenditure on salaries, committed liabilities, repayment schedules of debt, maintenance expenditure are not transparent. Similarly, there is no system for accounting fixed assets like land and building and consumption of capital. The FC12 has recommended moving towards the accrual basis of accounting gradually but in the mean time, the state should make efforts to append information on the above items in budget documents as initial steps towards reform in accounting system.

2.2 Key Trends of State Finance Aggregates Leading to Recent Situation

Since fiscal imbalances are the outcome of changes in revenue and expenditure profiles, it is important to look at the relevant aggregates. From 2001-02 to 2004-05, for which audited account is available, the revenues of the state relative to GSDP improved marginally by about 0.43 percentage points from 19.79 to 20.22 per cent (Table 3.7). The revenue receipts in 2005-06 RE and 2006-07 BE is estimated at 27.44 and 27.67 per cent of GSDP, which appear mainly based on the huge increase in grants-in-aid from the Central government in pursuit of the recommendations of the FC12. Improvements are also expected on account of higher growth in central tax collection and own non-tax revenue collection.

The marginal improvement in the revenue collection during 2001-02 to 2004-05 was accompanied by a rise in expenditure from 22.29 per cent of GSDP in 2001-02 to 24.92 per cent in 2004-05. Thus, while revenue receipt had 16.25 per cent average rate of annual growth, the revenue expenditure grew by 19.74 per cent, much above the average rate of growth of nominal GSDP. The result of the above imbalance in revenue collection and revenue expenditure is deteriorating self-reliance of the state. Self-reliance, measured as the ratio of own revenue to revenue expenditure, fell from 31.6 per cent in 2001-02 to 28.1 per cent in 2003-04, while all other states jointly improved their self reliance from 40.7 per cent to 42.3 per cent during the same period and the SCS states improved from 16.2 per cent to 17.3 per cent (Table 3.8). However, it may be noted that Uttarakhand has much better self-reliance in comparison to all other SCS states including Himachal Pradesh.

TABLE 3.7
Key Trends in Uttarakhand State Finances (Percentage of GSDP)

| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) | Average Growth (2002-05) |
|--------------------------------------------------|---------|---------|---------|---------|-----------------|-----------------|-----------------------------|
| Revenue receipts | 19.79 | 21.35 | 20.73 | 20.22 | 27.44 | 27.67 | 16.25 |
| Tax revenue | 7.37 | 6.75 | 7.06 | 7.15 | 7.90 | 7.70 | 14.36 |
| Non-tax revenues | 1.23 | 2.49 | 2.13 | 2.71 | 2.56 | 2.92 | 59.42 |
| State's share in union taxes | 1.15 | 2.48 | 2.50 | 2.57 | 3.68 | 3.96 | 61.18 |
| Grants-in-Aid from Gol | 10.04 | 9.63 | 9.03 | 7.79 | 13.30 | 13.09 | 6.01 |
| Expenditure | | | | | | | |
| Revenue expenditure | 22.29 | 24.40 | 25.10 | 24.92 | 29.25 | 28.25 | 19.74 |
| Plan | 3.68 | 6.42 | 6.05 | 5.63 | 8.56 | 8.61 | 38.78 |
| Non-plan | 18.61 | 17.98 | 19.06 | 19.29 | 20.70 | 19.64 | 16.80 |
| General services (including interest payments) | 8.06 | 7.88 | 8.41 | 9.41 | 9.94 | 9.54 | 21.66 |
| Interest payments | 3.85 | 3.67 | 3.44 | 4.04 | 3.80 | 3.74 | 17.90 |
| Economic services | 5.25 | 6.31 | 5.77 | 5.39 | 6.64 | 6.09 | 17.19 |
| Social services | 8.50 | 9.75 | 9.75 | 9.42 | 11.94 | 11.83 | 19.62 |
| Grants-in-aid and contributions | 0.49 | 0.46 | 1.17 | 0.70 | 0.74 | 0.79 | 57.16 |
| Capital expenditure (capital outlay) | 1.58 | 2.25 | 3.07 | 5.62 | 8.14 | 9.43 | 77.78 |
| Plan | 0.77 | 0.86 | 2.98 | 5.32 | 7.75 | 8.92 | 145.60 |
| Non-plan | 0.81 | 1.39 | 0.09 | 0.30 | 0.38 | 0.51 | 103.36 |
| General services | 0.23 | 0.34 | 0.33 | 0.73 | 0.71 | 1.08 | 79.06 |
| Economic services | 1.15 | 1.48 | 2.03 | 4.09 | 6.32 | 6.60 | 80.06 |
| Social services | 0.20 | 0.43 | 0.71 | 0.81 | 1.11 | 1.75 | 87.50 |
| Net lending | 0.07 | 0.56 | 0.62 | 0.64 | 0.47 | 0.49 | 256.11 |
| Financial assistance to local bodies etc. | 0.49 | 0.46 | 1.17 | 0.70 | | | 57.16 |
| Total expenditure (revenue + capital) | | | | | | | |
| Plan | 4.45 | 7.28 | 9.03 | 10.95 | 16.31 | 17.53 | 57.08 |
| Non-plan | 19.42 | 19.37 | 19.14 | 19.59 | 21.08 | 20.15 | 15.67 |
| Developmental# | 15.10 | 17.97 | 18.26 | 19.71 | 26.01 | 26.27 | 26.26 |
| Non-developmental# | 8.28 | 8.22 | 8.75 | 10.14 | 10.65 | 10.62 | 23.63 |

Note: # Does not include loans and advances.

Source: (basic data) Report of CAG of India for Uttarakhand Financial Accounts (various years) and Budget Accounts of Uttarakhand.

TABLE 3.8
Self-reliance of Selected States (Own Rev/Revenue Exp.)

| | Own Rev/Revenue Exp. | | | | | Relative to All States | | | | |
|-------------------|----------------------|---------|---------|-----------------|-----------------|------------------------|---------|---------|-----------------|-----------------|
| | 2001-02 | 2002-03 | 2003-04 | 2004-05 (RE) | 2005-06 (BE) | 2001-02 | 2002-03 | 2003-04 | 2004-05 (RE) | 2005-06 (BE) |
| Uttarakhand | 31.6 | 27.8 | 28.1 | 21.5 | 25.7 | 0.8 | 0.7 | 0.7 | 0.5 | 0.5 |
| Assam | 22.9 | 27.2 | 24.5 | 17.6 | 23.3 | 0.6 | 0.6 | 0.6 | 0.4 | 0.5 |
| Himachal Pradesh | 20.0 | 17.3 | 17.6 | 20.7 | 21.5 | 0.5 | 0.4 | 0.4 | 0.5 | 0.5 |
| Jammu & Kashmir | 14.0 | 15.2 | 17.5 | 17.1 | 17.9 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 |
| Meghalaya | 11.8 | 12.0 | 13.5 | 12.7 | 12.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Tripura | 8.7 | 9.3 | 10.7 | 11.5 | 11.5 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 |
| Sikkim | 4.6 | 5.6 | 9.1 | 5.5 | 5.8 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 |
| Manipur | 3.9 | 4.6 | 4.7 | 5.0 | 5.4 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Nagaland | 3.6 | 4.1 | 3.8 | 4.6 | 5.8 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Arunachal Pradesh | 2.8 | 3.0 | 3.1 | 2.9 | 7.9 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 |
| Mizoram | 1.7 | 2.5 | 2.6 | 2.3 | 2.5 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 |
| Uttar Pradesh | 32.5 | 38.8 | 27.1 | 34.4 | 38.0 | 0.8 | 0.9 | 0.6 | 0.8 | 0.8 |
| Chhattisgarh | 40.6 | 42.1 | 39.2 | 38.7 | 42.0 | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 |
| Jharkhand | 34.6 | 29.4 | 31.2 | 28.5 | 31.0 | 0.9 | 0.7 | 0.7 | 0.6 | 0.7 |
| All states | 40.7 | 42.4 | 42.3 | 44.8 | 47.2 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| SCS | 16.2 | 16.7 | 17.3 | 15.6 | 18.2 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 |

Source: (basic data) RBI (2006).

The revenue expenditure is dominated by the non-plan component but the growth in plan expenditure is much higher than the growth in non-plan revenue expenditure. In terms of developmental and non-developmental components, the non-developmental component (general services including interest payment) has recorded relatively higher average annual growth rate of 21.66 per cent as compared to 17.19 per cent and 19.62 per cent growth in economic and social services.

The imbalance in the revenue accounts is not the only reason of the deterioration of fiscal condition. Much of it comes from the capital expenditure as noted earlier. Both non-plan and plan capital expenditure have recorded average annual growth rate of more than 100 per cent between 2001-02 and 2004-05. The capital outlay to GSDP ratio sought up from 1.58 per cent to 5.62 per cent during this period, while 2006-07 budget proposed to take it further to 9.43 per cent. The high growths in capital expenditure during initial periods are mostly on account of the establishment of state capital, government offices along with infrastructure development in irrigation, transport and energy (see following sections for more details).

2.3 Debt and Contingent Liabilities: Alarming Rate of Increase

The approximately estimated liability of Uttarakhand as of 31 March 2006 was INR 12,805 crore (RBI 2006: Statement 26). Within a short period of four years between 31 March 2002 and 31 March 2006, Uttarakhand has increased its liability by about INR 7880 crore, which is equivalent to 21 per cent of its estimated GSDP for 2005-06 (Table 3.9). This is one of the highest growths in liabilities among all the states including SCS states.

Liabilities of the state consist of internal debt (mainly market borrowing), loans and advances from the government of India, net accruals from the public accounts, reserve funds, deposits and advances and contingent fund. As of end March 2006 (BE), internal debt constituted almost 70 per cent of the total liability in Uttarakhand as against 52.75 per cent for all states and 48.2 per cent for the SCS states (Table 3.9). Incidentally, Uttarakhand has one of the lowest shares of loans and advances from the Central government. Considering the fact that Central government loans to the states are costlier than market loan, Uttarakhand, by changing the composition of its debts, has been able to reduce the

TABLE 3.9
Outstanding Liability of Uttarakhand and Selected States (Percentage of GSDP)

| | Total Outstanding Liabilities as Percentage of GSDP | | Composition of Liabilities | | | | | |
|-------------------|-----------------------------------------------------|-----------------------------------------------------------|----------------------------|--------------------------------|----------------|--------------|-----------------------|------------------|
| | At the End of March 2006 (BE) | Percentage Point Increase between March 2002 and March 06 | Internal Debt | Loans and Advances from Centre | Provident Fund | Reserve Fund | Deposits and Advances | Contingency Fund |
| Uttarakhand | 59.7 | 21.9 | 70.01 | 7.62 | 7.74 | 3.82 | 10.59 | 0.22 |
| Mizoram | 82.6 | 8 | 32.48 | 26.26 | 32.10 | 0.13 | 9.03 | 0.00 |
| Himachal Pradesh | 67.9 | -5.2 | 61.87 | 16.08 | 16.99 | 1.52 | 3.52 | 0.03 |
| Sikkim | 60.2 | -21.3 | 50.62 | 24.73 | 23.64 | 0.38 | 0.60 | 0.04 |
| Arunachal Pradesh | 56.7 | 18.1 | 11.77 | 51.12 | 31.86 | 5.77 | -0.52 | 0.00 |
| Manipur | 45.8 | 4.6 | 29.67 | 47.07 | 18.45 | 0.41 | 4.39 | 0.00 |
| Jammu & Kashmir | 45.1 | -15.2 | 51.77 | 34.10 | 29.36 | 7.56 | -22.79 | 0.00 |
| Nagaland | 41.4 | -5.4 | 66.96 | 18.65 | 17.49 | -0.16 | -2.94 | 0.01 |
| Meghalaya | 38.0 | 1.1 | 48.01 | 22.72 | 16.37 | 0.51 | 12.15 | 0.24 |
| Assam | 35.6 | 6.3 | 53.99 | 26.27 | 19.95 | 2.28 | -2.49 | 0.00 |
| Tripura | 32.9 | -6.7 | 38.56 | 21.10 | 37.49 | -0.29 | 2.91 | 0.23 |
| Uttar Pradesh | 54.5 | 2.3 | 41.87 | 28.56 | 11.16 | 11.62 | 7.43 | -0.64 |
| All states | 33.1 | 2.9 | 52.75 | 25.27 | 12.46 | 4.25 | 5.26 | 0.01 |
| SCS states | | | 48.42 | 29.40 | 24.62 | 3.07 | -5.54 | 0.03 |

Source: (basic data) RBI, Study of budgets (various years).

effective rate of interest on its liabilities (Table 3.10). Clearly, the state government has taken advantage of the recommendations of the FC12, which said that the grants to states should not be linked to the state borrowings from the Central government.

TABLE 3.10
Effective Interest Rate

| | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 (RE) |
|-----------------------------|---------|---------|---------|---------|-----------------|
| Uttarakhand | 12.5 | 11.2 | 9.4 | 9.3 | 8.3 |
| Arunachal Pradesh | 17.4 | 16.8 | 15.3 | 15.4 | 12.8 |
| Assam | 11.4 | 12.7 | 11.6 | 13.7 | 11.8 |
| Himachal Pradesh | 10.9 | 10.7 | 11.1 | 10.4 | 9.8 |
| Jammu and Kashmir | 11.3 | 10.6 | 8.3 | 7.7 | 7.4 |
| Meghalaya | 9.3 | 9.9 | 9.3 | 10.0 | 9.2 |
| Manipur | 13.9 | 18.5 | 9.5 | 10.2 | 9.2 |
| Mizoram | 12.4 | 9.3 | 9.3 | 9.0 | 7.9 |
| Nagaland | 13.4 | 11.1 | 8.2 | 11.5 | 11.0 |
| Tripura | 12.1 | 12.2 | 11.1 | 10.4 | 8.8 |
| Sikkim | 9.8 | 9.6 | 9.4 | 9.3 | 8.1 |
| Uttar Pradesh | 9.9 | 7.5 | 9.6 | 8.9 | 8.1 |
| All states | 10.5 | 10.2 | 10.3 | 9.9 | 9.0 |
| All special category states | 11.6 | 11.5 | 10.1 | 10.4 | 9.4 |

Note: Effective interest rate obtained by dividing interest payment by the outstanding liabilities at the end of the previous year.

Source: (basic data) RBI study of budgets (various years).

Between 31 March 2002 and 31 March 2005, for which audited data was available, the liabilities of Uttarakhand grew at an average annual rate of growth of 30.36 per cent to attain a level of INR 10272.9 crore from a level of INR 4650.1 (Table 3.11). However, the composition of the liability has also undergone significant change. Market loans bearing interest increased its share from 19.8 per cent as on end March 2002 to about 34.5 per cent as of end March 2005, while the share of special securities issued to NSS funds increased from 15.7 per cent to 29.8 per cent of the liabilities (Table 3.11 & Figure 3.3).

Loan from financial institutions, which is another major component of liabilities, grew at about 178 per cent during 2002-2005 to acquire 8.7 per cent of liabilities. Significantly, loans from the central government, which formed about 51.2 per cent of the total liabilities at the time of formation of the state fell to a level of 37.4 per cent as on end March 2002 and remained just about 4.8 per cent of total liabilities by the end March 2005. Loans from public accounts are other important components of the liability portfolio but its share has also reduced from 13.2 per cent to 9.9 per cent.

Besides, Uttarakhand government has given guarantee of INR 1345 crore to the newly formed power companies and other institutions including Uttarakhand Hydrel Power

TABLE 3.11
Debt and Liabilities of the Uttarakhand Government (Disaggregated Analysis)

| | As on 31 March 2005 | | | As on 31 March 2002 | | | Average Growth (2002-2005) |
|--------------------------------------------|---------------------|----------------------|------------------------------------|---------------------|----------------------|------------------------------------|----------------------------|
| | INR crore | As Percentage of GDP | As Percentage of Total Liabilities | INR crore | As Percentage of GDP | As Percentage of Total Liabilities | |
| Internal debt | 7561.5 | 37.4 | 73.6 | 1851.7 | 14.0 | 39.8 | 62.39 |
| Market loans bearing interest | 3544.8 | 17.5 | 34.5 | 920.3 | 7.0 | 19.8 | 61.93 |
| Market loans not bearing interest | 0.4 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.00 |
| Loans from LIC | 1.5 | 0.0 | 0.0 | 1.5 | 0.0 | 0.0 | 0.00 |
| Loans from other institutions | 891.5 | 4.4 | 8.7 | 83.0 | 0.6 | 1.8 | 176.68 |
| Special securities issued to NSS funds | 3057.9 | 15.1 | 29.8 | 730.8 | 5.5 | 15.7 | 61.68 |
| Ways and means advances from RBI | 65.5 | 0.3 | 0.6 | 115.8 | 0.9 | 2.5 | 13.27 |
| Loans and advances from central Govt. | 491.3 | 2.4 | 4.8 | 1738.5 | 13.2 | 37.4 | -21.51 |
| Pre 1984-85 loans | 27.6 | 0.1 | 0.3 | 48.9 | 0.4 | 1.1 | -17.39 |
| Non-plan loans | 60.0 | 0.3 | 0.6 | 700.3 | 5.3 | 15.1 | -34.70 |
| Loans for state plan schemes | 369.7 | 1.8 | 3.6 | 962.8 | 7.3 | 20.7 | -3.62 |
| Loans for central plan schemes | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | -7.04 |
| Loans for centrally sponsored plan schemes | 21.1 | 0.1 | 0.2 | 13.5 | 0.1 | 0.3 | 16.44 |
| Ways and means advances | 12.9 | 0.1 | 0.1 | 12.9 | 0.1 | 0.3 | 0.00 |
| Small savings, provident funds etc. | 1012.8 | 5.0 | 9.9 | 613.6 | 4.7 | 13.2 | 18.25 |
| Deposits | 771.2 | 3.8 | 7.5 | 280.6 | 2.1 | 6.0 | 40.95 |
| Reserve funds | 378.0 | 1.9 | 3.7 | 150.0 | 1.1 | 3.2 | 36.50 |
| Contingency funds | 58.2 | 0.3 | 0.6 | 15.6 | 0.1 | 0.3 | 83.19 |
| Total liabilities | 10272.9 | 50.8 | 100.0 | 4650.1 | 35.3 | 100.0 | 30.36 |

Source: Report of CAG for Uttarakhand Financial Accounts (various years).

Corporation Limited (INR 88 crore), Uttarakhand Power Transmission Corporation Limited (INR 139 crore), Uttarakhand Power Corporation Limited (273 crore), Masoori-Dehradun Development Authority (INR 78 crore), SUDA (INR 13 crore), Uttarakhand Multi-purpose Finance and Development Corporation Limited (INR 15 crore) and Uttarakhand Transport Corporation Limited (INR 17 crore).

Debt Sustainability

Sustainability of debt is one of the important issues relating to state finances, which embodies issue related to state governments to service their debt obligations. Large primary deficits have led to large fiscal deficits and spiralling debt resulting in the emergence of a vicious cycle of deficit, debt and debt service payments for most of the state governments. Uttarakhand could not escape the common trend and in fact it has gone steps ahead of several states.

A good approximation to debt sustainability can be examined from the equation (1)

$$Db = b(r-g) + z \quad (1)$$

Where b = debt to GSDP ratio, r = nominal effective interest rate on loans, z = primary deficit to GSDP ratio, g = growth in nominal GSDP and Db = change in debt to GSDP ratio. Equation (1) decomposes change in debt to GSDP ratio between current primary deficit and the capacity and the excess of interest component over

growth. Sustainability of debt in the medium to long run requires Db and $b(r-g) + z$ should converge to zero or a negative value. Figure 3.4 plots the components of equation (1). Clearly, interest rate is less than the GSDP growth rate but primary deficit is large enough to offset this advantage making debt unsustainable in the medium run. It may be noted that Db and $b(r-g) + z$ have converged to the same value after three years but the converged value is high and positive. The state has responded to this problem during recent years and the latest data indicate primary surplus for the year ending March 2007 and 2008, which is likely to improve the debt sustainability.

The debt to GSDP ratio had been consistently rising since the formation of the state in November 2000. The average ratio of debt-GSDP during 2001-02 to 2003-04 was 41.42 per cent, increased to 50.84 per cent in 2004-2005, and it is projected to increase to 54.92 per cent in the revised budget estimates of 2005-06. The interest payment to GSDP ratio experiencing the downward trend during 2001-02 to 2003-04 has increased to 4.04 per cent in 2004-05. In the revised budget estimates, the ratio of interest payments to GSDP is expected to fall to 3.80 per cent.

Given the extraordinary growth in the revenue and the capital expenditure, there are a few reasons to be optimistic about debt not heading towards unsustainable heights. Yet some indications of improvements are there in the revised budget of 2005-06 and the budget estimate

FIGURE 3.3
Structure of Outstanding Liabilities of the UA Government (Per cent)

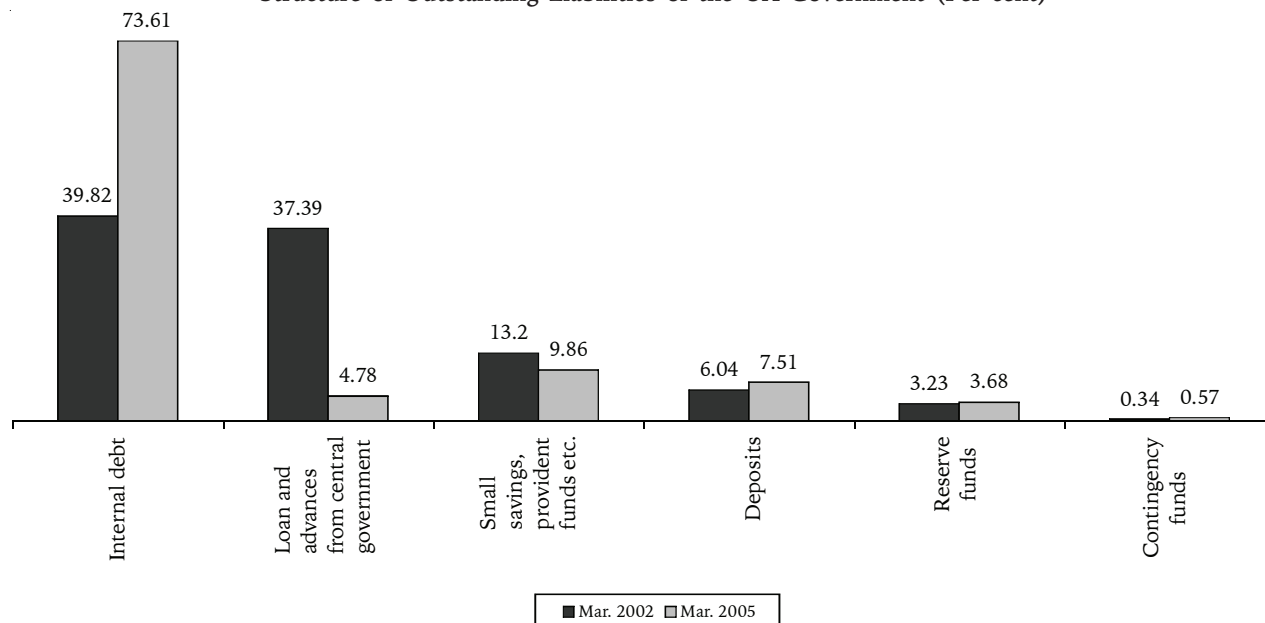
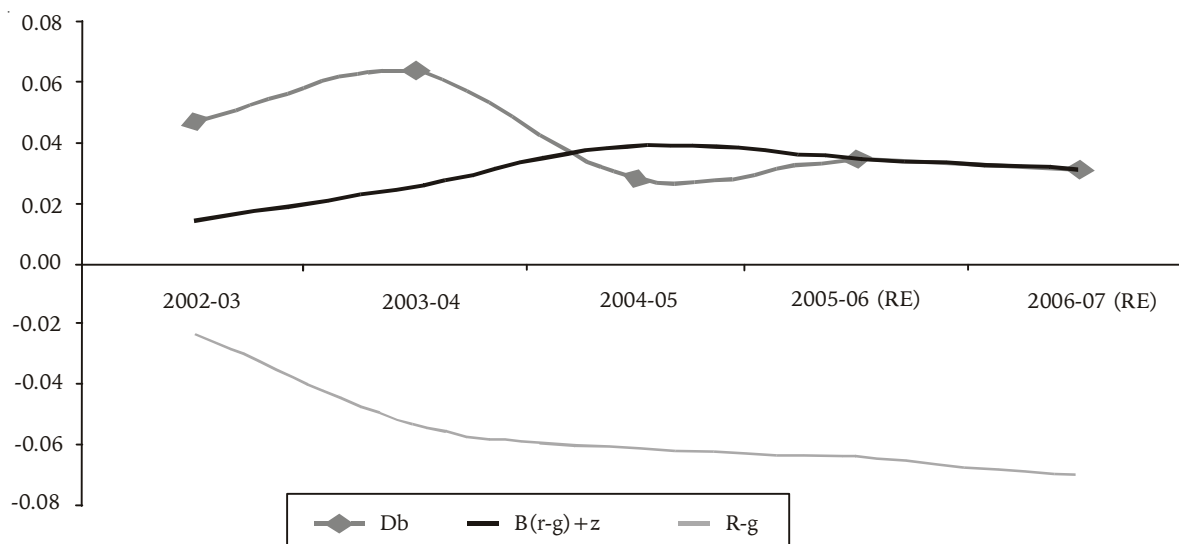


FIGURE 3.4
Sustainability of State Government Debt



Source: (basic data) Report of CAG for Uttarakhand Financial Accounts (various years).

of 2006-07. These improvements are however, linked to the recent increase in the allocations of the Central grants on account of FC12 recommendations. But, unfortunately these allocations are not dynamic. The year-to-year transfers are fixed in amount (Table 3.12). Therefore, only a one-time improvement is expected if all other resources and the expenditures keep following historical trends.

Emerging Scenario of Fiscal Imbalances and Debt Accumulation

In light of the foregoing discussion, a business as usual (BAU) fiscal condition of the state is estimated using plausible assumption about nominal GSDP growth, capital outlays and interest rates, and the underlying trend in non-tax revenue expenditure (see Box 3.1 for details). Specifically, the non-interest revenue expenditure is assumed to grow at three-year moving average growth rate starting with 22 per cent growth actually obtained during 2002-2005. The results are plotted in Figure 3.5. Clearly, in the absence of expenditure reforms, sustainable improvements are not possible even with the FC12 transfers. The borrowing capacity of the state is likely to be compromised with increasing debt condition. The BAU scenario indicates that by the end of Eleventh Five-Year Plan (EFYP), the debt will rise to the level of 68 per cent and the fiscal deficit will grow to the level of about 14 per cent. This situation cannot be allowed and the state will be forced to take hard options.

Among the hard options one is to reduce the growth of non-interest revenue expenditure, and to increase the revenue base while keeping the capital expenditure at the same percentage of GSDP. Substantial improvements are feasible in the own tax revenue collection due to implementation of VAT and other measures. More specifically, an alternative scenario is created taking a 12 per cent growth rate of non-interest revenue expenditure

TABLE 3.12

Grants for Uttarakhand Recommended by the Twelfth Finance Commission (INR Crore)

| Uttarakhand | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2005-2010 |
|-----------------------------|---------|---------|---------|---------|---------|-----------|
| Non-plan revenue deficit | 1112.91 | 1064 | 1115 | 992 | 830.4 | 5115 |
| Health | | | | | | |
| Education | 10 | 10 | 10 | 10 | 10 | 50 |
| Roads and bridges | 0 | 81.14 | 81.14 | 81.14 | 81.14 | 325 |
| Buildings | 0 | 24.4 | 24.4 | 24.4 | 24.4 | 97.6 |
| Forests | 7 | 7 | 7 | 7 | 7 | 35 |
| Heritage conservation | 0 | 1.25 | 1.25 | 1.25 | 1.25 | 5 |
| State specific needs | 0 | 60 | 60 | 60 | 60 | 240 |
| Local bodies rural | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 161 |
| Local bodies urban | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 34 |
| Calamity relief | 71.02 | 72.44 | 73.93 | 75.5 | 76.39 | 369 |
| Total grants in (2005-2010) | 1240 | 1360 | 1412 | 1291 | 1130 | 6431 |

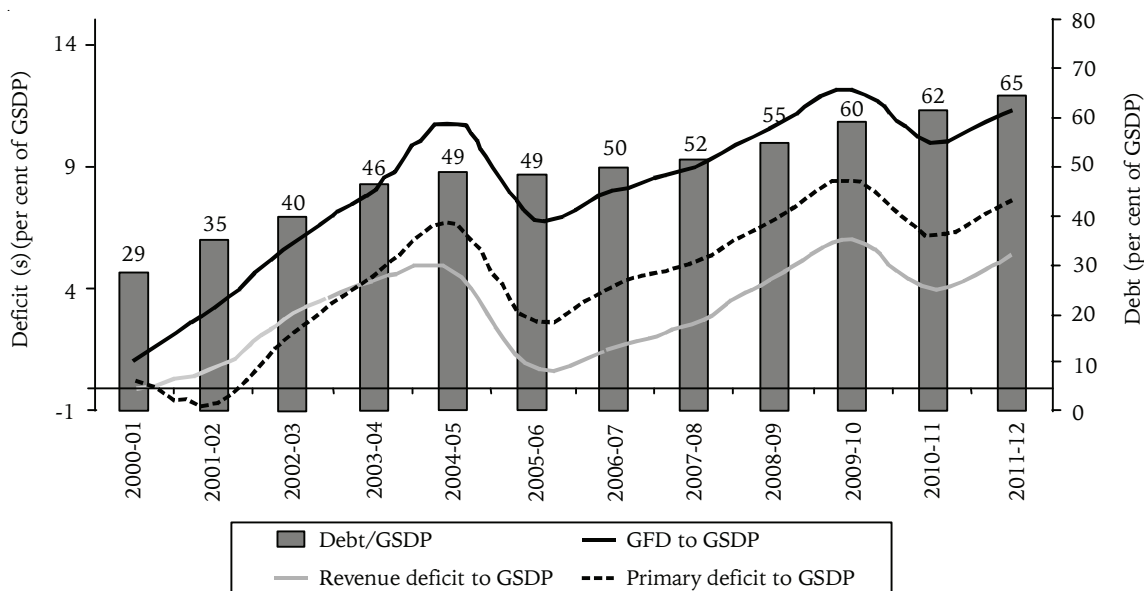
Source: Report of the Twelfth Finance Commission, 2005.

and a nominal 10 per cent annual incremental improvement in the GSDP share of own tax revenue but no improvement in non-tax revenue. The results are plotted in Figure 3.6. With this change in the expenditure pattern, the debt starts falling from 2007-08 and the

revenue deficit is completely eliminated by 2009-10. The gross fiscal deficit can thus be brought down to about 4.8 per cent of GSDP by the end of EFYP. A more aggressive strategy could be to increase the tax base substantially, while decreasing the expenditure growth slowly.

FIGURE 3.5

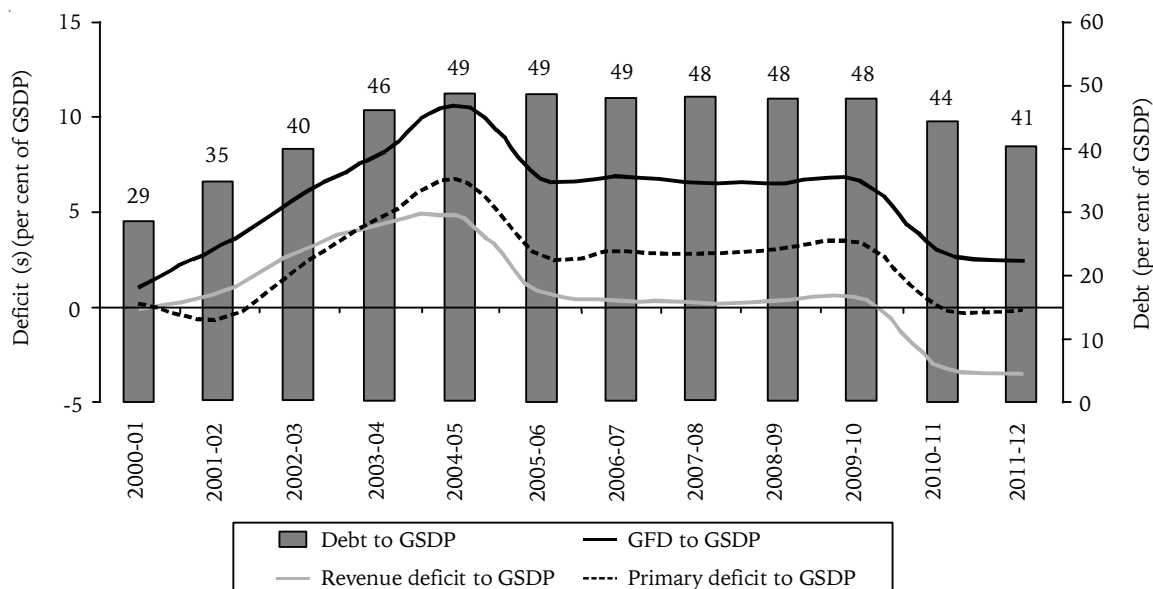
Fiscal Condition under Business as Usual Condition: Three-year Moving Average Growth Rate in Revenue Expenditure Starting with 22 Per cent Actually Obtained during 2002-2005



Source: Author's estimation.

FIGURE 3.6

Fiscal Condition under Reform Conditions: 12 Per cent Growth in Revenue Expenditure with Incremental 10 Per cent Improvement in Tax Collection



Source: Author's estimation.

Similar gains are also possible by controlling both the revenue expenditure and the capital expenditure from accelerating but this may result in loss of growth in the GSDP. Therefore, for sustaining the potential gains of 2006-07 in terms of revenue deficit, primary deficit and fiscal deficit, it is important to implement expenditure reforms along with adequate measures for increasing revenue collection. The special category states have high incidence of per capita revenue expenditure (Table 3.13). But, in its budget proposals Uttarakhand has increased the

per capita revenue expenditure very quickly to attain the level of SCS states. Other new states, Chhattisgarh and Jharkhand and even Uttar Pradesh have relatively very low incidence of revenue expenditure per capita. While some difference in the revenue expenditure per capita between SCS states and NSCS states could be explained, difference of the order of more than 50 per cent is hard to justify. Therefore, there is need for Uttarakhand to target its expenditure growth.

BOX 3.1

Assumptions for Figures 3.5 and 3.6

A. Common Assumptions

The share in Central taxes is calculated based on FC12 recommendations while year-to-year Central tax collection is assumed to grow at 20 per cent annually. The own tax revenue is estimated using its elasticity with respect to registered manufacturing and components of services sector GSDP obtained from cross-sectional analysis of 25 states. The own non-tax revenue is estimated assuming it to be 2.5 per cent of GSDP based on historical trend. Grants and aid are calculated in two parts *viz.*, constitutional part and non-constitutional part. The constitutional part is the year-to-year transfers based on FC12 recommendations with 100 per cent increase in the amount for FC13 period. The non-constitutional component is estimated using a growth rate of 5 per cent as per the average growth in the previous years. Interest burden is calculated using plausible interest rate and the debt liability of the previous year. The capital outlay is calculated as 5.5 per cent of GSDP, which is achievable but slightly lower than that obtained from TFYP assumption about ICOR and states share in required investment for 10 per cent real growth rate. Nominal GSDP is assumed to grow at 14.3 per cent.

B. Assumptions Specific to Business as Usual (BAU) Case

The non-interest revenue expenditure is assumed to grow at three-year moving average growth rate starting with 22 per cent growth actually obtained during 2002-2005.

C. Assumptions Specific to Reform Case

A 12 per cent growth rate of non-interest revenue expenditure and a nominal 10 per cent annual incremental improvement in the GSDP share of own tax revenue but no improvement in non-tax revenue.

TABLE 3.13
Revenue Expenditure Per Capita and as Percentage of GSDP:
Selected States

| | Revenue Exp./Pop (INR '000) | | | | | Revenue Exp./GSDP (per cent) | | | | |
|-----------------------------|-----------------------------|---------|---------|-----------------|-----------------|------------------------------|---------|---------|-----------------|-----------------|
| | 2001-02 | 2002-03 | 2003-04 | 2004-05 (RE) | 2005-06 (BE) | 2001-02 | 2002-03 | 2003-04 | 2004-05 (RE) | 2005-06 (BE) |
| Uttarakhand | 3306 | 4219 | 4921 | 6682 | 7023 | 21 | 24 | 26 | 31 | 30 |
| Uttar Pradesh | 1888 | 1918 | 2865 | 2546 | 2625 | 18 | 17 | 23 | 20 | 19 |
| Chhattisgarh | 2351 | 2584 | 3028 | 3532 | 3576 | 17 | 18 | 17 | 18 | 16 |
| Himachal Pradesh | 7401 | 8172 | 8734 | 8643 | 8899 | 31 | 32 | 31 | 28 | 27 |
| Jharkhand | 2229 | 2797 | 2597 | 2930 | 3173 | 18 | 21 | 18 | 18 | 18 |
| All states | 3036 | 3180 | 3520 | 3829 | 4095 | 15 | 15 | 15 | 15 | 15 |
| All special category states | 4535 | 5005 | 5350 | 7043 | 6995 | 29 | 30 | 29 | 35 | 31 |

Source: (basic data) RBI study of budgets (various years).

However, the state must be cautioned not to throttle the expenditure valve too hard. It is true that the fiscal adjustments are often predominantly based on expenditure reduction, but this may involve welfare losses and risk of downward trigger to overall economic activity. Therefore, it is argued that expansion of the scope and size of revenue flows into the budget is better form of prudent fiscal management and more likely to lead the state to sustainable fiscal consolidation. A fiscal strategy based on revenue maximisation would also provide the necessary flexibility in resource deployment. Therefore, Uttarakhand must be fast on progress in reforming the tax system and reduce leakages, which are mostly on account of tax exemptions and slackness in collection. Resource mobilisation from non-tax revenues sources by imposing appropriate user charges, and cost recovery from social and economic services and restructuring of state PSUs have to be given due importance.

2.4 Decentralisation: Finances of Local Bodies

With the 73rd and 74th Amendments to the Constitution, the local body finances have become an integral component of state finances. The 73rd amendment to the Constitution ensures decentralisation of governance by giving a constitutional status to the *Panchayats* as third tier in India's federal structure in rural areas, self-governance at the micro level. The three-tier structure includes *gram panchayat* (GP) at village level, *panchayat samiti* (PS) at intermediate level and the *zila panchayat* (ZP) at the district level. The PSs are called by different names across Indian states. The 74th Amendment calls for similar three-tier structure for the urban local bodies. A district-planning agency mandated under the 74th Amendment co-ordinates urban and rural development at the district level. All the states are required to enact laws to govern rural and urban local bodies. Uttarakhand has adopted relevant acts of Uttar Pradesh with necessary amendments vide Act No. 8 of 2002 called Uttarakhand Tristariya Panchayat Raj Amendment Act, 2002 to amend the Uttar Pradesh Panchayat Raj Act, 1947 and Uttar Pradesh Kshetra Panchayat and Zila Panchayat Adhiniyam, 1961 (Uttarakhand Adoption and Modification Order), 2001. Other relevant Acts include U.P. Panchayat Raj Act 1947, Uttar Pradesh Municipal Corporation Act 1959 (for cities), Municipality or Notified Area under the provisions of the U.P. Municipalities Act, 1924 (for Municipality or Notified Area) and U.P. Town Area Act 1914 (for *Nagar Panchayat*) and U.P. Cantonment Act 1924 (for Cantonments).

However, there has been a widespread belief that Uttarakhand, given its specific character and composition

should have its own local bodies Act. In Uttarakhand, the rural *panchayat* consist of *zila panchayats* (ZPs), *kshetra panchayats* (KPs) and *gram panchayats* (GPs) and the urban *panchayat* consists of *nagar nigam* (NN), *nagarpalika parishads* (NPPs) and *nagar panchayat* (NPs). The Panchayat Raj Act provides for *nyay panchayat* (NYP) with judicial responsibilities. In Uttarakhand, there are 13 ZPs (one per district), 95 KPs, 7227 GPs, 670 NYPs, one NN, 31 NPPs and 31 NPs.

Article 243(I) and 243(Y) inserted in the Constitution through the 73rd and 74th Amendment in 1992 enjoin on the Governor to set up a Finance Commission within two years and at every five-year interval. The first State Finance Commission (SFC-1), which was constituted in 2001 and submitted its report in 2002, reviewed the issues relating to functioning of local bodies in Uttarakhand and devolution of finances. In view of the fact that Uttarakhand was a new state needing maximum resources for meeting initial costs, the SFC-1 retained the status prevalent in Uttar Pradesh with some amendments. The SFC-1 recommended that the share of the *Panchayat* and Municipalities to remain within 11 per cent of the state's net tax revenue. In order to distribute these resources between *panchayat* and municipalities, the SFC-1 recommended 42.23 per cent to the *panchayats* and 57.77 per cent to the municipalities. Out of the share of *panchayats*, the respective percentage for GP, KP and ZP worked out to be 75.18 per cent, 9.35 per cent and 15.47 per cent, respectively. Out of the share of municipalities, the percentage for NP, NPP and NN worked out to be 9.41 per cent, 68.94 per cent, and 21.65 per cent respectively. After taking in to account the various complexities, the Commission decided to classify GP in to five categories depending upon their remoteness from the railhead and fixed the annual devolution on per capita basis. The total annual devolution came to be INR 41.17 crore for rural local bodies and INR 56.32 crore to municipalities. In addition the SFC-1 had also recommended INR 167.97 crore to municipalities to cover their deficits. Thus, at an aggregate level, the annual financial assistance to local bodies should have been INR 97.41 crore plus an amount of INR 167.97 crore. However, the accounts data for the four year period of 2001-2005 indicates that the total assistance during this period has been INR 477 crore, amounting to INR 119 crore per annum on an average, which is much less than that desired by the SFC-1. In 2005-06 budget, a provision of INR 25 lakh per *panchayat* was made to set up 'Area Fund' to execute developmental work at the *panchayat* level but it is not clear whether the expenditure would be made through local bodies.

The SFC-1 had also recommended substantial measures to increase the own revenue of the local bodies. However, the actual performance cannot be fully assessed in absence of transparency in the budgetary process. For the period of SFC-1, the SFC-2 found the actual devolution to be only 6.06 per cent of the state's own revenue as against the projection of 7.05 per cent (equivalent). In fact, the second finance commission is not in consensus with the first on share of revenues for the local bodies (SFC-1 had recommended devolution on per capita basis). SFC-2 recommended increasing the devolution percentage to at least 10 per cent of the state's own revenues. Further, SFC-2 recommended that 40 per cent of the amount that is to be devolved to local bodies, as share of state's own revenues should go to ULBs and remaining 60 per cent to PRIs. SFC-2 has also suggested allocating share to KPs out of allocation to PRIs. In terms of assigning revenue resources to local bodies, SFC-2 suggested that ULBs should continue to get the full net proceeds of the additional stamp duty and PRIs share should be fixed at 15 per cent of the stamp duty collections from transfer deeds of rural areas (present rate of additional duty is one-fifth of the total collection of 8 per cent of stamp duty, and 2 per cent of additional stamp

duty). To increase additional revenue generation for local bodies, SFC-2 recommended introduction of a pilgrim-cum-tourist tax by state government at a flat rate of INR 10 per head per night to be collected by the ULB/KP concerned.

Nevertheless, the FC12 has reported aggregate status of devolution through local bodies for various states during 2002-03 and the same can be a good indicator to compare the performance of Uttarakhand (UA) with respect to other states. The estimated per capita expenditure of the urban local bodies in Uttarakhand is INR 398, which is just about the all India average whereas Himachal Pradesh another SCS state tops the list with INR 854 per capita. The per capita expenditure through the rural local bodies is much smaller in the case of Uttarakhand as compared to most of the states.

However, in terms of self-reliance of the local bodies, Uttarakhand is evenly placed with other states in the case of rural local bodies but it needs to improve in the case of urban local bodies where it is stagnating at a very low level of 28.4 per cent.

Table 3.15 presents the distribution of revenue and expenditure by broader sources and destinations over the

FIGURE 3.7

Per Capita Expenditure through Urban Local Bodies and Panchayati Raj Institutions (2002-03)

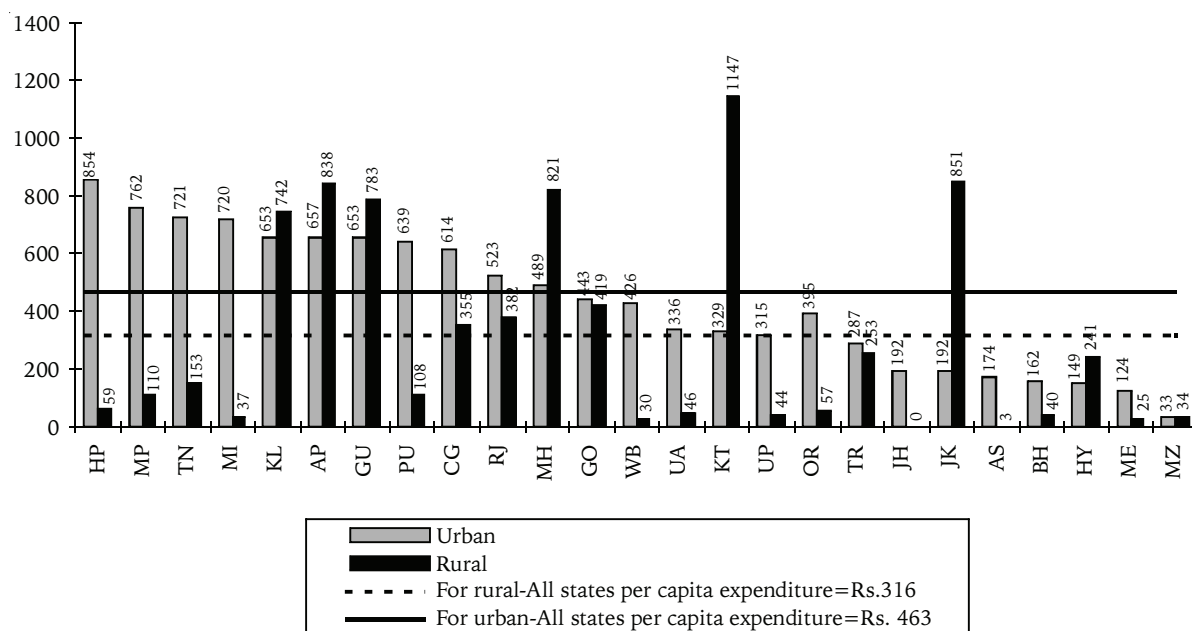


TABLE 3.14
Self-reliance of Local Bodies in Selected States

| States Sorted by 2002-03 Total | Urban Local Body | | | Rural Local Body | | | Total Local Bodies | | |
|--------------------------------------|------------------|-------------|-------------|------------------|------------|------------|--------------------|-------------|-------------|
| | 1998-99 | 2000-01 | 2002-03 | 1998-99 | 2000-01 | 2002-03 | 1998-99 | 2000-01 | 2002-03 |
| West Bengal | 39.5 | 36.8 | 60.2 | 16.9 | 5.3 | 17.6 | 35.3 | 24.5 | 53.7 |
| Madhya Pradesh | 39.5 | 39.0 | 49.5 | 26.5 | 28.1 | 36.7 | 35.8 | 36.3 | 45.9 |
| Himachal Pradesh | 36.2 | 39.9 | 47.4 | 8.9 | 14.8 | 16.1 | 27.0 | 32.1 | 35.4 |
| Gujarat | 72.6 | 66.9 | 74.6 | 2.6 | 1.8 | 2.7 | 27.8 | 23.9 | 27.0 |
| Uttarakhand | 28.4 | 28.4 | 28.4 | 8.7 | 15.6 | 20.5 | 18.0 | 24.7 | 26.4 |
| Uttar Pradesh | 25.1 | 24.6 | 29.0 | 11.6 | 9.5 | 10.6 | 20.3 | 18.6 | 22.7 |
| Maharashtra | 73.0 | 60.2 | 49.7 | 7.9 | 8.6 | 10.0 | 37.8 | 34.0 | 22.4 |
| Kerala | 31.5 | 45.5 | 50.9 | 9.4 | 14.4 | 12.7 | 14.1 | 21.7 | 22.1 |
| Andhra Pradesh | 64.1 | 64.4 | 60.8 | 3.9 | 3.5 | 3.3 | 15.2 | 14.5 | 15.8 |
| Karnataka | 70.0 | 44.1 | 56.5 | 1.7 | 1.5 | 1.5 | 15.1 | 9.1 | 8.7 |
| India | 57.1 | 53.4 | 52.6 | 6.3 | 5.9 | 6.0 | 26.5 | 24.5 | 23.0 |

Note: Self-reliance measured as $(100 \times \text{own revenue} / \text{revenue expenditure})$.

Source: (basic data) Report of Twelfth Finance Commission of India.

period of 1988-99 to 2002-03. It is encouraging to note that the share of own revenue in the urban areas has increased from 24.8 per cent to 31.1 per cent reducing its dependency on assignments and devolution. In the rural areas, revenue coming from other sources contribute about 90 per cent of the total revenue but the same is not spent fully. Under-utilisation of fund miscalculates high self-reliance. During 2002-03, INR 61 crore was received as against expenditure of just about INR 29.8 crore by the rural local bodies. It is possible that parts of such funds are either being diverted to other programmes, not

covered by the local body. A transparent system is therefore, essential to monitor the actual outcome.

The successful operation of municipal bodies and *panchayats* are now mandatory and financial system of these institutions should be improved as early as possible. The CAG of India has already formulated a programme in accordance with the recommendations of the Eleventh Finance Commission (FC11). The FC12 has clearly indicated the priority area where *panchayats* and the urban local bodies must concentrate at least in respect to the expenditures from the FC12 grants, which recommended

TABLE 3.15
Distribution of Revenue and Expenditure in Uttarakhand Local Bodies

| | Urban Local Body | | | Rural Local Body | | |
|-------------------------------|------------------|---------|---------|------------------|---------|---------|
| | 1998-99 | 2000-01 | 2002-03 | 1998-99 | 2000-01 | 2002-03 |
| A.1 Own tax | 12.6 | 13.9 | 14.8 | 1.1 | 2.6 | 1.5 |
| A.2 Own non-tax | 12.2 | 15.2 | 16.2 | 5.9 | 12.5 | 8.4 |
| A.3 Own revenue (A.1+A.2) | 24.8 | 29.1 | 31.1 | 7.0 | 15.2 | 9.9 |
| A.4 Assignment + devaluation | 72.7 | 62.7 | 59.3 | 23.4 | 49.2 | 10.4 |
| A.5 Grants-in-aids | 0.0 | 0.0 | 0.0 | 4.4 | 3.9 | 5.3 |
| A.6 Others | 13.2 | 9.9 | 0.0 | 65.2 | 31.8 | 74.4 |
| A.7 Total others revenue | 75.2 | 70.9 | 68.9 | 93.0 | 84.8 | 90.1 |
| Total revenue (INR crore) | 55 | 73 | 82 | 67 | 32 | 61 |
| Expenditure | | | | | | |
| B.1 Revenue | 73.5 | 72.4 | 72.4 | 61.7 | 59.2 | 32.5 |
| B.2 Capital | 26.5 | 27.6 | 27.6 | 38.3 | 40.8 | 67.5 |
| Total expenditure (INR crore) | 48.2 | 74.2 | 89.8 | 54.0 | 31.1 | 29.8 |

Source: Report of the Twelfth Finance Commission.

that priority should be given to expenditure on the O&M costs of water supply and sanitation in spending the grants allocated for *panchayats*. This will facilitate *panchayats* to take over the schemes and operate them. Similarly, at least 50 per cent of the grants in-aid provided to each state for the urban local bodies should be earmarked for the scheme of solid waste management through public private partnership. The municipalities should concentrate on collection, segregation and transportation of solid waste. The cost of these activities whether carried out in-house or outsourced could be met from the grants.

3. Revenue Receipts

The current transfers, which are a sum of shares in Central tax revenues and grants, are the dominant source of revenue for all special category states. In the case of Uttarakhand, current transfers as percentage of GSDP fell from 11.2 per cent during 2001-02 to 10.4 per cent during 2004-05. However, with the implementation of FC12 current transfers are expected to rise to the level of 17 per cent during 2006-07 (BE) (Table 3.7). The fastest growing components of the revenue receipts are the non-tax revenue and the share in Central taxes (Table 3.16). However, these resources constitute only a small component of revenue at present, more than 40 per cent is still contributed from grants-in-aid (Figure 3.8). Uttarakhand, with 35 per cent of its total revenue receipt coming from state taxes reveals a relatively stronger tax base compared to all other special category states.

3.1 Tax Revenues

The tax revenue of Uttarakhand is primarily driven by the sales tax/trade tax, which constitutes more than 50 per cent of the tax revenue and growing at an average annual rate of 15.9 per cent (Table 3.17 and Figure 3.8). Clearly, with increasing income of the state, consumption is increasing and the state is benefiting from higher tax collection. The buoyancy of sales tax/trade tax has improved from 0.91 during 2003-04 to 1.33 during 2004-2005 and it is likely to remain above one during 2006-2007(BE) (Table 3.17). Another important item with high buoyancy as well as high contribution is stamp and registration fee, which is again an important function of income. Because of the above two items, the overall buoyancy of tax revenues has improved from 0.33 to 1.34 during 2004-05. Sales tax, stamp duty and registration fee and state excise duties have buoyancy above unity.

The structure of tax revenues is shifting towards sales tax and stamp and registration fee due to the fractional (less than one) buoyancy of other taxes. The stamp duty and registration fee has been traditionally important source of revenue for states. Experience in several states has shown that lowering of stamp duty rates and increasing the credibility in valuation process leads to increase in total volume of collection from this source. Uttarakhand can benefit from the findings of the report of the Uttar Pradesh Resource Mobilisation and Taxation Reforms Committee (1996), which observed that high rates of stamp duty, complicated and non transparent system of registration, paucity of stamps, lack of rational

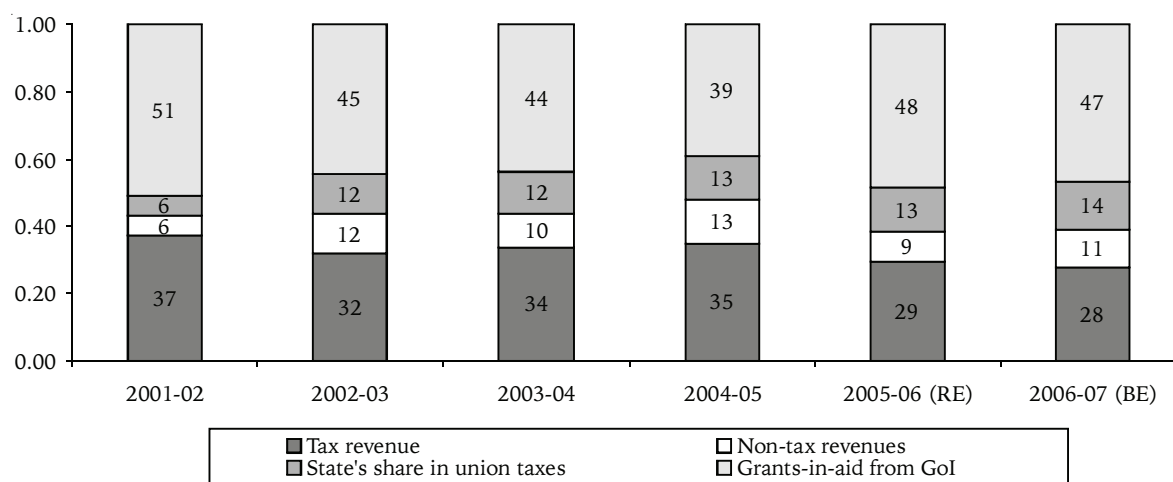
TABLE 3.16
Key Aggregates of Revenue Receipt (INR Crore) and Growth

| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) | Average Rate of Growth 2002-2005 |
|------------------------------|---------|---------|---------|---------|-----------------|-----------------|-------------------------------------|
| Tax revenue | 971* | 1017* | 1226 | 1444 | 1842 | 2071 | |
| Non-tax revenues | 162 | 375 | 370 | 548 | 597 | 784 | |
| State's share in union taxes | 151* | 374* | 435 | 520 | 858 | 1065 | |
| Grants-in-aid from GoI | 1324 | 1450 | 1569 | 1574 | 3100 | 3520 | |
| Total revenue receipts | 2608 | 3216 | 3600 | 4086 | 6397 | 7441 | |
| Growth | | | | | | | |
| Tax revenue | | 4.7 | 20.6 | 17.8 | 27.6 | 12.5 | 14.4 |
| Non-tax revenues | | 131.5 | -1.3 | 48.1 | 9.0 | 31.3 | 59.4 |
| State's share in union taxes | | 147.7 | 16.3 | 19.5 | 65.0 | 24.2 | 61.2 |
| Grants-in-aid from GoI | | 9.5 | 8.2 | 0.3 | 96.9 | 13.5 | 6.0 |
| Total revenue receipts | | 23.3 | 11.9 | 13.5 | 56.6 | 16.3 | 16.3 |

Note: Figures with asterisk (*) do not match with the budget documents of the Uttarakhand as they are taken from Report of CAG of India.

Source: (basic data) Report of CAG of India for Uttarakhand Financial Accounts and Uttarakhand budget documents (various years).

FIGURE 3.8
Distribution and Growth of Major Components of Revenue Receipt



Source: (basic data) Report of CAG of India for Uttarakhand Financial Accounts and Uttarakhand budget documents (various years).

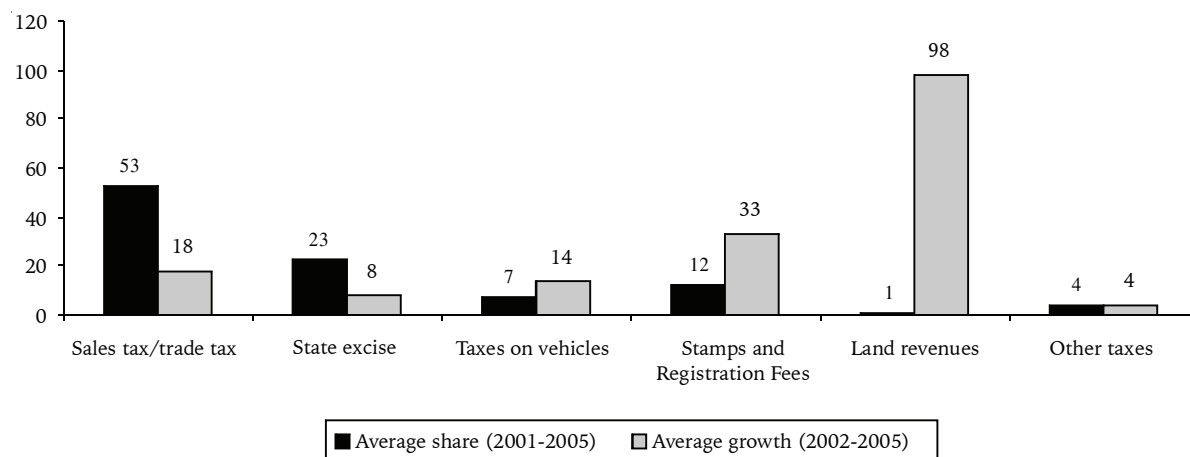
TABLE 3.17
Structure, Growth and Buoyancy of Tax Revenue

| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) |
|---------------------------------|---------|---------|---------|---------|--------------|--------------|
| INR crore | | | | | | |
| Tax revenue (Total) | 971* | 1017* | 1226* | 1444 | 1842 | 2071 |
| Share (per cent) | | | | | | |
| Sales tax/trade tax | 50.1 | 54.0 | 54.0 | 54.9 | 54.3 | 55.9 |
| State excise | 23.9 | 24.2 | 22.3 | 20.2 | 19.4 | 19.4 |
| Taxes on vehicles | 6.9 | 7.1 | 7.0 | 6.9 | 6.7 | 6.6 |
| Stamps and registration fees | 9.2 | 12.1 | 13.8 | 14.4 | 16.5 | 15.8 |
| Land revenues | 0.3 | 0.3 | 1.1 | 0.6 | 0.5 | 0.5 |
| Other taxes | 9.7 | 2.4 | 1.9 | 3.0 | 2.6 | 1.8 |
| Annual growth (per cent) | | | | | | |
| Sales tax/trade tax | | 13.0 | 20.6 | 19.8 | 26.1 | 15.9 |
| State excise | | 6.0 | 11.0 | 7.0 | 22.6 | 12.0 |
| Taxes on vehicles | | 7.5 | 19.4 | 15.1 | 25.2 | 9.8 |
| Stamps and registration fees | | 38.2 | 37.4 | 23.1 | 46.2 | 7.9 |
| Land revenues | | 0.0 | 333.3 | -38.5 | 11.2 | 9.5 |
| Other taxes | | -74.5 | -4.2 | 91.3 | 6.9 | -20.2 |
| Tax revenue | | 4.7 | 20.6 | 17.8 | 27.6 | 12.5 |
| Annual buoyancy | | | | | | |
| Revenue receipts | | | 1.63 | 0.78 | 0.83 | 3.68 |
| Tax revenue | | | 0.33 | 1.34 | 1.09 | 1.79 |
| Sales tax/trade tax | | | 0.91 | 1.34 | 1.21 | 1.70 |
| State excise | | | 0.42 | 0.72 | 0.43 | 1.47 |
| Taxes on vehicles | | | 0.52 | 1.27 | 0.93 | 1.64 |
| Stamps and registration fees | | | 2.68 | 2.44 | 1.41 | 3.00 |
| Land revenues | | | 0.00 | 21.77 | -2.36 | 0.73 |
| Other taxes | | | -5.21 | -0.27 | 5.59 | 0.45 |
| Non-tax revenues | | | 9.21 | -0.09 | 2.95 | 0.58 |

Note: Figures with asterisk (*) do not match with the budget documents of the Uttarakhand as they are taken from Report of CAG of India.

Source: (basic data) Report of CAG of India for Uttarakhand Financial Accounts and Uttarakhand budget documents (various years).

FIGURE 3.9
Average Structure of Tax Revenue



Source: (basic data) Report of CAG of India for Uttarakhand Financial Accounts and Uttarakhand budget documents (various years).

and scientific system of valuation, requirement of large number of no objection certificates and absence of efficient executive machinery are important reasons for extensive evasion and avoidance of stamp duty. Relative share of other taxes has gone down substantially. More importantly, the share of state excise duty has fallen from an impressive 23.9 per cent during 2001-02 to 20.2 per cent during 2004-05. However, the budgetary projections expect it to grow faster and regain the lost ground.

Collection of revenue through sales taxes is associated with several problems including: (i) tax evasion; (ii) under-valuation; (iii) inter-state stock transfers; (iv) classification disputes; and (v) multiple tax rates. In order to avoid some of these difficulties, system of VAT has been mooted for all states. Uttarakhand adopted VAT in October 2005. However the success of VAT depends upon several factors including: (i) training of officials and dealers; (ii) coordination with other states introducing VAT; (iii) exhaustive computerisation; and (iv) publicity. The White Paper on VAT prepared on the basis of recommendations of the Empowered Committee has suggested two core rates for VAT, viz., 4 and 12.5 per cent. Since VAT proceeds are also dependent on the amount of value added at each stage, larger the number of commodities with high-valued added nature, the larger would be the revenue benefit to the state. Similarly, larger the number of items placed under the higher rate, larger will be the VAT proceeds. Therefore, Uttarakhand should endeavour to develop a structure to maximise total proceeds. A good system needs to be backed by

information technology (IT) support, information on stage-wise input and trade flows among retailers, dealers and manufacturers. As an ongoing effort to take full benefits of VAT regime, the state is getting technical support from a USAID. In fact, USAID has commissioned a study with the National Council of Applied Economic Research (NCAER) to generate an input-output table for the state in order to calculate potential incidence of VAT proceeds and carry out simulation analysis.

3.2 Non-tax Revenues: Energy and Forest Sectors Dominate Non-tax Revenue Resource

Non-tax revenue (read own non-tax revenue excluding central transfers) can be divided in four broad categories of interest, dividends and profits; general services; social services; and economic services. During 2004-05 these categories respectively on an average contributed 4.06 per cent, 12.74 per cent, 5.75 per cent and 77.47 per cent to the non-tax revenue receipts (Table 3.18).

Among all the non-tax revenue sources, energy has emerged as the single most important contributor to the non-tax revenue. Its share has increased from almost non-existent during 2001-02 to 40.11 per cent during 2004-05. The state government has rightly identified this sector as one of the key drivers of the economy. There is a huge potential of hydroelectric power in the state and the same could be exploited to create critical peak-load energy hub.

Forestry and wildlife, which contributed about 23.84 per cent of non-tax revenue during 2004-05, form an important

TABLE 3.18
Non-tax Revenue Distribution

| | Share (per cent) | | | | | | Avg. Share (2001-2005) | Avg. Growth (2002-2005) |
|-------------------------------------------------|------------------|---------|---------|---------|-----------------|-----------------|---------------------------|----------------------------|
| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) | | |
| State's own non-tax revenue (INR crore) | 16213 | 37485 | 37059 | 54770 | 59711 | 78411 | 100 | 59.3 |
| Fiscal services | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 171.6 |
| Interest receipts, dividends and profits | 1.95 | 1.06 | 8.17 | 4.06 | 4.23 | 3.57 | 3.81 | 221.0 |
| Interest receipts | 1.94 | 1.04 | 8.16 | 4.01 | 4.18 | 3.53 | 3.79 | 222.9 |
| Dividends and profits | 0.01 | 0.01 | 0.01 | 0.05 | 0.05 | 0.04 | 0.02 | 229.5 |
| General services | 11.30 | 6.45 | 10.00 | 12.74 | 13.38 | 23.27 | 10.12 | 57.8 |
| Police | 2.22 | 1.02 | 1.08 | 0.77 | 0.89 | 0.81 | 1.27 | 5.2 |
| Public development | 1.07 | 0.77 | 0.59 | 0.73 | 0.73 | 0.57 | 0.79 | 41.5 |
| Other administrative services | 2.39 | 2.59 | 5.57 | 4.94 | 3.46 | 2.20 | 3.87 | 97.9 |
| Payment for pension & other retirement benefits | 4.17 | 0.12 | 0.35 | 3.53 | 5.36 | 17.14 | 2.04 | 493.0 |
| Other general services | 1.44 | 0.26 | 1.48 | 1.06 | 0.52 | 0.50 | 1.00 | 102.0 |
| Social services | 14.83 | 8.95 | 9.32 | 5.75 | 7.28 | 5.92 | 9.71 | 11.2 |
| Education, sports, art and culture | 11.08 | 6.05 | 5.74 | 4.07 | 5.57 | 4.59 | 6.73 | 8.2 |
| Medical & public health | 2.21 | 0.90 | 1.15 | 0.47 | 0.54 | 0.38 | 1.18 | -6.2 |
| Others | 1.53 | 0.77 | 0.35 | 0.30 | 0.41 | 0.34 | 0.42 | 65.2 |
| Economic services | 71.91 | 83.54 | 72.51 | 77.46 | 75.11 | 67.23 | 76.35 | 70.8 |
| Agriculture (crop husbandry) | 1.97 | 13.16 | 5.97 | 1.17 | 1.86 | 1.07 | 5.57 | 438.4 |
| Forestry and Wildlife | 49.77 | 47.40 | 35.59 | 23.84 | 25.08 | 16.69 | 39.15 | 31.1 |
| Major and medium irrigation projects | 4.19 | 2.77 | 2.53 | 1.05 | 0.96 | 0.21 | 2.63 | 1.5 |
| Energy | | 9.34 | 16.13 | 40.11 | 38.18 | 41.83 | 16.40 | 169.1* |
| Minerals & ores industries | 11.25 | 6.38 | 8.59 | 6.68 | 6.70 | 5.61 | 8.23 | 26.4 |
| Tourism | 0.81 | 0.89 | 0.69 | 2.38 | 0.69 | 0.64 | 1.19 | 180.9 |
| Others | 3.91 | 3.60 | 3.03 | 2.22 | 1.64 | 1.18 | 0.42 | 34.7 |

Source: (basic data) Uttarakhand government budget documents (various years).

source of revenue in this region but the flow of proceeds have high fluctuations due to inappropriate resource management techniques. Poor management of forest resources has attracted the attention of the honourable Supreme Court, which has directed to link falling of trees to scientific management of forests. After recording a 120 per cent growth during 2002-03, there has been consistently negative growth in revenue from forest during the following two years. However, 2005-06 (RE) estimates show some recovery. Other important contributors include royalty from mineral and ore industry (6.7 per cent); other administrative services (4.94 per cent); education, sports, art and culture (4.07 per cent); interest receipts (4.01 per cent) and payment for pension and other retirement benefits (3.53 per cent). However, these are also among the volatile elements of the revenue basket.

Uttarakhand has identified tourism as another driver of the economic growth. However, the revenue collection

from this sector is highly volatile and small. The best year so far has been 2004-05, when collection from tourism was of the order of INR 13.06 crore, about 2.36 per cent of the total non-tax revenue collection as against just about 0.81 per cent during 2001-02. However, it is budgeted to fall to INR 5.0 crore (0.69 per cent of non-tax revenue) during 2006-07 (BE). It is important that the state should start thinking of tourism as a major source of revenue and employment generation.

3.3 Resource Transfers from the Centre

Central resources are transferred to the states broadly in three forms; namely devolutions of the state's share in Centrally collected taxes, grants and loans. Grants include grant-in-aid decided by the Finance Commission under Article 275 of the Constitution, and grants for state and Centrally sponsored plan programmes through the Planning Commission and loans. The FC12 has increased

the sharable taxes from 29.5 per cent to 30.5 per cent with overall Central transfers limited to remain under 38 per cent. Uttarakhand is entitled to 0.952 per cent of the sharable taxes during 2005-06 to 2009-10 (FC12 period). As part of reform process, the FC12 has scrapped the system of imposing a 70:30 ratio between loans and grants for extending plan assistance to non-special category states (10:90 in the case of special category states), thus giving more freedom to states to borrow from market at competitive rates. This has also resulted in a fall in the central transfers. The grant in aid recommended by the FC12 for all states for the period 2005-2010 stand at INR 1,42,640 crore as against INR 58,587 crore recommended for the Eleventh Finance Commission period, which is more than 140 per cent increase. Uttarakhand has been allocated a sum of INR 6,432 crore for the FC12 period with heads-wise year-wise distribution given in Table 3.19. With this hefty increase several states including Uttarakhand are expecting substantial improvement in their fiscal condition stated earlier.

The transfers for state plans are however, arbitrary and subjected to various conditions. The total Central transfers, as percentage of GSDP for Uttarakhand during 2001-2004 was 13.6 per cent on an average basis. This was the lowest among the special category states (Table 3.20). However, the Uttarakhand government has projected improved numbers for 2005-06 (RE) and 2006-2007 (BE) (Table 3.7).

Even the FC12 grants for Uttarakhand when measured in terms of per capita, it works out to be one of the lowest among SCS states. Clearly, the economic and demographic conditions, which form basis for FC transfers of grants, are much better in the case of Uttarakhand as compared to other SCS states.

This finding has special implications for Uttarakhand. Clearly, even though it has been given the status of SCS state, it should carry on its business planning just like any other NSCS state.

TABLE 3.19
FC12 Per Capita Transfers (2005-2010) for the Special Category States (INR)

| | Share in Central Taxes & Duties (INR Crore) | Non-plan Revenue Deficit | Health | Education | Roads and Bridges | Building | Forests | Heritage Conservation | State Specific Needs | Local Bodies Rural | Local Bodies Urban | Calamity Relief | Total Grants in (2005-2010) | Total Grants in (2000-2005) |
|-------------------|---------------------------------------------|--------------------------|--------|-----------|-------------------|----------|---------|-----------------------|----------------------|--------------------|--------------------|-----------------|-----------------------------|-----------------------------|
| Mizoram | 16295 | 33087 | | | 468 | 259 | 278 | 56 | 722 | 222 | 111 | 291 | 35493 | 12700 |
| Nagaland | 8068 | 27683 | | | 604 | 231 | 125 | 25 | 225 | 200 | 30 | 76 | 29199 | 344 |
| Manipur | 9658 | 19096 | | | 335 | 164 | 130 | 22 | 130 | 200 | 39 | 96 | 20212 | 8017 |
| Himachal Pradesh | 5251 | 16725 | | | 429 | 242 | 33 | 16 | 82 | 241 | 13 | 657 | 18438 | 11459 |
| Tripura | 8207 | 17169 | | | 192 | 157 | 47 | 16 | 153 | 178 | 25 | 160 | 18097 | 7994 |
| Arunachal Pradesh | 16067 | 12344 | | | 403 | 522 | 909 | 45 | 91 | 618 | 27 | 1023 | 15984 | 7280 |
| Jammu and Kashmir | 7368 | 12231 | | | 117 | 163 | 30 | 10 | 99 | 278 | 38 | 340 | 13306 | 19891 |
| Meghalaya | 9898 | 7812 | | | 376 | 152 | 130 | 22 | 152 | 217 | 35 | 195 | 9092 | 18109 |
| Sikkim | 27859 | 3773 | | | 373 | 643 | 160 | 100 | 2000 | 260 | 20 | 1395 | 8724 | 18830 |
| Uttarakhand | 6779 | 6017 | 59 | | 382 | 115 | 41 | 6 | 282 | 191 | 40 | 434 | 7567 | 7901 |
| Assam | 7435 | 114 | 362 | 415 | 124 | 86 | 15 | 7 | 49 | 197 | 21 | 288 | 1677 | |
| India | 6058 | 562 | 58 | 101 | 148 | 49 | 10 | 6 | 70 | 198 | 49 | 158 | 1409 | 579 |
| Uttar Pradesh | 7112 | | 139 | 268 | 145 | 36 | 1 | 3 | 48 | 176 | 31 | 71 | 918 | 256 |

Source: (basic data) Report of the Twelfth Finance Commission.

TABLE 3.20
Inflows from the Central Government as
Percentage of GSDP
(Average 2001-02 to 2003-04)

| | Loans and Advances from the Centre as Percentage of GSDP | Grants from the Centre as Percentage of GSDP | Share in Central Taxes as Percentage of GSDP | Total Inflows from the Centre as Percentage of GSDP |
|----------------------------|-------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------|
| Uttarakhand | 1.43 | 9.6 | 2.6 | 13.6 |
| Assam | 2.27 | 6.5 | 5.1 | 13.9 |
| Himachal Pradesh | 1.51 | 13.9 | 2.3 | 17.7 |
| Meghalaya | 1.99 | 18.5 | 4.2 | 24.7 |
| Tripura | 1.36 | 20.8 | 3.9 | 26.1 |
| Jammu & Kashmir | 1.61 | 30.2 | 4.2 | 36.0 |
| Nagaland | 2.40 | 30.6 | 3.2 | 36.2 |
| Mizoram | 3.20 | 41.4 | 3.9 | 48.5 |
| Manipur | 18.64 | 27.5 | 5.1 | 51.2 |
| Sikkim | 3.08 | 46.2 | 8.6 | 57.8 |
| Arunachal Pradesh | 3.42 | 48.0 | 6.7 | 58.1 |
| Chhattisgarh | 1.24 | 2.0 | 4.1 | 7.3 |
| Uttar Pradesh | 1.51 | 1.4 | 5.8 | 8.6 |
| Jharkhand | 1.10 | 4.1 | 6.0 | 11.2 |
| All states | 1.14 | 2.0 | 2.6 | 5.7 |
| Special category states | 2.47 | 16.8 | 4.1 | 23.3 |

Source: (basic data) RBI Study of Budgets (various years).

4. Expenditure

Government expenditure can be classified in three major ways: (i) plan and non-plan expenditure; (ii) revenue and capital outlays; and (iii) developmental (social and economic service) and non-developmental (general services) expenditure. Most of the expenditure heads have plan and non-plan component. The plan and the capital expenditure are incurred to create assets for the state. The non-plan and the revenue expenditure are incurred on establishments, maintenance and services. Therefore, the plan and the capital expenditure have larger multiplier effect. The plan capital expenditure in Uttarakhand has increased from 0.77 per cent of GSDP in 2001-02 to 5.32 per cent of GSDP in 2004-05 and it is expected to reach 8.92 per cent by 2006-07 if budgetary projections come true (Table 3.7). The Plan Outlay increased from INR 586 crore in 2001-02 to INR 1568 crore in 2003-04 and to INR 2213 crore in 2004-05 (Table 3.21), yet the share of plan expenditure in total expenditure (revenue + capital) did not change due to even more increases in non-plan expenditure (Figure 3.10).

Importantly, revenue expenditure remained dominant part of the total expenditure despite commendable increases in the capital expenditure (Figure 3.12). In 2001-02, 93.4 per cent of the expenditure incurred by the

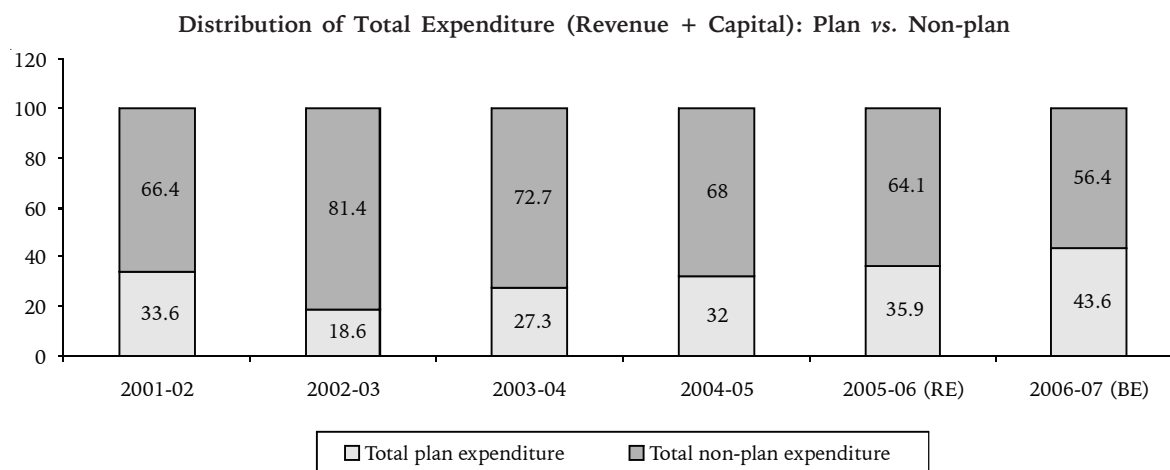
TABLE 3.21
Key Expenditure Aggregates (INR Crore)

| | 2001-02* | 2002-03* | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) | Avg. Growth Rate 2002-2005 |
|-------------------------------------|----------|----------|---------|---------|-----------------|-----------------|-------------------------------|
| Revenue expenditure | 2938 | 3675 | 4360 | 5036 | 6820 | 7596 | 19.7 |
| Plan | 485 | 967 | 1050 | 1138 | 1995 | 2316 | 38.8 |
| Non-plan | 2453 | 2708 | 3310 | 3898 | 4825 | 5280 | 16.8 |
| General services | 1062 | 1187 | 1461 | 1901 | 2317 | 2566 | 21.7 |
| Economic services | 692 | 951 | 1003 | 1090 | 1547 | 1637 | 17.2 |
| Social services | 1120 | 1468 | 1693 | 1904 | 2783 | 3180 | 19.6 |
| Grants-in-aid and contributions | 64 | 69 | 203 | 141 | 173 | 213 | 57.2 |
| Capital outlay | 208 | 339 | 533 | 1136 | 1897 | 2536 | 77.8 |
| Plan | 101 | 129 | 518 | 1075 | 1808 | 2399 | 145.6 |
| Non-plan | 107 | 210 | 15 | 61 | 90 | 137 | 103.4 |
| General services | 30 | 51 | 58 | 147 | 165 | 290 | 79.1 |
| Economic services | 151 | 223 | 352 | 826 | 1474 | 1776 | 80.1 |
| Social services | 27 | 65 | 123 | 163 | 258 | 470 | 87.5 |
| Disbursements of loans and advances | 78 | 96 | 135 | 181 | 175 | 326 | 32.6 |
| Total | 3224 | 4110 | 5028 | 6353 | 8893 | 10458 | 25.4 |

Note: Figures with asterisk (*) do not match with the budget documents of the Uttarakhand as they are taken from Report of CAG of India. See Annexe -1 of the chapter for budget figures.

Source: (basic data) Report of CAG of India for Uttarakhand Financial Accounts and Uttarakhand budget documents (various years).

FIGURE 3.10



state was in the revenue head, but it reduced to 81.6 per cent during 2004-05 and budget projection indicated a further fall.

Even in the plan expenditure the content of revenue expenditure is extremely high at 51 per cent during 2004-2005, which however, is a substantial improvement over 2001-02 condition when revenue share in plan expenditure was 83 per cent (Tables 3.21 and 3.22). It may be noted that the desirable share of revenue expenditure is just about 30 per cent in light of the Gadgil formula of resource transfer from Central government to states.

The developmental expenditure (social and economic services) as percentage of GSDP is in general high in the special category states. In Uttarakhand however, the average ratio of Development Expenditure to GSDP for the years 2001-02 to 2003-04 was 17.27 per cent, which increased to 19.7 per cent in 2004-05 and 2006-07 BE estimates are targeting to achieve more than 22 per cent

(Table 3.7). The latter is comparable to the average developmental expenditure (as percentage of GSDP) in SCS states. In terms of share of total expenditure, the developmental expenditure has marginally increased from 63.3 per cent in 2001-02 to 64.3 per cent in 2004-05. For 2006-07 BE, the state has targeted to spend 69.7 per cent of total expenditure in development activities (Figure 3.11).

Although there is tendency to increase developmental expenditure, most of it is observed to flow through revenue heads rather than capital heads (Figure 3.12 and Table 3.22). Almost all of the expenditure in social services is in the form of revenue expenditure. Clearly, the fund is not directed towards increasing social infrastructure such as schools, colleges, hospitals, housing, sanitation etc., rather most of it is going to maintain the existing facilities and pay salaries and other expenses. Similarly, the non-developmental expenditure also is mostly in the form of revenue expenditure.

FIGURE 3.11

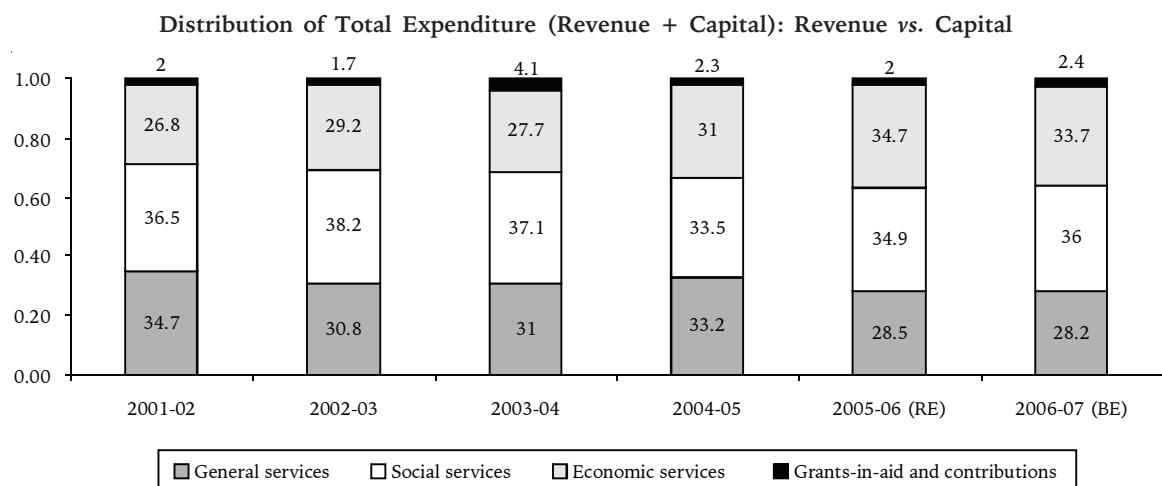
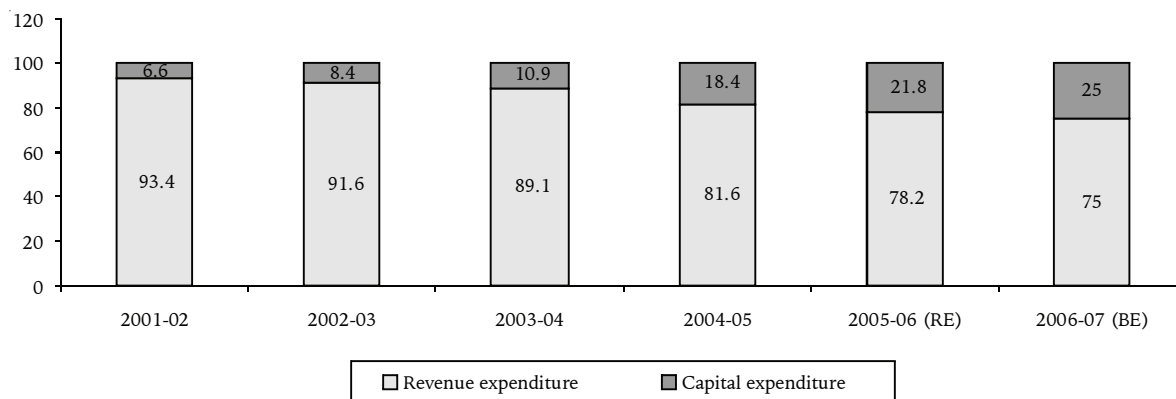


FIGURE 3.12

Distribution of Total Expenditure (Revenue + Capital): Developmental vs. Non-developmental



Source: (basic data Figure 3.9-3.11) Report of CAG for Uttarakhand Financial Accounts and Uttarakhand budget documents (various years).

TABLE 3.22

Distribution of Revenue and Capital Expenditure across Groups

| | | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) |
|------------------------|---------|---------|---------|---------|---------|--------------|--------------|
| Expenditure | Revenue | 93 | 92 | 89 | 82 | 78 | 75 |
| | Capital | 7 | 8 | 11 | 18 | 22 | 25 |
| General service | Revenue | 97 | 96 | 96 | 93 | 93 | 90 |
| | Capital | 3 | 4 | 4 | 7 | 7 | 10 |
| Social services | Revenue | 98 | 96 | 93 | 92 | 92 | 87 |
| | Capital | 2 | 4 | 7 | 8 | 8 | 13 |
| Economic service | Revenue | 82 | 81 | 74 | 57 | 51 | 48 |
| | Capital | 18 | 19 | 26 | 43 | 49 | 52 |
| Total plan expenditure | Revenue | 83 | 88 | 67 | 51 | 52 | 49 |
| | Capital | 17 | 12 | 33 | 49 | 48 | 51 |

Source: (basic data) Report of CAG of India for Uttarakhand Financial Accounts and Uttarakhand budget documents (various years).

In terms of plan and non-plan expenditure, almost all of the revenue expenditure is spent as non-plan expenditure, while most of the capital expenditure is

spent as plan expenditure (Table 3.23). During all these years, the share of the non-plan expenditure in the revenue account has been more than 70 per cent.

TABLE 3.23

Distribution of Plan and Non-plan Expenditure in Capital and Revenue Expenditure

| | | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) |
|---------------------|----------|---------|---------|---------|---------|--------------|--------------|
| Total expenditure | Plan | 19 | 27 | 32 | 36 | 44 | 47 |
| | Non-plan | 81 | 73 | 68 | 64 | 56 | 53 |
| Revenue expenditure | Plan | 17 | 26 | 24 | 23 | 29 | 30 |
| | Non-plan | 83 | 74 | 76 | 77 | 71 | 70 |
| Capital expenditure | Plan | 49 | 38 | 97 | 95 | 95 | 95 |
| | Non-plan | 51 | 62 | 3 | 5 | 5 | 5 |

Source: (basic data) Report of CAG of India for Uttarakhand Financial Accounts and Uttarakhand budget documents (various years).

4.1 Trends in Revenue Expenditures

Interest Payment, Education and Administrative Services Dominate the Revenue Expenditure

Social services sector has the highest incidence of revenue expenditure with almost 39 per cent on an average, which is closely followed by the general services (non-developmental component) with 34 per cent. Expenditure on economic services has been just about 24

per cent. The share of grants-in-aid contribution was approximately two per cent during 2001-2005. However, in terms of average rate of growth during 2002-2005, general services topped with 25.8 per cent followed by social services at 19.7 per cent and economic services at 17 per cent (Table 3.24). Clearly, revenue expenditure is moving away from developmental segment towards non-developmental segment.

TABLE 3.24
Structure of Revenue Expenditure

| | Percentage of Revenue Expenditure | | | | | | | Average Percentage of GSDP 2001-2005 | Average Annual Growth Rate 2002-2005 |
|-------------------------------------------|-----------------------------------|-------------|-------------|-------------|--------------|--------------|-------------------------|--------------------------------------|--------------------------------------|
| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) | Average Share 2001-2005 | | |
| REVENUE EXPENDITURE | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 24.15 | |
| A. Developmental | 63.98 | 65.81 | 61.89 | 59.45 | 63.49 | 63.42 | 62.8 | 15.15 | 18.7 |
| Social services | 39.45 | 39.96 | 38.84 | 37.82 | 40.81 | 41.87 | 39.0 | 9.43 | 19.7 |
| Education, sports, art and culture | 24.14 | 25.73 | 23.71 | 22.37 | 20.44 | 20.06 | 24.0 | 5.80 | 18.9 |
| Medical, public health and family welfare | 4.85 | 4.32 | 4.00 | 3.93 | 5.28 | 5.21 | 4.3 | 1.03 | 13.0 |
| Water supply and sanitation | 5.95 | 3.95 | 3.57 | 6.33 | 5.14 | 3.94 | 5.0 | 1.20 | 32.7 |
| Urban development | 0.59 | 0.82 | 3.35 | 0.67 | 3.52 | 6.49 | 1.4 | 0.35 | 128.6 |
| Welfare of SCs, STs and other BCs | 1.27 | 1.03 | 0.93 | 1.14 | 1.73 | 1.44 | 1.1 | 0.28 | 18.1 |
| Social security and welfare | 1.15 | 1.41 | 1.61 | 1.66 | 2.22 | 2.20 | 1.5 | 0.33 | 37.9 |
| Relief on account of natural calamities | 0.60 | 1.77 | 0.80 | 0.91 | 1.47 | 1.26 | 1.0 | 0.23 | 18.9 |
| Others (social services) | 0.91 | 0.92 | 0.87 | 0.80 | 1.00 | 1.27 | 0.9 | 0.00 | 16.6 |
| Economic services | 24.53 | 25.86 | 23.04 | 21.63 | 22.69 | 21.55 | 23.8 | 5.73 | 17.0 |
| Agriculture and allied activities | 11.90 | 9.99 | 10.32 | 8.91 | 8.50 | 9.02 | 10.3 | 2.48 | 10.4 |
| Agriculture (crop husbandry) | 2.34 | 3.88 | 4.22 | 2.76 | 2.41 | 2.40 | 3.3 | 0.80 | 40.0 |
| Forests | 5.86 | 3.84 | 3.39 | 3.57 | 3.75 | 4.18 | 4.2 | 1.00 | 3.7 |
| Agricultural research and education | 1.24 | 0.61 | 1.06 | 1.27 | 0.83 | 1.10 | 1.0 | 0.28 | 35.9 |
| Rural development | 5.47 | 4.19 | 3.95 | 3.57 | 4.90 | 4.12 | 4.3 | 1.03 | 5.2 |
| Irrigation and flood control | 4.17 | 3.90 | 3.23 | 3.05 | 2.85 | 2.63 | 3.6 | 0.88 | 9.6 |
| Energy | 0.48 | 3.70 | 2.56 | 1.58 | 2.98 | 0.65 | 2.1 | 0.53 | 285.4 |
| Power | 0.13 | 3.31 | 2.18 | 1.31 | 2.74 | 0.47 | 1.7 | 0.43 | 1061.4 |
| Alternative energy sources | 0.35 | 0.39 | 0.37 | 0.27 | 0.24 | 0.18 | 0.3 | 0.10 | 14.1 |
| Industry and minerals | 0.36 | 0.80 | 0.56 | 0.65 | 0.57 | 0.56 | 0.6 | 0.15 | 69.4 |
| Transport | 1.67 | 1.43 | 0.98 | 1.06 | 1.29 | 2.57 | 1.3 | 0.35 | 5.5 |
| Science, technology and environment | 0.06 | 0.05 | 0.16 | 0.03 | 0.25 | 0.51 | 0.1 | 0.00 | 67.0 |
| General economic services | 0.41 | 1.78 | 1.30 | 2.78 | 1.35 | 1.49 | 1.6 | 0.38 | 198.8 |
| Tourism | 0.26 | 0.24 | 0.35 | 0.26 | 0.24 | 0.32 | 0.3 | 0.10 | 27.2 |
| B. Non-developmental (general services) | 33.77 | 32.30 | 33.46 | 37.75 | 33.97 | 33.78 | 34.3 | 8.30 | 25.8 |
| Organs of states | 1.06 | 0.94 | 1.09 | 1.30 | 1.03 | 1.37 | 1.1 | 0.25 | 30.0 |
| Fiscal services | 1.74 | 1.53 | 1.48 | 2.08 | 2.16 | 1.98 | 1.7 | 0.43 | 30.4 |
| Interest payments and servicing of debt | 18.96 | 16.40 | 14.83 | 18.68 | 15.12 | 15.02 | 17.2 | 4.15 | 21.7 |
| Interest payments | 17.7 | 15.0 | 13.7 | 16.2 | 13.0 | 13.2 | 15.7 | 3.75 | 18.2 |
| Administrative services | 11.08 | 9.77 | 9.55 | 8.66 | 8.22 | 8.50 | 9.8 | 2.74 | 11.7 |
| Police | 5.62 | 5.29 | 5.06 | 4.44 | 4.00 | 4.17 | 5.1 | 1.23 | 12.3 |
| Public development | 2.91 | 2.31 | 2.13 | 2.06 | 2.16 | 2.35 | 2.4 | 0.55 | 8.1 |
| Pensions and miscellaneous gen. services | 0.93 | 3.67 | 6.52 | 7.04 | 7.43 | 6.90 | 4.5 | 1.15 | 181.9 |
| C. Grants-in-aid and contributions | 2.25 | 1.88 | 4.65 | 2.81 | 2.54 | 2.81 | 2.9 | 0.73 | 57.2 |
| Total expenditure (INR crore) | 2833 | 3676 | 4362 | 5036 | 6820 | 7596 | | | |

Source: Budget documents of Uttarakhand (various years).

Out of the social services sector expenditure, more than 60 per cent was contributed from education, sports, art and culture during 2001-2005 with an average annual growth rate of 18.9 per cent. Expenditure on water supply, sanitation, housing and urban development with average share of 20 per cent in the social services sector, grew at about 32.7 per cent annually during 2002-2005. Medical, public health and family welfare contributes another about 10 per cent of the revenue expenditures in social services. Social security and welfare, and urban development are the fastest growing expenditures among social services (Table 3.24).

Within the economic services, agriculture and allied activities including crop husbandry and agriculture research during 2001-2005 contributed almost 43 per cent of it on an average with expenditure on crop husbandry and agriculture research growing at an average rate of 40 per cent and 35.6 per cent respectively. Rural development, irrigation and flood controls together constitute another 35 per cent of the economic services related expenditure but both these sectors had sluggish rate of growth during 2002-2005. The fastest growth in economic services related expenditure is taking place in power, which has increased from just about two per cent contribution in 2001-02 to an average contribution of 7.3 per cent during 2004-05.

The revenue expenditure in general services (non-developmental group) is dominated by the interest payment and administrative services, which together

constituted about 75 per cent of it during 2001-2005. The interest payments grew at about 18.2 per cent annually on an average, and the administrative services grew at 11.7 per cent. It may be noted that interest payment is growing at much higher rate than the growth of nominal GSDP, which is an unhealthy sign for the state finances.

4.1.1 Committed Revenue Expenditure: Better than SCS States but Expanding Fast

Committed expenditure ought to be low in order to provide flexibility in controlling revenue expenditure. Generally, committed items include interest payments, pensions and expenditures on administrative services. Table 3.25 compares committed expenditure in Uttarakhand with that of other SCS states and all the states combined for the year 2003-04. Uttarakhand is placed much better as compared to other SCS states except Sikkim. Uttarakhand has to spend about 70.7 per cent of own revenue to meet the committed expenditure whereas all other SCS states have to spend 81.5 per cent (Assam) to 440.6 per cent (Nagaland) of own tax revenue for this purpose. Even Himachal Pradesh has to spend 121.6 per cent of own revenue for committed expenditure. However, Uttarakhand is still worse than average of all the states.

The state finances are also vulnerable to increasing share of non-developmental expenditure. The non-developmental expenditure has already reached 95 per cent of own revenue and there is no sign of drastic reduction of the same (Figure 3.13).

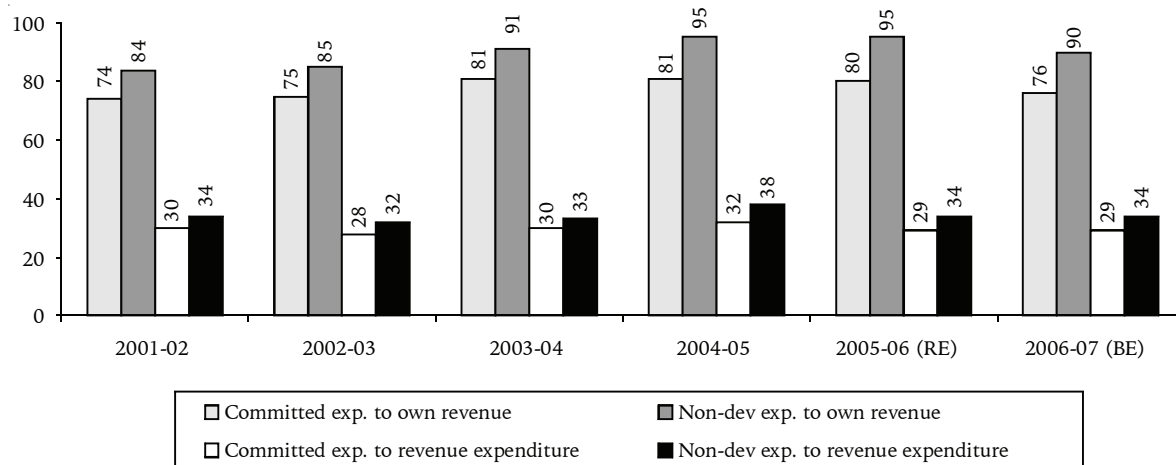
TABLE 3.25
Committed Expenditure across SCS (2005-06)

| | <i>As Percentage of Own Revenue</i> | | | | <i>As Percentage of Revenue Expenditure</i> | | | |
|-------------------|-------------------------------------|-----------------------|-------------------------|--------------|---------------------------------------------|-----------------------|-------------------------|--------------|
| | <i>Interest</i> | <i>Admin. Payment</i> | <i>Pension Services</i> | <i>Total</i> | <i>Interest</i> | <i>Admin. Payment</i> | <i>Pension Services</i> | <i>Total</i> |
| Uttarakhand | 33.2 | 18.9 | 18.6 | 70.7 | 14.4 | 8.2 | 8.1 | 30.7 |
| Sikkim | 9 | 9.1 | 3.7 | 21.8 | 5.8 | 5.8 | 2.3 | 14.0 |
| Assam | 32.2 | 27.7 | 21.6 | 81.5 | 14.3 | 12.4 | 9.6 | 36.3 |
| Meghalaya | 47.9 | 65.1 | 23.4 | 136.4 | 11.4 | 15.5 | 5.6 | 32.5 |
| Himachal Pradesh | 71.5 | 19.5 | 30.6 | 121.6 | 24.2 | 6.6 | 10.4 | 41.1 |
| Tripura | 103.0 | 104.9 | 67.2 | 275.1 | 15.5 | 15.8 | 10.1 | 41.4 |
| Jammu & Kashmir | 53.8 | 64.9 | 30.2 | 149.0 | 13.4 | 16.1 | 7.5 | 37.0 |
| Arunachal Pradesh | 59.2 | 84.9 | 26.8 | 171.0 | 9.4 | 13.4 | 4.2 | 27.0 |
| Mizoram | 105.4 | 126.1 | 50.9 | 282.4 | 11.6 | 13.9 | 5.6 | 31.2 |
| Manipur | 138.6 | 157.3 | 98.3 | 394.1 | 11.9 | 13.4 | 8.4 | 33.7 |
| Nagaland | 125.5 | 226.5 | 88.7 | 440.6 | 12.3 | 22.2 | 8.7 | 43.3 |
| All states | 32.3 | 13.2 | 15.6 | 61.1 | 19.2 | 7.8 | 9.3 | 36.3 |

Source: RBI State Finances: A Study of Budgets of 2007-08.

FIGURE 3.13

Pattern of Committed and Non-developmental Expenditure in Uttarakhand



Source: Budget documents of Uttarakhand (various years), committed expenditure includes interest payments, pension and administrative expenditure.

However, with twin advantage of having relatively better tax base and status of a special category state, Uttarakhand can perform much better than other SCS states provided it is able to maintain the advantage.

4.1.2 Interest Payments

Most of the improvement in Uttarakhand with respect to committed expenditure for the budgeted periods of 2005-2007 are expected to come from reduction in the interest payments which is projected to come down from 16.2 per cent of revenue expenditure in 2004-05 to 13.25 per cent during 2006-07 (Table 3.24 and 3.26). FC11 had recommended 18 per cent of revenue receipt as the upper limit, while FC12 recommended it to come down to 15 per cent by 2008-09. The actual performance of the state during 2005-06 has been quite reasonable and in line with the expectation. This situation is contingent upon the market rate of interest which is likely to increase for some time.

4.1.3 Expenditure on Pension and Salary Payments

The revenue conditions in Uttarakhand are severely threatened by the rising pension and salary bills. Salary and pension payments, which consumed about 85 per cent of own revenue collections during 2001-2003, has been increasing at an average growth rate of 24.6 per cent during 2001-2005 and it is expected to eat out almost all of the own revenue collection during 2005-06 (Table 3.27). The salary was *de facto* revised during 2004-05 when dearness allowances were merged in to basic, which led to the significant increase in basic-linked allowances such as house rent. Consequently, salaries of the employees who did not enjoy government accommodations increased sharply.

Pension payments increased from INR 13 crore in 2001-02 to INR 354 crore in 2004-05 and the 2006-07 budget has projected it to be INR 523 crore. Thus, there is sharp rise in pension bills during 2002-2005, possibly

TABLE 3.26
Interest Payment

| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) |
|-----------------------------------|---------|---------|---------|---------|--------------|--------------|
| Interest payment (INR crore) | 507 | 553 | 597 | 816 | 887 | 1006 |
| Percentage of own revenue | 44.75 | 39.73 | 37.41 | 40.96 | 36.35 | 35.24 |
| Percentage of revenue receipt | 19.44 | 17.20 | 16.58 | 19.97 | 13.86 | 13.52 |
| Percentage of revenue expenditure | 17.26 | 15.05 | 13.69 | 16.20 | 13.00 | 13.25 |
| Growth | | 9.07 | 7.96 | 36.68 | 8.64 | 13.50 |

Source: (basic data) Report of CAG of India for Uttarakhand Financial Accounts and Uttarakhand budget documents (various years).

due to increasing number of retirees, which could also lead to a major structural shift in the age profile of the government employees. On the one hand, it can be an advantageous situation for Uttarakhand in achieving a cut in salary bills but on the other hand, the resulting pension could pose a big threat to fiscal health. The state government has not constituted any fund to meet the fast rising pension liability of the retiring state employees. Considering the high rate of increase in pension, reforms in pension schemes has become critical (CAG_AU, 2006).

TABLE 3.27
Salary, Wages and Pension

| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) |
|------------------------------------------|---------|---------|---------|---------|--------------|--------------|
| (INR crore) | | | | | | |
| Salary | 950 | 1048 | 1191 | 1506 | 1928 | 2056 |
| pension | 13 | 135 | 283 | 354 | 506 | 523 |
| Total (salary + pension) | 963 | 1183 | 1474 | 1860 | 2435 | 2579 |
| Annual growth rate (per cent) | | | | | | |
| Salary | | 10.3 | 13.7 | 26.5 | 28.0 | 6.6 |
| Pension | | 938.5 | 109.5 | 25.2 | 43.1 | 3.3 |
| Total (salary + pension) | | 22.9 | 24.6 | 26.2 | 30.9 | 5.9 |
| Percentage of revenue expenditure | | | | | | |
| Salary | 32.3 | 28.5 | 27.3 | 29.9 | 28.3 | 27.1 |
| Pension | 0.4 | 3.7 | 6.5 | 7.0 | 7.4 | 6.9 |
| Total (salary + pension) | 32.8 | 32.2 | 33.8 | 36.9 | 35.7 | 34.0 |
| Percentage of revenue (own) | | | | | | |
| Salary | 83.8 | 75.3 | 74.6 | 75.6 | 79.1 | 72.0 |
| Pension | 1.1 | 9.7 | 17.7 | 17.8 | 20.8 | 18.3 |
| Total (salary + pension) | 85.0 | 85.0 | 92.3 | 93.4 | 99.8 | 90.3 |

Source: (basic data) Budget documents of Uttarakhand (various). Salary and wages includes DA and other allowances.

The distribution of salary bills (which includes dearness allowance (DA) and other allowances) presented in Table 3.28 indicates complete dominance of education, police, health and agriculture related departments, which together constituted about 72 per cent of salary bill during 2004-05. Education department, which leads the list of salary expenditures, is dominated by the secondary education, which constituted 91 per cent of it during 2004-05.

During 2002-03 to 2003-04, public health, language development, finance secretariat and secondary education all have recorded average growth rate of more than 20 per cent. During the recent two budget-periods of 2005-2007,

university education, technical education, public health, *ayurvedic* health, public works, revenue department, rural development, judiciary and finance department are budgeted to increase by more than about 20 per cent on an average (Table 3.28). Thus, there is no indication of fall in administrative expenditure, even while emphasis is shifting from secondary to university and technical education and Indian health system.

The salary expenditure in tourism and primary education is among the least, whereas both would be expected to play an important role in the development of the state. In fact, primary education has recorded sharp declines in salary expenditure, while tourism is budgeted to have high growth in salary.

4.2 Capital Expenditures

Noticeable Shift towards Developmental Expenditure after Experiencing a Sharp Fall during 2002-03

The capital expenditure can be broadly classified in two groups namely capital outlays and disbursements against loans and liabilities. Often, the CAG reports treat capital outlays in the budget documents as capital expenditure while, the term capital expenditure in budget documents mean capital outlays plus disbursements against loans and liabilities. In order to avoid confusion, here items are discussed as they appear in the budget documents that encompass both aspects.

Capital outlays are further differentiated between developmental outlays and non-developmental outlays or as plan outlays and non-plan outlays. As discussed earlier, non-plan and non-developmental outlays have lower multiplier effects and hence it is generally emphasised to control them while developmental and plan expenditures need to be expanded.

The capital expenditure has grown from INR 880 crore in 2001-02 to INR 2183 crore in 2004-05 at an average annual growth rate of 52.28 per cent, mostly in the form of repayment of central government loans during 2003-04.

The share of capital outlay in total expenditure (outlay+revenue), which was 6.6 per cent in 2001-02, has consistently increased over the years to a level of 18.4 per cent during 2004-05 and it is expected to reach 25 per cent in 2006-07, if budget proposal are to be believed (Figure 3.12). In terms of percentage of GSDP, the capital outlay increased from 1.58 per cent during 2001-02 to 5.62 per cent in 2004-05. However, while development component (economic+social services) of capital expenditure has increased from 1.35 per cent of GSDP during 2001-02 to 4.89 per cent during 2004-05 (Table 3.7).

TABLE 3.28
Share of Top Departments in Salary and Wages
(including DA and Other Allowances)

| Sorted by 2005-06(RE) Share | Share | | | | | | Growth | | |
|---------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2002-04 | 2004-05 | 2005-07 |
| Education department | 25.9 | 29.8 | 29.0 | 41.3 | 39.7 | 41.0 | 18.8 | 79.9 | 16.6 |
| Secondary | 21.7 | 25.3 | 25.2 | 38.1 | 36.2 | 37.2 | 20.9 | 91.3 | 15.5 |
| University | 1.9 | 1.9 | 1.8 | 1.5 | 1.7 | 1.8 | 10.3 | 4.6 | 30.0 |
| Language development | 0.3 | 0.6 | 0.7 | 0.5 | 0.7 | 0.7 | 68.0 | 2.9 | 42.5 |
| Technical education | 0.7 | 0.7 | 0.6 | 0.5 | 0.6 | 0.7 | 6.7 | 8.3 | 32.8 |
| Primary | 0.9 | 1.0 | 0.4 | 0.3 | 0.2 | 0.2 | -11.8 | -18.3 | 8.7 |
| Police | 14.2 | 15.5 | 14.9 | 12.0 | 12.0 | 12.3 | 15.1 | 1.5 | 18.7 |
| Health department | 11.1 | 11.1 | 11.5 | 9.9 | 11.2 | 9.1 | 13.9 | 9.2 | 15.8 |
| Allopathic | 6.5 | 6.1 | 6.1 | 5.2 | 6.0 | 3.0 | 8.5 | 7.6 | 1.2 |
| Ayurved | 2.0 | 2.0 | 2.1 | 1.9 | 2.2 | 2.9 | 16.6 | 13.4 | 43.9 |
| Public health | 0.5 | 0.7 | 1.7 | 1.4 | 1.5 | 1.5 | 103.2 | 6.6 | 22.7 |
| Family welfare | 1.9 | 2.1 | 1.4 | 1.3 | 1.3 | 1.3 | -1.1 | 11.2 | 19.0 |
| Agriculture & allied activities | 13.7 | 10.7 | 12.7 | 10.3 | 8.8 | 9.1 | 10.5 | 2.7 | 9.7 |
| Forestry | 5.7 | 5.2 | 6.1 | 5.0 | 4.3 | 4.5 | 17.8 | 2.3 | 11.3 |
| Agriculture & allied department | 4.5 | 2.5 | 3.3 | 2.5 | 1.8 | 1.8 | 4.4 | -4.7 | 1.3 |
| Animal husbandry | 2.0 | 1.7 | 1.9 | 1.5 | 1.4 | 1.4 | 11.7 | 2.0 | 10.5 |
| Food | 0.9 | 0.9 | 0.8 | 0.7 | 0.7 | 0.7 | 6.8 | 5.8 | 17.9 |
| Public works department | 6.6 | 6.4 | 6.2 | 5.6 | 6.3 | 6.3 | 7.9 | 13.9 | 25.7 |
| Revenue | 6.1 | 5.8 | 5.6 | 4.7 | 5.3 | 5.4 | 7.4 | 6.3 | 26.7 |
| Land revenue | 3.6 | 3.4 | 3.2 | 2.7 | 3.1 | 3.2 | 5.8 | 6.1 | 28.2 |
| District admin. | 2.5 | 2.4 | 2.4 | 2.0 | 2.2 | 2.2 | 9.7 | 6.7 | 24.6 |
| Rural development | 5.9 | 5.2 | 4.6 | 3.9 | 4.1 | 4.1 | -0.6 | 6.5 | 20.2 |
| Irrigation & flood control | 6.4 | 6.3 | 6.2 | 4.3 | 3.9 | 4.0 | 10.5 | -12.9 | 13.2 |
| Finance | 3.0 | 3.0 | 3.0 | 2.7 | 2.9 | 2.9 | 11.7 | 14.5 | 23.1 |
| Secretariat | 0.8 | 1.0 | 1.0 | 0.9 | 1.0 | 1.0 | 23.4 | 11.5 | 26.2 |
| Treasury & accounts admin. | 1.0 | 0.9 | 0.9 | 0.8 | 0.9 | 0.9 | 6.6 | 9.9 | 21.8 |
| Judiciary department | 1.3 | 1.2 | 1.3 | 1.3 | 1.4 | 1.6 | 12.9 | 33.2 | 28.4 |
| Tourism | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 3.3 | 59.3 | 23.9 |
| Other (including tourism) | 5.9 | 5.1 | 5.0 | 4.1 | 4.3 | 4.3 | 3.9 | 2.3 | 20.3 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 12.0 | 26.5 | 17.3 |

Source: (basic data) Budget documents of Uttarakhand (various years).

In terms of distribution of the capital disbursements (Table 3.29), the share of social services has increased from 3.08 per cent during 2001-02 to 7.48 per cent during 2004-05. During the same period economic services increased from 21.92 per cent to 37.81 per cent and the general services increased from 3.39 per cent to 6.35 per cent. Among the social services, education and health have received respectable emphasis in terms of increases. In this context, it can be said that Uttarakhand has to a large extent complied with the priorities set by the FC12. However, social sectors experiencing the fastest growth in

capital expenditure include urban development and SC/ST/OBC welfare.

Among the economic services, irrigation and flood control and the energy have grown faster than other sectors but in terms of distribution capital expenditure on transport (including roads and bridges) remained dominant with an average share of 60 per cent of economic services related capital expenditure. The budgetary proposals for 2006-07 indicate increasing emphasis on rural development.

TABLE 3.29
Changing Structure of Capital Expenditure in Uttarakhand

| | Share (per cent) | | | | | | Average Annual Share 2001-2005 | Average Percentage of GSDP 2001-2005 | Average Annual Growth Rate 2001-2005 |
|-------------------------------------------------------|------------------|---------|---------|---------|--------------|--------------|--------------------------------|--------------------------------------|--------------------------------------|
| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) | | | |
| Capital outlay (A+B) | 28.39 | 14.67 | 23.63 | 51.65 | 75.86 | 76.17 | 29.58 | 3.22 | 68.1 |
| A. Developmental expenditure (1+2) | 25.00 | 12.45 | 21.06 | 45.29 | 69.26 | 67.44 | 25.95 | 2.82 | 68.0 |
| Social service | 3.08 | 2.82 | 5.48 | 7.48 | 10.33 | 14.11 | 4.71 | 0.55 | 87.4 |
| Economic services | 21.92 | 9.63 | 15.59 | 37.81 | 58.93 | 53.33 | 21.24 | 2.28 | 69.4 |
| B. Non-developmental expenditure | 3.39 | 2.23 | 2.56 | 6.35 | 6.60 | 8.72 | 3.63 | 0.40 | 74.9 |
| General services | 3.39 | 2.23 | 2.56 | 6.35 | 6.60 | 8.72 | 3.63 | 0.40 | 74.9 |
| Discharge of internal debt | 49.41 | 49.34 | 18.40 | 39.06 | 16.21 | 13.20 | 39.05 | 4.39 | 67.9 |
| Repayment of loans to the centre | 13.31 | 31.83 | 51.97 | 1.00 | 0.92 | 0.84 | 24.53 | 3.20 | 163.0 |
| Loans by the state government | 8.90 | 4.15 | 6.00 | 8.29 | 7.02 | 9.79 | 6.84 | 0.73 | 32.4 |
| Loan for developmental activities | 8.80 | 3.88 | 5.76 | 7.92 | 6.46 | 9.36 | 6.59 | 0.70 | 68.0 |
| Loan for non-developmental activities | 0.10 | 0.27 | 0.24 | 0.37 | 0.55 | 0.42 | 0.25 | 0.03 | 74.9 |
| Capital expenditure (total) | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | | 52.28 |
| General services | 3.39 | 2.23 | 2.56 | 6.35 | 6.60 | 8.72 | 3.63 | 0.40 | 74.9 |
| Police | 1.00 | 0.94 | 0.96 | 1.07 | 1.88 | 1.58 | 0.99 | 0.12 | 50.8 |
| Stationery | 0.02 | 0.06 | 0.07 | 0.02 | 0.08 | 0.02 | 0.04 | 0.01 | 238.2 |
| Public development | 2.37 | 1.23 | 1.54 | 5.26 | 4.64 | 7.12 | 2.60 | 0.28 | 96.4 |
| Social services | 3.08 | 2.82 | 5.48 | 7.48 | 10.33 | 14.11 | 4.71 | 0.55 | 87.4 |
| Education, sports, arts & culture | 1.51 | 1.02 | 2.65 | 2.06 | 2.81 | 5.10 | 1.81 | 0.21 | 68.9 |
| Health & welfare | 1.02 | 1.06 | 1.55 | 2.31 | 3.03 | 4.83 | 1.49 | 0.17 | 86.8 |
| Water supply, sanitation, housing & urban development | 0.12 | 0.40 | 0.16 | 0.87 | 1.51 | 1.63 | 0.39 | 0.05 | 377.8 |
| SC/ST, OBC welfare | 0.38 | 0.30 | 0.50 | 1.55 | 2.43 | 2.18 | 0.68 | 0.08 | 123.8 |
| Social security & welfare | 0.06 | 0.03 | 0.56 | 0.44 | 0.35 | 0.10 | 0.27 | 0.03 | 561.0 |
| Other services | 0.00 | 0.01 | 0.04 | 0.24 | 0.19 | 0.27 | 0.07 | 0.01 | 411.2 |
| Economic services | 21.92 | 9.63 | 15.59 | 37.81 | 58.93 | 53.33 | 21.24 | 2.28 | 69.4 |
| Agriculture & allied services | 0.53 | -0.06 | -0.19 | 2.02 | 5.27 | 4.79 | 0.57 | 0.06 | -348.5 |
| Rural development | 0.44 | 0.44 | 1.50 | 1.67 | 1.57 | 2.48 | 1.01 | 0.12 | 134.9 |
| Irrigation & flood control | 3.16 | 1.12 | 3.47 | 5.15 | 9.37 | 11.22 | 3.22 | 0.35 | 79.8 |
| Major and medium irrigation | 2.79 | 0.96 | 1.39 | 2.17 | 2.76 | 5.99 | 1.83 | 0.19 | 27.7 |
| Minor irrigation | 0.00 | 0.00 | 1.82 | 2.62 | 5.04 | 4.29 | 1.11 | 0.13 | 39.6 |
| Flood control & drainage | 0.37 | 0.16 | 0.27 | 0.35 | 1.58 | 0.95 | 0.29 | 0.03 | 35.1 |
| Energy | 0.91 | 0.00 | 0.00 | 7.63 | 8.20 | 10.18 | 2.14 | 0.22 | 0.0 |
| Industry & minerals | 0.17 | 1.79 | 1.31 | 4.25 | 10.18 | 4.34 | 1.88 | 0.23 | 956.2 |
| Telecom & electronic industries | 0.17 | 0.92 | 0.59 | 0.49 | 5.89 | 3.48 | 0.54 | 0.07 | 426.1 |
| Transport | 16.01 | 5.87 | 8.72 | 15.50 | 22.39 | 18.16 | 11.52 | 1.20 | 37.8 |
| Roads and bridges | 15.48 | 5.50 | 7.66 | 13.63 | 19.29 | 16.31 | 10.57 | 1.09 | 33.8 |
| Public Debt | 62.72 | 81.18 | 70.37 | 40.06 | 17.13 | 14.05 | 63.58 | 7.59 | 59.8 |
| Discharge of internal debt of which | 49.41 | 49.34 | 18.40 | 39.06 | 16.21 | 13.20 | 39.05 | 4.39 | 67.9 |
| Loans from RBI | 47.15 | 49.22 | 18.27 | 39.06 | 11.99 | 9.01 | 38.43 | 4.34 | 72.3 |
| Repayment of loans to the centre | 13.31 | 31.83 | 51.97 | 1.00 | 0.92 | 0.84 | 24.53 | 3.20 | 163.0 |
| Loans & advances by state governments | 8.90 | 4.15 | 6.00 | 8.29 | 7.02 | 9.79 | 6.84 | 0.73 | 32.4 |
| Electricity | 7.75 | 3.23 | 0.94 | 5.64 | 6.08 | 7.54 | 4.39 | 0.44 | 139.5 |
| Capital expenditure (INR crore) | 880 | 2309 | 2257 | 2183 | 2501 | 3329 | | | |

Source: Budget documents of Uttarakhand (various years).

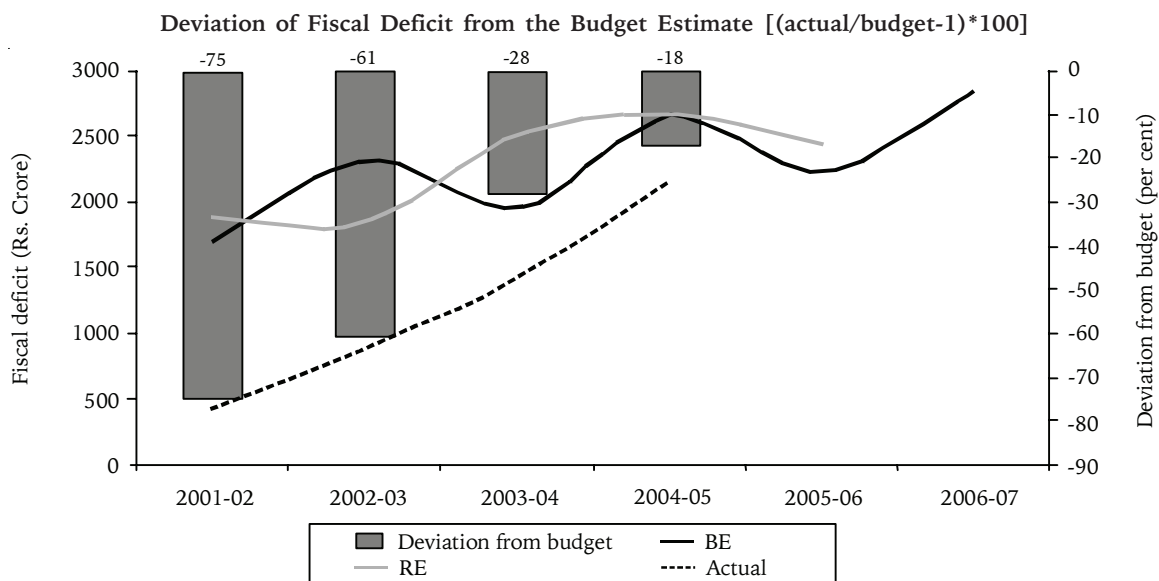
5. Fiscal Management and Predictive Performance of Budget Estimates

A Quick Learning Process in Right Direction

Efficiency of the financial intervention in the state as also the national economy is highly dependent upon the reliability, efficiency, and transparency in the budgetary process and its management. Often there are large divergences between budget estimates, revised estimates and actual outcome. Too much of error between budgeted amounts and actual outcomes reduces the usefulness of the whole exercise and unnecessary recourse to ways and means advances. Figures 3.14-3.16 present the budget

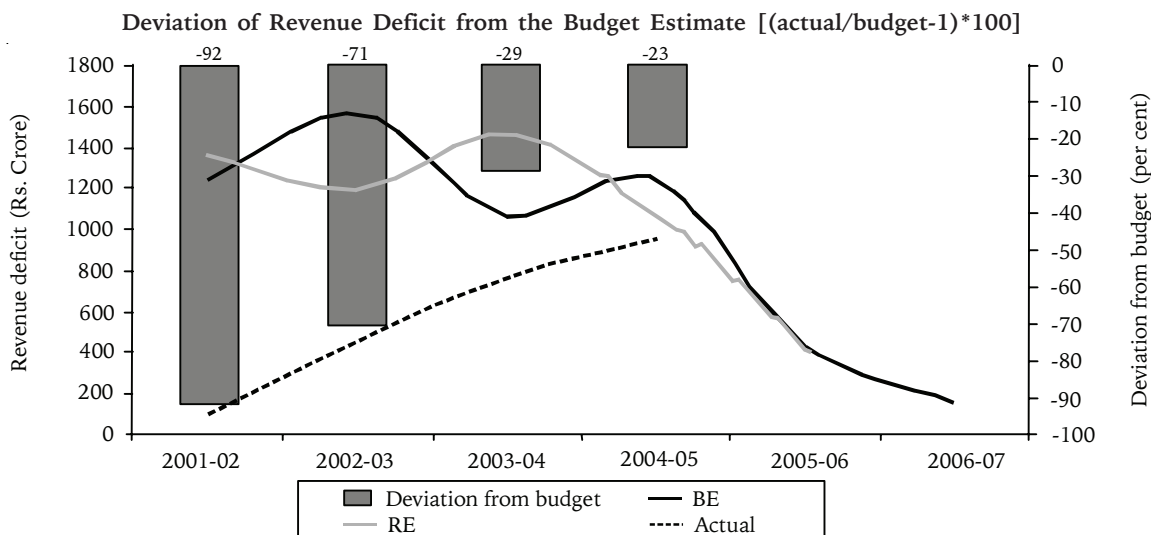
estimate, revised estimate, actual outcome and the percentage deviations of actual from budget $[(\text{actual}/\text{budget}-1)*100]$ with regards to the three measures of fiscal deficit in Uttarakhand over the period of 2001-02 to 2004-05. Clearly, the Uttarakhand budgeting process is under evolution and improving over time. The budget has systematically overestimated all the three measures of fiscal deficit since 2001-02. In the case of gross fiscal deficit the deviation has reduced from 75 per cent to 18 per cent and in the case of revenue and primary deficits the reduction is from 92 per cent and 107 per cent respectively to 23 and 28 per cent. Importantly, the revised figure appears to go much away from the actual

FIGURE 3.14

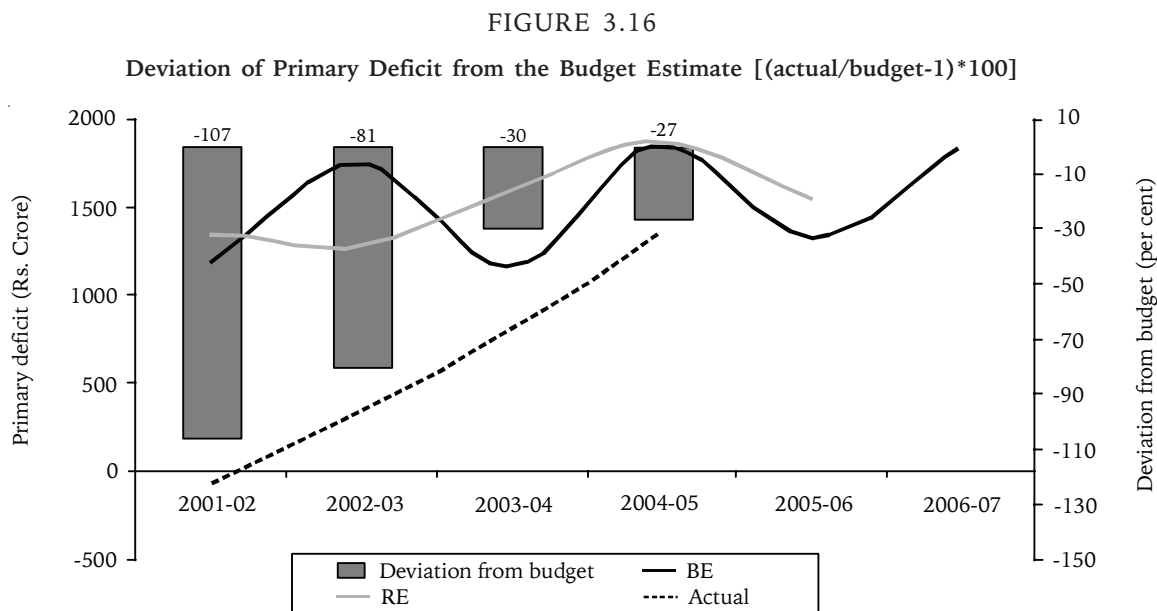


Source: (basic data) Uttarakhand budget documents (various years).

FIGURE 3.15



Source: (basic data) Uttarakhand budget documents (various years).



Source: (basic data) Uttarakhand budget documents (various years).

figures in most points of the time. It is also clear that emphasis is more on achieving the revenue targets as compared to the primary deficit target.

What could be the reasons of systematic overestimation of deficit indicators? Since process of central transfers are linked to the past performance and socio-economic conditions of the states, the budgetary process cannot be divorced from the related considerations and therefore, the likelihood of financial statements getting influenced by an underlying game process cannot be totally rejected. However, there are strong possibilities of pure errors of judgements. Fiscal errors can occur due to several reasons including miss-prediction of the relevant economic prospects including that of GSDP growth as well as the growth of central revenues.

5.1 Estimation Errors

Extent of failure in predicting fiscal deficits can be understood in a more formal way by examining the variations in selected components of the government budget. Two indicators are used to describe predictive accuracy over the period 2001-02 to 2004-05. These are percentage variation from the budget estimate and the Theil's inequality coefficient (TI). The latter is defined as follows:

$$TI = \left[\frac{\sum_{t=T+1}^{t=T+h} (B_t - A_t)^2 / h}{\sqrt{\left[\frac{\sum_{t=T+1}^{t=T+h} B_t^2 / h + \frac{\sum_{t=T+1}^{t=T+h} A_t^2 / h}{2} \right]}} \right]$$

where B stands for budget estimates and A stands for corresponding actual. The smaller the error, the better the forecasting ability of the budgetary process. Both percentage deviations and TI are scale invariant. Theil's inequality coefficient always lies between zero and one, where zero indicates a perfect forecast.

Table 3.30 gives the estimated values of these summary statistics describing prediction performance of selected components. Clearly, primary deficit is badly predicted, while prediction of gross fiscal deficit is little better. The best predictions are those of tax revenues (own as well as share in Central taxes). The quality of estimating own non-tax revenues in relative terms is much worse. At the aggregate level, estimation of non-tax revenue, revenue expenditure, capital expenditure and measures of deficit suffer from large errors in terms of TI and deviations of actual from budget estimates.

Cases where actual turn out to be lower than estimates are instances of overestimation and percentage errors have a negative sign. On the other hand, cases where actual are higher than corresponding budget estimates are instances of underestimation and percentage errors have positive sign. Clearly, there is general tendency to overestimate the expenditure components and underestimate the components of revenue receipt leading to overestimation of fiscal measures.

In terms of value of items having large range of deviation, it turns out that about 43 per cent of the values in revenue expenditure, 37 per cent values in revenue

TABLE 3.30
Predictive Quality of Components of Budget Estimates

| | Percentage Variation in Actual from Budgeted $100*(Actual-Budget)/Budget$ | | | | | TI | General Trend |
|-----------------------------------|------------------------------------------------------------------------------|---------|---------|---------|---------|------|---------------|
| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | Average | | |
| Revenue receipts | 9 | 11 | -22 | -12 | -3 | 0.08 | Over |
| Tax revenue | 4 | -6 | 1 | 7 | 2 | 0.03 | Under |
| States own tax revenue | 14 | 1 | 2 | 11 | 7 | 0.04 | Under |
| Share in central taxes | -13 | -23 | -4 | -3 | -11 | 0.06 | Over |
| Non-tax revenue | -16 | 114 | -17 | 37 | 29 | 0.18 | |
| Grants from the centre | 18 | 16 | -37 | -34 | -9 | 0.19 | Over |
| Revenue expenditure | -25 | -18 | -23 | -14 | -20 | 0.10 | Over |
| Developmental | -17 | -16 | -25 | -12 | -17 | 0.10 | Over |
| Non-developmental (gen. services) | -35 | -18 | -20 | -16 | -22 | 0.11 | Over |
| Capital expenditure | 18 | 68 | -7 | 9 | 22 | 0.13 | Under |
| Capital outlay | -34 | -47 | -18 | -10 | -27 | 0.13 | Over |
| Developmental expenditure | -33 | -50 | -13 | -3 | -25 | 0.13 | Over |
| Social service | -50 | -47 | -24 | -21 | -35 | 0.17 | Over |
| Economic services | -30 | -51 | -8 | 2 | -22 | 0.12 | Over |
| Non-developmental expenditure | | | | -40 | -40 | 0.25 | Over |
| General services | -39 | -21 | -47 | -40 | -37 | 0.25 | Over |
| Discharge of internal debt | 117 | 105 | -29 | 56 | 62 | 0.31 | Under |
| Repayment of loans to the centre | | | | -1 | -1 | 0.31 | Over |
| Loans by the state government | -35 | -16 | -43 | -1 | -24 | 0.19 | Over |
| Loan for developmental | -28 | 18 | -42 | 3 | -4 | 0.18 | Over |
| Loan for Non-developmental | -86 | -83 | -64 | -46 | -49 | 0.25 | Over |
| Fiscal deficit | -75 | -61 | -28 | -18 | -45.60 | 0.29 | Over |
| Revenue deficit | -92 | -71 | -29 | -23 | -53.72 | 0.42 | Over |
| Primary deficit | -107 | -81 | -30 | -27 | -61.16 | 0.43 | Over |

Source: (basic data) Uttarakhand budget documents (various years).

TABLE 3.31
Value Share of Receipts and Expenditure with Range of Variation

| Range | Code # | Revenue Receipts | | | Revenue Expenditure | | | Capital Receipts | | | Capital Expenditure | | |
|-------------|--------|------------------|---------|---------|---------------------|---------|---------|------------------|---------|---------|---------------------|---------|---------|
| | | 2002-03 | 2003-04 | 2004-05 | 2002-03 | 2003-04 | 2004-05 | 2002-03 | 2003-04 | 2004-05 | 2002-03 | 2003-04 | 2004-05 |
| <-1000 | | | 0 | | 0 | | | | | -1 | -1 | 0 | |
| -100 to -50 | 1 | 6 | 9 | 3 | 4 | 5 | 3 | 0 | 0 | 0 | 7 | 2 | 10 |
| -50 to -20 | 2 | 2 | 4 | 37 | 34 | 31 | 40 | 2 | | 22 | 3 | 6 | |
| -20 to 0 | 3 | 25 | 49 | 17 | 46 | 56 | 36 | | 12 | | 0 | 25 | 1 |
| 0 to 10 | 4 | 14 | 30 | 9 | 10 | 8 | 15 | 29 | 8 | 38 | 36 | 55 | 55 |
| 10 to 30 | 5 | 1 | 5 | 21 | 1 | 0 | 1 | | 22 | | 3 | 8 | 7 |
| 30 to 100 | 6 | 7 | 1 | 6 | 3 | | 5 | | 39 | 36 | 1 | | 25 |
| 100 to 500 | 7 | 43 | 1 | 7 | 1 | | 0 | 69 | | 0 | 49 | | 1 |
| >5008 | 3 | 1 | 0 | 0 | | - | | 16 | 3 | 0 | 5 | 0 | |
| no data | 9 | | | 0 | | | - | 0 | 2 | 0 | | 0 | 0 |

Note: # See Appendix A-3c (various years) for items falling under each code.

Source: (basic data) Uttarakhand budget document.

receipts, and 22 per cent values in capital receipts group had variation of more than 20 per cent underestimation during 2004-05. About 57 per cent value in capital expenditure had overestimation of more than 30 per cent during the same period. This suggests that the methodology of budget estimation needs change. Often there is tendency to apply fixed growth factor to obtain budgeted magnitudes. Instead, the estimation methods should take into account the inter-dependence among fiscal variables. For example, interest payments should be related to outstanding debt stock. Pension expenditures need to be determined by working out the number of pensioners likely to join the pensioner stream in the budget year and the likely increase in average pension, etc.

5.2 Need for Performance and Outcome Budgeting

With inefficient budgeting process likelihood of slippages in the actual outcome for which a particular budget was earmarked increases many folds. The Central government has recognised this fact albeit with delay. The concept was introduced in the 2005-06 Budget speech of the union government. Performance budgeting takes budgetary analysis beyond expenditures and attempts to link these to outputs and outcomes:

I must caution that the outlays do not necessarily mean outcomes. The people of the country are concerned with outcomes. The Prime Minister has repeatedly emphasised the need to improve the quality of implementation and enhance the efficiency and accountability of the delivery mechanism. During the course of the year, together with the Planning Commission, we shall put in place a mechanism to measure the development outcomes of all major programmes. (Union Budget Speech 2005-06 by the Honourable Finance Minister Mr P. Chidambaram).

Some of the ministries including the Finance Ministry of India have started reporting outcome budget. This is an equally useful concept at the state level to bring in discipline in the budgetary process and making the system accountable to the actual target and goals. Under a performance budget, governmental operations are divided into functions, programmes and activities. A function refers to major division of work of the government such as education, health, agriculture, etc. Programmes refer to broad categories within a function that identifies projects or accomplishments in respect of the budgets of a function and activity consists of the collection of homogenous types of work in a programme. The primary concern in a performing budget is to bring out end of objectives associated with the monetary allocation in the budget. However, the philosophy of the outcome budget goes beyond performance of the budgetary allocations and

its disbursement toward certain activity to scrutinise the final result for which the budget was proposed. For example, if a locality is becoming polluted and a budgetary allocation is made to reduce the pollution by an amount of “x” percentage points then the outcome of the budget should be tested by examining whether the expenditure actually brought down the pollution by “x” percentage points. If the answer is “no” then the subsequent question is to what extent the said expenditure achieved the final outcome and what were the reasons for underperformance.

There are several weaknesses and lack of conceptual clarity in the proposed outcome budgeting process of the Central government. Uttarakhand can take on itself to improve the system and adopt it.

In addition, as a part of capacity building the following issues must also be taken care of. These include predictive accuracy of the budget and revised estimates; adequate framework for ensuring consistency with desirable medium term fiscal targets; capacity to undertake intra-year adjustments; suitable procedures for evaluating budgetary outcomes and impact on the state economy; and inadequate attention to accruals of claims and payments as well on assets and liabilities including contingent liabilities (Srivastava *et al.*, 2001).

6. Fiscal Prospects and Reforms Needed

Uttarakhand has presented six full-fledged budgets since its birth, and out of these four have undergone financial audit. The initial trend is mixed. While there is clear evidence that the state has priority towards developmental capital expenditure, the revenue expenditure is going out of bounds creating unsustainable liabilities. The primary deficit as well as the gross fiscal deficit is increasing without any indication of correction. However, the projections of debt and deficits presented in Figures 3.5 and 3.6 indicate good possibility of containing fiscal deterioration through management of revenue expenditure and improvements in the revenue receipts. There are also issues with respect to increasing number of loss-making state public sector undertakings (SPUs), and high growth in salary and pension bills. However, FC12 recommendations together with the state level reforms with legal binding can go a long way in improving the fiscal performance without much compromise with developmental capital expenditure.

Increasing Burden of Public Sector Undertakings

Uttarakhand had about five major state public sector undertakings (SPSUs) confined to its territory at the time

of its creation. These included: (1) Garhwal Mandal Vikas Nigam (GMVN); (2) Kumaon Mandal Vikas Nigam (KMVN); (3) UP Hill Electronics Corporation Ltd. (HILTRON); (4) Kichha Sugar Mills (KSM); and (5)

Doiwala Sugar Mills (DSM). After the formation of the new state, several new SPSUs have been created including (5) State Industrial Development Corporation of Uttarakhand Ltd. (SIDCUL); (6) UP Seed and Tarai

TABLE 3.32
Financial Status of State Public Sector Units in Uttarakhand

| Sl. No. | Sector and Name of Company | Status | Main Firm | Date of Incorp'n | Period of Accounts | Year in which Accounts Finalised | Profit(+)/ Loss(-) INR crore | Cumulative Profit(+)/ Loss(-) INR crore | |
|--------------------------------|-----------------------------------------------------------------|------------|------------|------------------|--------------------|----------------------------------|------------------------------|-----------------------------------------|-----------------|
| Working companies | | | | | | | | | |
| 1. | Trans Cables Limited | TCL | Subsidiary | KMVN | 29.11.1973 | 1999-00 | 2002-03 | (-)0.84 | (-)5.80 |
| 2. | Uttar Pradesh Digitals Limited | UPDL | Subsidiary | KMVN | 08.03.1978 | 1996-97 | 1997-98 | (-)1.19 | (-)6.94 |
| 3. | Uttarakhand Chay Vikas Nigam Limited ² | UCVN | Subsidiary | KMVN | 29.01.1974 | 1996-97 | 2003-04 | - | |
| 4. | Uttar Pradesh Hill Electronics Corporation Limited | HILTRON | | | 26.06.1985 | 1993-94 | 1997-98 | (-)0.21 | (-)0.68 |
| 5. | Kumaon Mandal Vikas Nigam Limited | KMVN | | | 30.03.1971 | 1998-99 | 2004-05 | (-)0.56 | (-)1.73 |
| 6. | Garhwal Mandal Vikas Nigam Limited | GMVN | | | 01.03.1976 | 1996-97 | 2004-05 | (-)0.58 | (-)6.17 |
| 7. | Garhwal Anusuchit Janjati Vikas Nigam Limited | GAJVN | Subsidiary | GMVN | 30.06.1975 | 1989-90 | 2001-02 | (-)0.13 | (-)0.59 |
| 8. | Kumaon Anusuchit Janjati Vikas Nigam Limited | KAJVN | Subsidiary | KMVN | 30.06.1975 | 1986-87 | 2002-03 | (-)0.02 | (-)0.05 |
| 9. | Uttarakhand Bahuudeshiya Vitta Evam Vikas Nigam Limited | UBVEVN | Subsidiary | KMVN | 25.10.2001 | 2001.02* | N/A | 0 | N/A |
| 10. | Kiccha Sugar Company Limited | KSC | | | 17.02.1972 | 2003-04 | 2005-06 | (-)5.27 | (-)26.84 |
| 11. | Doiwala Sugar Company Limited | DSC | | | 19.12.2001 | 2001-02 | 2004-05 | (-)2.85 | (-)2.85 |
| 12. | Uttarakhand Power Corporation Limited | UPCL | | | 12.02.2001 | 2001-02 | 2004-05 | (-)23.97 | (-)23.97 |
| 13. | Uttarakhand Jal Vidyut Nigam Limited | UJVN | | | 12.02.2001 | 2001-02 | 2004-05 | (-)3.64 | (-)3.64 |
| 14. | Power Transmission Corporation of Uttarakhand Ltd.* | PTCU | | | 31.05.2004 | - | - | N/A | N/A |
| 15. | State Industrial Development Corporation of Uttarakhand Limited | SIDCUL | | | 18.07.2002 | 2003-04 | 2005-06 | (+)0.81 | (+)0.08 |
| 16. | Uttaranchal Purv Sainik Kalyan Udham Limited* | UPSKU | | | 1/3/2004 | | | | |
| 17. | Uttarakhand State Road Transport Corporation* | USRTC | | | 27.10.2003 | | | | |
| 18. | Uttarakhand Forest Development Corporation* | UFDC | | | 17.05.2001 | | | | |
| 19. | Uttarakhand Peya Jal Sansthan Vikas Evam Nirman Nigam | UPJSVEN | | | 07.11.2002 | | | | |
| Non-working companies** | | | | | | | | | |
| 1. | UPAI Limited | UPAI Ltd | | | 20.04.1977 | 1988-89 | 1999-00 | (-)0.01 | (-)0.05 |
| 2. | Kumtron Limited | KL | Subsidiary | HILTRON | 27.04.1987 | 1989-90 | 1990-91 | (-)0.02 | (-)0.02 |
| 3. | UP Hill Phones Limited | UPHPL | Subsidiary | HILTRON | 10.08.1987 | | | | |
| 4. | UP Hill Quartz Limited | UPHQL | Subsidiary | HILTRON | 18.07.1989 | | | - | |
| 5. | Teletronix Limited | Teletronix | Subsidiary | KMVN | 27.01.1973 | 1995-96 | 2002-03 | (-)1.43 | (-)5.59 |
| 6. | Kumaon Television Limited | KTL | Subsidiary | KMVN | 24.08.1977 | April 96 to 29 Nov.1996 | 2000-01 | (-)3.40 | (-)3.11 |
| Total | | | | | | | (-)40.27 | | (-)87.23 |

Note: *: USRTC, UFDC, UPJSVEN are statutory corporations and their audit is entrusted to CAG. **: Non-working companies are under liquidation.

Source: CAG_UA Report 2005-06.

2. Formerly Northern Electrical Equipment Industries Limited.

Development Corporation Ltd. (UPSTDC); (7) Uttarakhand Bahuudeshiya Vitt Evam Vikas Nigam (UBVAVN); (8) Uttarakhand Purva Sainik Kalyan Udham Ltd. (UPSKUL); (9) Uttarakhand State Road Transport Corporation (UPSRTC); (10) Uttarakhand Forest Development Corporation (UFDC), (11) Minorities Welfare Corporation (MWC); (12) Uttarakhand Jal Vidyut Nigam Ltd. (UPJVNL); (13) Uttarakhand Power Corporation Ltd. (UPCL); (14) Power Transmission Corporation of Uttarakhand Ltd. (PTCUL); and (15) Uttarakhand Peya Jal Sansthan Vikas Evam Nirman Nigam (UPJSVENN). The five old companies have several subsidiary companies attached to them with independent accounts (Table 3.32). If counted in this way, there are as many as 24 SPSUs in Uttarakhand as of 2006 and there is no commitment to contain the expansion of SPSUs.

Out of these companies, TCL, HILTRON, GAJVN, KAJVN and UPDL have a turnover of less than INR 5 crore. The net worth of some of these companies namely, TCL, GAJVN and UPDL has become negative due to the losses incurred year after year. More importantly, many of the SPSUs have not even finalised their accounts since several years (See CAG-AU, 2006) and it takes years for them in finalising the accounts (Table 3.27). It is ironical that the government owned companies are blatantly violating the Companies Act and the administrative departments are pretty unconcerned about it. It may be noted that the accounts for every year is required to be finalised within six months of the end of the financial year under Section 166, 210, 230, 619 and 619B of the Companies Act, 1956 and they are to be laid before the Legislature within nine months from the end of financial year.

Six of the 24 SPSUs are not working and making recurring losses. Out of these six companies, four are subsidiaries of HITRON and two are subsidiaries of KMVN. Out of 18 working companies, only 12 companies have finalised their accounts and except SIDCUL all have reported losses during the reported period as well as on the cumulative basis. The accumulated losses for the reported accounts are as high as INR 87.23 crore (Table 3.32). Clearly, Uttarakhand cannot ignore the poor performance of its PSU.

There is no indication of early disposal of closed companies; neither there is a move to privatise other loss making units.

FC12 Recommendations and Fiscal Restructuring

There are several recommendations by the FC12, where states are likely to benefit. Such changes would be

important for Uttarakhand's state finances as well. Several of the facilities can now be availed after FRL has been enacted.

- (i) The share of all the states in the shareable pool of Central taxes including the additional excise duties has been increased from 29.5 to 30.5 per cent. Uttarakhand's share in the shareable pool of Central taxes has been fixed at 0.95 per cent under TFC recommendations.
- (ii) Uttarakhand falls under SCS and therefore, the grant to loan ratio has been fixed at 90 to 10.
- (iii) The state will be the recipient of earmarked grants for capital, as well as for the maintenance of roads and bridges, government buildings. Under FC12 recommendations, grants for local bodies, natural calamities and state specific needs have been increased. The details of various grants to Uttarakhand are given in Table 3.20.
- (iv) The FC12 has recommended that the Central government should not act as an intermediary for future lending and allow the states to approach the market directly. If some fiscally weak states are unable to raise funds from the market, the centre could borrow for the purpose of lending to such states, but the interest rates should remain aligned to the marginal cost of borrowing for the centre.
- (v) Uttarakhand is eligible for the restructuring of its debt under the terms and conditions specified by the FC12 as it has enacted the FRL. Uttarakhand can also avail of the benefit of debt write-off under the proposed scheme, whereby the benefit is linked to the reduction in revenue deficit in absolute terms. In effect, if the revenue deficit is brought down to zero, the entire repayments during the period will be written off.

Initiatives of the RBI as Debt Manager for State Governments

As a banker and debt manager to the state governments, the RBI has also undertaken some initiatives as stated below:

- i. The RBI provides a forum for state governments to discuss various relevant issues through its biannual conference of State Finance Secretaries and provides ways and means advances and overdrafts facilities to the state governments to help them tide over the problem of temporary mismatches in their receipts and payments.

- ii. In the area of market borrowings, the Reserve Bank has, over the years, enhanced the flexibility available to the states. States are encouraged to directly access the market for resources ranging from 5 to 35 per cent of gross borrowings, with the states deciding on the method, timing and maturity of the borrowings.
- iii. The state governments' guarantees is another area where the bank has taken a number of initiatives based on the report of the Technical Committee on state government guarantees constituted by the RBI (1999). Uttarakhand has not taken any step for setting up Guarantee Redemption Fund (GRF) to avoid default in honouring guaranteed loans, if the guarantee is invoked. Several states including Andhra Pradesh, Gujarat, Orissa, Goa, Haryana, Madhya Pradesh and Tripura have either already set up GRF or they have proposed to set up.
- iv. The Consolidated Sinking Fund was set up in 1999-2000 to meet redemption of market loans of States. Several states including Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh, Goa, Maharashtra, Meghalaya, Mizoram, Tripura, Uttarakhand and West Bengal have established the CSF.

6.1 Proposed and Implemented Initiatives by the Uttarakhand Government Towards Improving Fiscal Condition

The Government of Uttarakhand has embarked upon a medium term fiscal policy and accountability strategy, which was part of the then MTFRP signed on 18th February 2005, which has become redundant following the FC12 recommendations. However, the reform initiatives remain important commitment worth pursuing. The main steps taken under these policy reforms (Refer GoUA, 2004 and GoUA, 2005) may be listed as follows:

• Initiatives Towards Restructuring of Departments

The Uttarakhand state has initiated re-organisation of government departments with an aim to downsize manpower requirement on a permanent basis by about 10 to 15 thousand persons. Directorates of treasury, pension, panchayati raj lekha, departmental accounts, local fund, chief audit of co-operative and *panchayat*, and financial statistical department have been restructured and consolidated into two directorates. The directorate of entertainment tax, stamp and registration has been merged into one. Directorate of chief revenue

commissioner has replaced the erstwhile revenue board and directorate of land acquisition. For industrial development a single corporation namely State Industrial Development Corporation of Uttarakhand (SIDCUL) has been established as against large number of corporations in U.P. Directorates related to the health; family planning; *ayurvedic*, homeopathic, and *unani* systems have been merged to form two departments. The primary and secondary education has been integrated into one department. The social welfare department has been unified to cover the works related to SC/ST, OBC, minorities, handicapped and ex-soldiers. However, it could not be ascertained, whether this has actually resulted in reduction of manpower. The total expenditure on salary in secondary and primary education forming highest component of revenue expenditure, are increasing without bounds and there is no indication of any tangible benefit of this restructuring.

• Initiatives Towards Outsourcing and Privatisation

The department of horticulture has been managing 104 orchards managed to provide planting material to farmers. Out these 104 orchards, 6 gardens have already been leased out to private firms and another 71 are under the process of privatisation. It is expected that private firms would bring in more capital and new technology. The surplus of staff is being redeployed. Similarly, new industrial states are being developed with public private participation.

Uttarakhand has already banned ad hoc and daily wages appointments and local citizens are being engaged to fill the vacancies of teachers on contract. However, it is not clear, whether such contract over the time would become permanent liability.

• Initiatives to Enhance Tax Revenue

The Uttarakhand government has already implemented the concept of value added tax (VAT) with effect from 1st October 2005. The experience of four months of implementation of VAT from October 2005 to February 2006 has been encouraging. During this period annual growth in tax collection was 39.85 per cent leading to cumulative growth of 27.76 per cent for the period of April 2005 to February 2006 as against average rate of growth of 21.55 per cent achieved during 2004-05.

The state has substantially modified the original VAT classification of goods circulated by the Empowered Committee (EC) with its white paper in January 2005. VAT rates have been modified in respect of at least 52

items in Uttarakhand as follows: (i) For 17 items the 12.5 per cent rate has been reduced to zero, (ii) for 11 items the 12.5 per cent rate has been reduced to 4 per cent, (iii) for 14 items the four per cent rate has been reduced to zero per cent, (iv) for four items the zero per cent rate has been increased to four per cent, and (v) for six items the four per cent rate has been increased to 12.5 per cent rate. The VAT rates for all kinds of lubricants are increased from 12.5 per cent to 20 per cent and tax rate on kerosene oil sold through PDS has been increased from zero per cent of EC to 12.5 per cent UA rate. The industrial inputs, capital goods and packing material are not included in Uttarakhand's list of VAT items. However, provision has been made in the Act such that a registered manufacturer may be allowed to get the rebate on the purchase of such goods and selling dealers will charge tax at the rate of four per cent irrespective of the rate of tax normally payable. Selling dealer will get a setoff of tax paid on purchases over and above tax received on sale to manufacturer. Thus, what comes out is a partial implementation of the VAT regime in Uttarakhand and full benefits are yet to be harnessed.

Besides implementing VAT, the state has imposed additional entry tax on some selected commodities to be collected at 13 check posts.

In order to meet some of the above inadequacies, the SFC-2 has recommended modifications in the existing VAT structure, which seeks replacement of 'uniform floor rates' with 'floor rates' and levy rates higher than the 'floor rates' on selected commodities, in which there is no possibility of diversion of trade. Moreover, the small dealers under composition scheme for turnover of INR 5 lakhs to INR 50 lakhs must issue an invoice (not mandatory at present), showing the amount of tax to enable the purchaser to claim input credit.

• Initiatives to Increasing the Tax Base

To widen the tax base computerised registration drive of dealers is launched from time to time. As a result, the number of registered dealers has increased from about 30,000 in 2000-01 to more than 50,000 in 2004-05. System of motor vehicle tax has also been reviewed and rationalised in 2003.

• Initiatives to Enhance the Non-tax Revenue

The Government has proposed to initiate a programme of phased increase in user charges pertaining to irrigation, higher education, hospital services and other selected economic and social services. The government hospitals are no more completely free of charges. In the same vein,

tuition fees in the engineering colleges have been increased.

Full-cost recovery of inputs and services provided to the farmers for soil testing; cost of seeds and seedlings for horticulture; artificial insemination, health and diagnostic services for animals; and the cost of chawki-reared worms for sericulture have been implemented.

State rules have been updated to strengthen community participation in forest management through village *panchayat* and self help groups. This is likely to increase non-tax revenue from forests.

• Computerisation and Expenditure Management

Uttarakhand claims to have introduced the concept of IT enabled Integrated Pay and Account office (IPAO) system. Under the IPAO system, category-wise and pay scale-wise details of all the government employees and a number of critical reports for budget information including the details of pension disbursement is expected to be available on the Internet. However, in practice none of the details can be found on the Finance Ministries web page.

• Initiatives Towards Budgetary Reforms

Following the recommendations of the eleventh finance commission (FC11), Uttarakhand has improved upon its budget documents in terms of transparency and details. Expenditure like salary and wages, DA, other allowances etc., and pension are shown as a separate schedule to the budget. Separate schedule have been included showing the grant wise expenditure on establishment, office expenditure, operational expenses, grant-in-aid, maintenance expenditure, major and minor construction works etc. A separate schedule showing outstanding debt and year wise guarantees given by the government has also been included.

• Initiatives Towards Power Sector Reforms

When Uttarakhand was created, the power sector in the erstwhile Uttar Pradesh was already under the process of reform and unbundling. After the division of the state, no thermal power plant went to the new state. Therefore, Uttarakhand chose to start with only two corporations in 2001. The Uttarakhand Jal Vidyut Nigam Ltd. (UPJVNL) was incorporated to manage the hydropower houses and the Uttarakhand Power Corporation Ltd. (UPCL) was incorporated to manage transmission and distribution of electricity. The Uttarakhand State Electricity Regulatory Commission (REC) was constituted in September 2002, which started issuing the tariff orders since 2003-04.

Subsequently, transmission and distribution were separated out after the creation of Power Transmission Corporation of Uttarakhand Limited (PTCUL) in 2004.

The Uttarakhand government is giving one of the highest priorities to power sector to exploit the hydropower potential in the state. A large number of power projects, which were started long back and were languishing due to non-availability of funds are now put on fast track with the financial help from Power Finance Corporation (PFC) and tying up projects with NTPC, and several private sector firms. The Uttarakhand government has committed large-scale capital towards creating infrastructure to reduce transmission and distribution (T&D) losses. All 11 kV and above feeders are being provided with electronic meters and exercises have been undertaken to implement energy audit practices with follow up. As a first step all the independent and industrial feeders are closely monitored to access the energy losses for taking corrective actions. In certain cases, meters are installed at both ends of feeder to check/verify pilferage.

6.2 Additional Reforms Needed

There are many areas of the nature of public good requiring public investment. Some of the key areas for public investment are quite well known, which include quality health and education; infrastructure including roads, power and irrigation projects; and development of industrial parks. All such developmental works require huge money. Therefore, management of revenue is critical for the state. But, equally important is to manage the expenditure because, expenditure saved is equal to revenue raised and therefore, all effort to control unproductive expenditures is highly desired. Uttarakhand has initiated reforms on several fronts, but the results are not visible in terms of fiscal health. There are ample scopes of improvement everywhere. Some of the issues needing emphasis are discussed here. The concept of welfare state is good up to a limited extent. In the long term a business type approach, which aims at developing competitiveness among people by projecting the idea that every thing costs and nothing is free lunch, is more sustainable.

6.2.1 Revenue Augmentation

Revenue augmentation is the key to fiscal improvement in view of the fact that there are significant rigidities in revenue expenditure due to permanent commitments. The share of the industrial sector in Uttarakhand is about 27 per cent, which is at the all-India average level. This provides with reasonable potential tax

base for VAT regime. However, as already pointed out, full benefits of VAT can be harnessed only through scientific analysis of the products, relationship between input and output, and price sensitivity.

Another important source of revenue could be the service tax, presently being collected by the Central government and distributed among states as per the Finance Commission formulae. The average contribution of services sector in the total GDP of India is about 50 per cent, which is poorly taxed. Accordingly, there has been strong demand from the states to allow them to collect certain service taxes under state goods and services tax (state GST) regime. In fact, according to the Shome Committee (on Tax Policy and Tax Reforms 2001), states should be allowed to levy tax on all services except financial services, telecommunication, posts, transportation of goods and passengers by air, sea and rail. The Central government, through the Constitutional (Ninety-Second Amendment) Act 2003 (7th January 2004) has placed taxation of services under an inserted Article 268A, which provides for collection and appropriation of service tax by both the Central and the state governments. However, it is yet to be notified. Once in force, this law will take out the sharing of service tax raised by the Central government outside the purview of the Finance Commission recommendations and it will be up to the Central government to assign certain services for taxation by the states. Uttarakhand, with about 42 per cent share of services in its GSDP, stands to gain much in augmenting its revenue. Therefore, it should start identifying such areas and carry out sensitivity analysis about the potential gains.

Non-tax Revenues, Implicit Subsidies and User Charges

Uttarakhand has very rich forest, mines and minerals and other natural resources but there is limited scope of exploitation of such resources as exploitation of the same conflicts with the environmental goals of maintaining ecological balance. However, development of eco-tourism with professional management could increase the revenue without tempering with the ecological balance.

Non-tax revenue collections in most states have also been low because of poor returns on government investment. For example, return on investments in public sector units are in general much lower than the effective rate of interest paid on the investment.

This results into implicit subsidy given to some consumers who may or may not be the targeted beneficiaries. Therefore, all subsidies (including explicit

and implicit) should be re-assessed for social cost and benefits. Only those subsidies, which have net social benefits, should be retained. In fact, according to a discussion paper presented by the government of India in the parliament in May 1997 made following important suggestions worth pursuing:

- Reduce the overall scale of subsidies.
- Making subsidies as transparent as possible and duly reflected in the budget of the government.
- Using subsidies for well-defined objectives.
- Focusing subsidies to final goods and services with a view to maximising their impact on the target population at minimum cost.
- Instituting systems for periodic review of subsidies.
- Setting clear limits on duration of any new subsidy schemes.
- Majority of public sector units incur huge losses. Such units should be either sold to private agents or wind up under proper compensation schemes to workers.

User Charges

Six areas namely education, health, agriculture, irrigation, power and transport are under the focus of user charges. However, in absence of a regulatory body, the charges are neither monitored nor are they based on transparent and scientific methods.

Raising user charges is often refrained due to possible resistance and political costs. However, the 'willingness to pay' studies indicate that consumers do demonstrate willingness to pay higher than existing rates if there is an improvement in the quality of these services. This is because in most cases the cost of coping up with poor quality of services/supply is very high. An initiative can be taken by the state electricity supply. Uttarakhand has enough capacity to supply uninterrupted power. It should take the challenge of declaring a premium price for genuinely uninterrupted supply to customers in industrial zones and urban clusters to start with, and extendable to rural areas. Similar challenges can be taken for user charges with top class roads, hygienic water supply and wildlife parks and forest resorts.

In addition, many user charges require legislative or departmental clearance for upward revision due to which the user charges do not move in accordance with the input costs. Therefore, a legislation-backed mechanism should be put in place for automatic upward revision of user charges linked to price index of inputs. There is also

a need of ERC type regulatory commission to look after the service quality and pricing of the services under consideration. User charges must be implemented with firm conviction and honesty. The policy of raising user charges without an improvement in quality of service is less likely to be successful.

Municipal Bonds

The Uttarakhand state also need to explore possibility of raising revenue through municipal and *panchayat* bonds through private placement, commercial banks, public sector corporations and domestic financial institutions by escrowing its potential of tourism related taxes, property tax, water charges and entry taxes on goods and services. The proceeds of such bonds must be invested to raise the level of facilities to tourists and the local people alike in an extremely professional and commercial way. Municipal bonds of Nagpur and Nashik are good example of success in this area.

6.2.3 Expenditure Reforms

The growth in non-interest revenue expenditure must come down to 10 per cent or at the level of nominal GSDP growth. However, this requires the state to undertake reforms on several fronts as indicated below.

Pension Reforms

Pension is a promise of the government to pay in future an amount of the money not explicitly known at the time of making the promise. For each employee the liability has to be calculated based on their post retirement age profiles, incomes at the time of retirement and incremental benefits subsequently. It becomes an unobserved, unending liability capable of bringing the state in to a situation of debt trap. Therefore, it is important to reform the pension schemes. Generally, the pension reforms yield benefits only in the long-term and therefore, state governments, more concerned about immediate gains, are reluctant to implement them. Nevertheless, these reforms are critical to reduce the vulnerability of the state finances to exogenous decisions regarding pensions. A recent study has estimated India's implicit pension debt (IPD) on account of current civil employees of the Central and states governments to be about INR 17.35 lakh crore (see for more details, Ila Patnaik, 2005). In this context, new initiatives are needed. The central government is forwarding the case of Funded Pension Scheme with contributions from the employees known as the new pension scheme (NPS). Under this new scheme, all new employees joining after January 1, 2004 will contribute 10 per cent of their salary and DA with

matching contribution from the government. To make this scheme a law, the government has formulated the Pension Funds Regulatory and Development Authority (PFRDA) Bill, which is yet to be passed by the Parliament. However, the scheme is partially in operation for the Central government employees under an interim PFRDA and the state governments are being persuaded to adopt similar schemes to build a political consensus. 16 states including Uttarakhand have in principle agreed to join the NPS. The other states are Andhra Pradesh, Manipur, Jharkhand, Chhattisgarh, Gujarat, Rajasthan, Madhya Pradesh, Himachal Pradesh, Bihar, Assam, Goa, Orissa, Maharashtra and Uttar Pradesh. However, smooth transition to the new system of NPS would require adequate preparations in terms of reforming the account keeping. In this context, the feasibility of keeping provident funds in a separate account should be examined.

Salary Reforms

Accelerating salary bill of the government employees is not unique to Uttarakhand. Most of the state governments face problems of overstaffing. There are now agreed steps in dealing with this problem, which include: (1) freezing/restricting government employment; (2) training and re-deployment of the surplus staff specially in IT which has potential to increase the efficiency of individual besides meeting requirement of IT trained staff; (3) golden handshake or voluntary retirement scheme for surplus staff after a thorough survey of each department, and (4) abolition of positions that are vacant for long duration.

State level experiences show that there is a pressing need of improving the quality of working staff and therefore, any restructuring programme must be sensitive to retaining the talent while thinking of reducing expenditure. To do this, expenditures on manpower should be weighted against its outcomes by each ministry. Outsourcing of services improves efficiency and it should be encouraged as far as possible. There is also a need to re-assess the need and size of departments falling under developmental expenditure in addition to scrutinising the non-developmental expenditure. Developmental expenditure account could be safe haven for breeding unproductive expenditure in the name of development.

Subsidy Reforms

Subsidies are extremely contentious issues to tackle due to a variety of interest groups involved in one form or the other. The problem is made more complex when subsidies are associated with political fallouts. Therefore, any reform to reduce subsidy must be in small steps in

order to sustain the reforms. Subsidies can be implicit as well as explicit. Implicit subsidies are hard to see and therefore, it is important to calculate and make them transparent in proper format along with the resultant beneficiaries. In fact, the budget document should contain a separate schedule to enumerate all possible subsidies and this list should be updated year after year. Only after conducting such an exercise it can be clearly said about the volume, cost and target groups of such expenditure. Often, subsidies are justified in the name of promoting social welfare but at times they are found to be overused, abused, and inefficient. An outcome budget with respect to subsidy can be extremely useful tool to monitor its efficiency and the same should be attempted.

Refining the Planning Process and Capital Expenditure

The independence and long-term perspective of planning process cannot be overemphasised. Ideally the planning process must look in to the distant future rather than meeting the goals of politically convenient programmes. It is common to find a number of programmes targeting the same population for the same end results. For example, if the end result is to provide education to every child irrespective of cast, creed and gender, then there is no logic to run multiple programmes in different names and diverting the funds through so many routes. One solid programme can serve the purpose better. It has also become a fashion to name different development programmes by politically sensitive names, while in a democratic system, no one political party is likely to remain permanently in power and retain the name forever. Often the new establishments tend to give a different name to the same programme or create an overlapping programme in a more convenient name leading to confusion, duplication and resentment in part of the society. Such practices need to be done away with, in order to maintain continuity and clarity of the key objective. This would also increase the efficiency and productivity of the planning process and return to investment. Capital is scarce and therefore, at least few questions stated below must be asked for major expenditure decision.

1. How much the expenditure will be helpful in motivating private investment?
2. How much will the investment create/attract quality human capital?
3. How much the investment will motivate self-employment and develop entrepreneurship?

4. How much the investment will reduce public cost of living and help in promoting economic activities?

It should be clearly understood that the goal of planning process and the capital expenditure should not be to maximise direct employment but instead it should be to maximise indirect employment in the private sector. It should also be linked to the induced effect of the government investment on the private sector investment, which is likely to be more sustainable with high multiplier effect. Planning for generating direct employment is more likely to augment the fiscal problems with increases in committed expenditure.

6.2.4 Management and Monitoring of Budgetary Process and its Outcome

Budget management could be linked to the proposed fiscal responsibility legislative (FRL) under preparation or FRL provisions of other states. It includes reforms leading to reduction in deficit measures, particularly primary and revenue deficits; reduction in debt and liabilities; reduction and elimination of state guarantees for public or private sector loans; and improving the predictability of the budgetary components.

The foregoing discussion and several steps taken by the state government towards increasing revenue, reducing expenditure and bringing more efficiency in resource allocation has thrown ample light on the possibilities of reducing fiscal deficit measures.

The level of public debt and the level of implicit liabilities in the form of guarantees are to be in confirmation with the sustainability requirements on a consistent basis. Figure 3.4 can be extended every year to have a check and balance requirement. Standard practices of reducing debt liability include retiring high cost debt with low cost borrowing, which Uttarakhand has already done to a large extent, by retiring Central government debt. As the interest rate fall, similar steps can be taken for more costly debt.

FC12 has recommended all the states to set up sinking funds for amortisation of all loans including loans from banks, liabilities on account of NSSF etc. The fund should be maintained outside the consolidated fund of the states and the public account and should not be used for any other purpose, except for redemption of loans (FC12, 2005).

Several states have resorted to special purpose vehicle (SPV) for meeting the capital expenditure on infrastructure projects that have created huge off-budget liabilities in those states (for example, Maharashtra).

Uttarakhand must not fall in trap of such lucrative but translucent ideas.

In order to bring more transparency in budgetary process, it is important to include every detail in the budget documents regarding employees (their distribution by salaries, department, vacant positions, reforms etc.); head wise implicit and explicit subsidies; pension liability, its projection and reforms; investments and returns from the public sector undertakings; commentary on outcome budget for the previous expenditures etc.

At present there is no consolidated and disaggregate account at the state level for accounting receipts and disbursements and assets and liabilities of the local bodies. Sooner it is included in to consolidated budgetary process better it will be. At least the economic survey or any such document must start compiling the accounts of local bodies.

Computerisation of budgetary process is the call of the time. It has enormous advantages in terms of flexibility and monitoring the flow of receipts and expenditure with online matching of projections. Statements of deviations can be generated periodically for discussion and timely corrections and improvements in estimation methodologies.

Accrual System of Accounting

The transparency in the budgetary process can be improved automatically with the switchover to the accrual system or the double entry system of accounting instead of cash transaction system. Uttarakhand should start implementing the double entry system at least in the case of local bodies and corporations and insist on the SPSUs and the statutory bodies to follow the same.

Budget Monitoring

The FC12 has recommended that every state should set up a high level monitoring committee headed by the Chief Secretary with the Finance Secretary and the secretaries/heads of departments as members for monitoring proper utilisation of finance commission grants. The scope of such monitoring committees should be extended to cover all major heads of expenditure and including those that have history of high rate of variations between budgeted and actual values.

The monitoring committee should be responsible for monitoring both financial and physical targets to ensure the fructification of actual outcomes expected from the fund allocations. For this, it is important that such a committee should be a permanent feature of the

governance and it should set the physical targets for the surveillance, monitoring and reporting on a monthly/quarterly basis immediately after each budget.

6.3 Implementing Fiscal Responsibility Legislation

The consequences of deteriorating fiscal health are well understood in the policymaking as indicated in various official statements. Such concerns are reflected in the White Papers and official policy statements issued by the governments and enactment of fiscal responsibility legislations. Several states have come out with White Papers on their fiscal health, and many of them including Uttarakhand have also enacted the fiscal responsibility legislation (FRL). The objective of FRL has been to provide legal and institutional framework for fiscal reforms. Some states have also realised that without a bailout package from central government or a loan from a multilateral agency they may not be able to come out of the fiscal crisis. But all this requires a high level of commitment to reforms in return for financial support as indicated in the FC12 recommendations. A typical reform package aims at:

1. Downsizing of the government by eliminating unproductive staff, improving efficiency in government, transfer of non-essential functions to the private sector and tenure based government jobs.
2. Removing inefficient subsidies and diverting funds to enable areas such as infrastructure and education.
3. Encouraging private investment in all possible areas.
4. Levying appropriate and dynamic user charges for services such as water supply, road use and electricity.
5. Improving tax collection and compliance.
6. Discouraging populist programmes, which are otherwise economically unviable.
7. Applying technology to improve overall efficiency.

6.2.5 Key Targets Recommended by the Second State Finance Commission which Need to be Achieved

1. The state should have buoyancy of at least 1.2 per cent for tax revenues during 2005-2010.
2. The state should try 7 per cent return on outstanding loans and advances and 5 per cent on equity, to be achieved in graded manner by 2009-2010.
3. The growth rate of interest payments for Uttarakhand should be pegged at 7.5 per cent per annum.
4. The level of interest payments relative to revenue receipts should fall to about 15 per cent by 2009-2010.
5. The own tax revenues of state should have annual growth rate of 23.5 per cent.
6. The state should restrict market borrowings to the minimum level, so that the outstanding liabilities are reduced as much as possible to achieve the target set in FRBM Act.
7. *Van Panchayat* be placed under overall guidance and supervision of corresponding *Gram Panchayat*, and suitable amendments should be made in Uttarakhand Panchayati Forest Rules 2001 to facilitate this.
8. Scattered and isolated *Gram Panchayats* with very small population be merged with contiguous *Gram Panchayats* so that every *Gram Panchayat* has a population in excess of 300 and a voter population of at least 200.
9. There should be a hierarchical system in the Panchayati Raj. *Kshetra Panchayats* (KPs) should supervise works undertaken by GPs and ZPs should supervise works undertaken by KPs.

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APPENDIX A-3.1a
Exhibits of CAG Report 2005-06

Exhibit IV- Data on State Government Finances (INR Crore)

| | 9/11/2000- 31/3/2001 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) |
|------------------------------------------------------------------|-------------------------|---------|---------|---------|---------|-----------------|-----------------|
| <i>GSDP-Nominal (INR crore)</i> | 12237 | 13181 | 15064 | 17370 | 20205 | 23315 | 26888 |
| Part A: Receipts | | | | | | | |
| 1. Revenue receipts | 924 | 2608 | 3216 | 3600 | 4086 | 6397 | 7441 |
| (i) Tax revenue | 295 | 971 | 1017 | 1226 | 1444 | 1842 | 2071 |
| Sales tax/trade tax | 146 | 486 | 549 | 662 | 793 | 1000 | 1159 |
| State excise | 66 | 232 | 246 | 273 | 292 | 358 | 401 |
| Taxes on vehicles | 22 | 67 | 72 | 86 | 99 | 124 | 136 |
| Stamps and registration fees | 42 | 89 | 123 | 169 | 208 | 304 | 328 |
| Land revenues | 2 | 3 | 3 | 13 | 8 | 9 | 10 |
| Other taxes | 17 | 94 | 24 | 23 | 44 | 47 | 38 |
| (ii) Non-tax revenues | 63 | 162 | 375 | 370 | 548 | 597 | 784 |
| (iii) State's share in union taxes | 119 | 151 | 374 | 435 | 520 | 858 | 1065 |
| (iv) Grants-in-aid from GoI | 447 | 1324 | 1450 | 1569 | 1574 | 3100 | 3520 |
| 2. Miscellaneous capital receipts | | | | | | 0 | 0 |
| 3. Total revenue and non-debt capital receipts (1+2) | 924 | 2608 | 3216 | 3600 | 4086 | 6397 | 7441 |
| 4. Recoveries of loans and advances | 2 | 4 | 3 | 23 | 87 | 60 | 180 |
| 5. Public debt receipts | 187 | 775 | 1834 | 3063 | 1587 | 1858 | 1983 |
| Internal debt (excluding ways and means advances and overdrafts) | 86 | 567 | 1583 | 2777 | 1405 | 1638 | 1933 |
| Net transactions under ways and means advances and overdrafts | | 85 | | | 35 | 0 | 0 |
| Loans and advances from GoI | 101 | 123 | 251 | 286 | 147 | 220 | 50 |
| 6. Total receipts in the consolidated fund (3+4+5) | 1113 | 3387 | 5053 | 6686 | 5760 | 8316 | 9603 |
| 7. Contingency fund receipts | | 30 | | 55 | 24 | 8 | 40 |
| 8. Public account receipts | 2112 | 5131 | 6574 | 7499 | 8525 | 7475 | 10749 |
| 9. Total receipts of the state (6+7+8) | 3225 | 8548 | 11627 | 14240 | 14309 | 15799 | 20391 |
| Part B: Expenditure | | | | | | 6820 | 7596 |
| 10. Revenue expenditure | 934 | 2938 | 3675 | 4360 | 5036 | 6820 | 7596 |
| Plan | 236 | 485 | 967 | 1050 | 1138 | 1995 | 2316 |
| Non-plan | 698 | 2453 | 2708 | 3310 | 3898 | 4825 | 5280 |
| General services (including interest payments) | 234 | 1062 | 1187 | 1461 | 1901 | 2317 | 2566 |
| Economic services | 351 | 692 | 951 | 1003 | 1090 | 1547 | 1637 |
| Social services | 307 | 1120 | 1468 | 1693 | 1904 | 2783 | 3180 |
| Grants-in-aid and contributions | 42 | 64 | 69 | 203 | 141 | 173 | 213 |
| 11. Capital expenditure (capital outlay) | 149 | 208 | 339 | 533 | 1136 | 1897 | 2536 |
| Plan | 128 | 101 | 129 | 518 | 1075 | 1808 | 2399 |
| Non-plan | 21 | 107 | 210 | 15 | 61 | 90 | 137 |
| General services | 1 | 30 | 51 | 58 | 147 | 165 | 290 |
| Economic services | 148 | 151 | 223 | 352 | 826 | 1474 | 1776 |
| Social services | | 27 | 65 | 123 | 163 | 258 | 470 |
| 12. Disbursements of loans and advances | 11 | 78 | 96 | 135 | 181 | 175 | 326 |
| 13. Total (10+11+12) | 1094 | 3224 | 4110 | 5028 | 6353 | 8893 | 10458 |
| 14. Repayment of public debt | 28 | 78 | 823 | 1176 | 22 | 128 | 168 |
| Internal Debt (excluding ways and means advances and overdrafts) | | 1 | 3 | 3 | | 105 | 140 |

Contd...

| <i>...contd. ...</i> | | | | | | | |
|------------------------------------------------------------------------|-------------------------|---------|---------|---------|---------|-----------------|-----------------|
| | 9/11/2000- 31/3/2001 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) |
| <i>GSDP-Nominal (INR crore)</i> | 12237 | 13181 | 15064 | 17370 | 20205 | 23315 | 26888 |
| Net transactions under ways and means advances and overdrafts | | | 85 | | | 0 | 0 |
| Loans and advances from GoI | 28 | 77 | 735 | 1173 | 22 | 23 | 28 |
| 15. Appropriation to contingency fund | | 30 | | 55 | | 0 | 0 |
| 16. Total disbursement out of consolidated fund (13+14+15) | 1122 | 3332 | 4933 | 6259 | 6375 | 9022 | 10625 |
| 17. Contingency fund disbursements | 4 | 11 | 1 | 20 | 16 | 0 | 0 |
| 18. Public account disbursements | 1831 | 5480 | 6311 | 8121 | 7847 | 6869 | 10197 |
| 19. Total disbursements by the state (16+17+18) | 2957 | 8823 | 11245 | 14400 | 14238 | 15891 | 20823 |
| Part C: Deficits | | | | | | | |
| 20. Revenue deficit/surplus (1-10) | 10 | 330 | 459 | 760 | 950 | 423 | 156 |
| 21. Fiscal deficit/surplus (3+4-13) | 168 | 612 | 891 | 1405 | 2180 | 2436 | 2838 |
| 22. Primary deficit/surplus (21-23) | 51 | 105 | 338 | 808 | 1364 | 1549 | 1831 |
| Part D: Other data | | | | | | | |
| 23. Interest payments (included in revenue expenditure) | 117 | 507 | 553 | 597 | 816 | 887 | 1006 |
| 24. Arrears of revenue (percentage of tax and non-tax revenue receipt) | NA | NA | 185 | NA* | NA | | |
| 25. Financial assistance to local bodies etc. | NA | 64 | 69 | 203 | 141 | | |
| 26. Ways and means advances and overdrafts (days) | 3 | 88 | 150 | 56 | 200 | | |
| 27. Interest on ways and means advances/overdraft | 1 | 26 | 1 | 0.51 | 0.81 | | |
| 28. Gross state domestic product (GSDP) | NA | 13181 | 15052 | 16922 | 18858 | | |
| 29. Outstanding debt (year end) | 3509 | 4634 | 6003 | 8030 | 9910 | | |
| 30. Outstanding guarantees (year end) | NA | NA | 1930 | 743 | 760 | | |
| 31. Maximum amount guaranteed (year end) | NA | NIL | 1930 | 743 | 760 | | |
| 32. Number of incomplete projects** | NA | NA | 94 | 492 | 578 | | |
| 33. Capital blocked in incomplete projects | NA | NA | 737 | 1517 | 1737 | | |
| As percentage of GSDP | | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) |
| Part A: Receipts | | | | | | | |
| 1. Revenue receipts | | 19.79 | 21.35 | 20.73 | 20.22 | 27.44 | 27.67 |
| (I) Tax revenue | | 7.37 | 6.75 | 7.06 | 7.15 | 7.90 | 7.70 |
| Sales tax/trade tax | | 3.69 | 3.64 | 3.81 | 3.92 | 4.29 | 4.31 |
| State excise | | 1.76 | 1.63 | 1.57 | 1.45 | 1.54 | 1.49 |
| Taxes on vehicles | | 0.51 | 0.48 | 0.50 | 0.49 | 0.53 | 0.51 |
| Stamps and registration fees | | 0.68 | 0.82 | 0.97 | 1.03 | 1.30 | 1.22 |
| Land revenues | | 0.02 | 0.02 | 0.07 | 0.04 | 0.04 | 0.04 |
| Other taxes | | 0.71 | 0.16 | 0.13 | 0.22 | 0.20 | 0.14 |
| (ii) Non-tax revenues | | 1.23 | 2.49 | 2.13 | 2.71 | 2.56 | 2.92 |
| (iii) State's share in union taxes | | 1.15 | 2.48 | 2.50 | 2.57 | 3.68 | 3.96 |
| (iv) Grants-in-aid from GoI | | 10.04 | 9.63 | 9.03 | 7.79 | 13.30 | 13.09 |
| 2. Miscellaneous capital receipts | | | | | | | |
| 3. Total revenue and non-debt capital receipts (1+2) | | 19.79 | 21.35 | 20.73 | 20.22 | 27.44 | 27.67 |
| 4. Recoveries of loans and advances | | 0.03 | 0.02 | 0.13 | 0.43 | 0.26 | 0.67 |
| 5. Public debt receipts | | 5.88 | 12.18 | 17.63 | 7.85 | 7.97 | 7.37 |
| Internal debt (excluding ways and means advances and overdrafts) | | 4.30 | 10.51 | 15.99 | 6.95 | 7.03 | 7.19 |
| Net transactions under ways and means advances and overdrafts | | 0.64 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 |
| Loans and advances from GoI | | 0.93 | 1.67 | 1.65 | 0.73 | 0.94 | 0.18 |

Contd...

| ...contd. ... | 9/11/2000- 31/3/2001 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 (RE) | 2006-07 (BE) |
|------------------------------------------------------------------------|-------------------------|---------|---------|---------|---------|-----------------|-----------------|
| GSDP-Nominal (INR crore) | 12237 | 13181 | 15064 | 17370 | 20205 | 23315 | 26888 |
| 6. Total receipts in the consolidated fund (3+4+5) | | 25.70 | 33.54 | 38.49 | 28.51 | 35.67 | 35.71 |
| 7. Contingency fund receipts | | 0.23 | 0.00 | 0.32 | 0.12 | 0.03 | 0.15 |
| 8. Public account receipts | | 38.93 | 43.64 | 43.17 | 42.19 | 32.06 | 39.98 |
| 9. Total receipts of the state (6+7+8) | | 64.8 | 77.2 | 82.0 | 70.8 | 67.8 | 75.8 |
| Part B: Expenditure | | | | | | | |
| 10. Revenue expenditure | | 22.29 | 24.40 | 25.10 | 24.92 | 29.25 | 28.25 |
| Plan | | 3.68 | 6.42 | 6.05 | 5.63 | 8.56 | 8.61 |
| Non-plan | | 18.61 | 17.98 | 19.06 | 19.29 | 20.70 | 19.64 |
| General services (including interest payments) | | 8.06 | 7.88 | 8.41 | 9.41 | 9.94 | 9.54 |
| Economic services | | 5.25 | 6.31 | 5.77 | 5.39 | 6.64 | 6.09 |
| Social services | | 8.50 | 9.75 | 9.75 | 9.42 | 11.94 | 11.83 |
| Grants-in-aid and contributions | | 0.49 | 0.46 | 1.17 | 0.70 | 0.74 | 0.79 |
| 11. Capital expenditure (capital outlay) | | 1.58 | 2.25 | 3.07 | 5.62 | 8.14 | 9.43 |
| Plan | | 0.77 | 0.86 | 2.98 | 5.32 | 7.75 | 8.92 |
| Non-plan | | 0.81 | 1.39 | 0.09 | 0.30 | 0.38 | 0.51 |
| General services | | 0.23 | 0.34 | 0.33 | 0.73 | 0.71 | 1.08 |
| Economic services | | 1.15 | 1.48 | 2.03 | 4.09 | 6.32 | 6.60 |
| Social services | | 0.20 | 0.43 | 0.71 | 0.81 | 1.11 | 1.75 |
| 12. Disbursements of loans and advances | | 0.59 | 0.64 | 0.78 | 0.90 | 0.75 | 1.21 |
| 13. Total (10+11+12) | | 24.46 | 27.28 | 28.95 | 31.44 | 38.15 | 38.89 |
| 14. Repayment of public debt | | 0.59 | 5.46 | 6.77 | 0.11 | 0.55 | 0.62 |
| Internal debt (excluding ways and means advances and overdrafts) | | 0.01 | 0.02 | 0.02 | 0.00 | 0.45 | 0.52 |
| Net transactions under ways and means advances and overdrafts | | 0.00 | 0.56 | 0.00 | 0.00 | 0.00 | 0.00 |
| Loans and advances from GoI | | 0.58 | 4.88 | 6.75 | 0.11 | 0.10 | 0.10 |
| 15. Appropriation to contingency fund | | 0.23 | 0.00 | 0.32 | 0.00 | 0.00 | 0.00 |
| 16. Total disbursement out of consolidated fund (13+14+15) | | 25.28 | 32.75 | 36.03 | 31.55 | 38.70 | 39.52 |
| 17. Contingency fund disbursements | | 0.08 | 0.01 | 0.12 | 0.08 | 0.00 | 0.00 |
| 18. Public account disbursements | | 41.57 | 41.90 | 46.75 | 38.84 | 29.46 | 37.93 |
| 19. Total disbursements by the state (16+17+18) | | 66.94 | 74.65 | 82.90 | 70.47 | 68.16 | 77.44 |
| Part C: Deficits | | | | | | | |
| 20. Revenue deficit/surplus (1-10) | | 2.50 | 3.05 | 4.38 | 4.70 | 1.82 | 0.58 |
| 21. Fiscal deficit/surplus (3+4-13) | | 4.64 | 5.91 | 8.09 | 10.79 | 10.45 | 10.55 |
| 22. Primary deficit/surplus (21-23) | | 0.80 | 2.24 | 4.65 | 6.75 | 6.65 | 6.81 |
| Part D: Other data | | | | | | | |
| 23. Interest payments (included in revenue expenditure) | | 3.85 | 3.67 | 3.44 | 4.04 | 3.80 | 3.74 |
| 24. Arrears of revenue (percentage of tax and non-tax revenue receipt) | | NA | 1.23 | NA | NA | NA | NA |
| 25. Financial assistance to local bodies etc. | | 0.49 | 0.46 | 1.17 | 0.70 | 0.00 | 0.00 |
| 26. Ways and means advances and overdrafts (days) | | 0.67 | 1.00 | 0.32 | 0.99 | 0.00 | 0.00 |
| 27. Interest on ways and means advances/overdraft | | 0.20 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28. Gross state domestic product (GSDP) | 100.00 | 99.92 | 97.42 | 93.33 | 93.33 | 0.00 | 0.00 |
| 29. Outstanding debt (year end) | | 35.16 | 39.85 | 46.23 | 49.05 | 0.00 | 0.00 |
| 30. Outstanding guarantees (year end) | | NA | 12.81 | 4.28 | 3.76 | 0.00 | 0.00 |
| 31. Maximum amount guaranteed (year end) | | NA | 12.81 | 4.28 | 3.76 | 0.00 | 0.00 |
| 32. Number of incomplete projects** | | NA | 0.62 | 2.83 | 2.86 | 0.00 | 0.00 |
| 33. Capital blocked in incomplete projects | | NA | 4.89 | 8.73 | 8.60 | 0.00 | 0.00 |

Note: - deficit, + surplus

*: Information is wanting from state government.

** : Number of incomplete projects also includes 123 works started in the month of January to March 2004 which are in progress.

APPENDIX A-3.1b

Key Expenditure Aggregates (INR crore) for 2001-2003 as per the State Government Budget Documents

| | 2001-02 | 2002-03 |
|-------------------------------------|----------------|----------------|
| Revenue expenditure | 2832.60 | 3675.59 |
| Plan | 485.73 | 965.34 |
| Non-plan | 2346.87 | 2710.25 |
| General services | 956.52 | 1187.38 |
| Economic services | 694.78 | 950.39 |
| Social services | 1117.57 | 1468.61 |
| Grants-in-aid and contributions | 63.74 | 69.15 |
| Capital outlay | 249.83 | 338.84 |
| Plan | 219.67 | 130.56 |
| Non-plan | 30.16 | 208.28 |
| General services | 29.81 | 51.40 |
| Economic services | 192.92 | 222.39 |
| Social services | 27.10 | 65.06 |
| Disbursements of loans and advances | 77.31 | 95.89 |
| Total | 3082.43 | 4014.43 |

APPENDIX A-3.1c

Reference to Codes in Table 3.31: Range of Variations in Budgetary Estimates

| I: REVENUE RECEIPTS | | | |
|---------------------|----------------------------------------------------|----------------------------------------|--------------------------------------|
| Code | 2002-03 | 2003-04 | 2004-05 |
| 0 | | | Other taxes on income & expenditure |
| 1 | Land development | Income tax (excl. municipal taxes) | Non-conventional energy resources |
| | Central plan schemes | Taxes on goods and passengers | Civil aviation |
| | Urban development | Fiscal services | Taxes on goods and passengers |
| | Civil supplies other retirement benefits | Payment for pension & | Dairy development |
| | Income tax (excl. municipal taxes) | Family welfare | Central plan schemes |
| | Centrally sponsored schemes | Others | Centrally sponsored schemes |
| | Labour and employment | Dairy development | Others |
| | Payment for pension & other retirement benefits | Land development | |
| | Non-plan grants | Non-conventional energy resources | |
| | | Central plan schemes | |
| | | Centrally sponsored schemes | |
| | | Non-plan grants | |
| 2 | Hotel receipts tax | Hotel receipts tax | Agriculture (crop husbandry) |
| | Taxes on vehicles | Taxes on vehicles | Payment for pension & other |
| | | Retirement Benefits | |
| | Land revenue | Jail | Other rural development programmes |
| | | Stationery & other materials | Other taxes and duties |
| | | Animal husbandry | Jail |
| | | Fisheries | Major and medium irrigation projects |
| | | Other agricultural programmes | Non-plan grants |
| | | Energy | Fisheries |
| | | Tourism | Medical & public health |
| | | | State plan schemes |
| | | | Animal husbandry |
| 3 | Animal husbandry | State excise | Police |
| | Minor irrigation | Taxes and duties on electricity | Central excise duty |
| | State excise | Other taxes and duties | Housing |
| | Sales tax & other business taxes | Dividends and profits | Family welfare |
| | | Public services | Customs duty |
| | | Police | Others |
| | | Education, sports, art and culture | Forestry and wildlife |
| | | Information & broadcasting | State excise |
| | | Labour and employment | Interest receipts |
| | | Forestry and wildlife | |
| | | Cooperation | |
| | | State plan schemes | |
| 4 | Municipal taxes | Municipal taxes | Wealth tax |
| | Other taxes on income & expenditure | Other taxes on income & expenditure | Water & sanitation |
| | Wealth tax | Wealth tax | Land development |
| | Customs duty | Customs duty | Mountainous regions |
| | Central excise duty | Central excise duty | Industries |
| | Taxes on goods and passengers | Sales tax & other business taxes | Overseas transport |

contd...

| ...contd.... | | | |
|--------------|-----------------------------------------------|-----------------------------------------------|--------------------------------------------|
| Code | 2002-03 | 2003-04 | 2004-05 |
| | Service tax | Service tax | State's share in central sales tax revenue |
| | Fiscal services | Water & sanitation | Education, sports, art and culture |
| | Dividends and profits | Housing | Municipal taxes |
| | Water & sanitation | Mountainous regions | Taxes on vehicles |
| | Fisheries | Industries | Hotel receipts tax |
| | Mountainous regions | Minerals & ores industries | Income tax (excl. municipal taxes) |
| | Non-conventional energy resources | Overseas transport | |
| | Village and small industries | State's share in central Sales tax revenue | |
| | Industries | | |
| | Civil aviation | | |
| | Road transport | | |
| | Overseas transport | | |
| | State's share in central Sales tax revenue | | |
| | Stamps and registration fees | | |
| | Roads & bridges | | |
| | Jail | | |
| 5 | Others | Stamps and registration fees | Sales tax & other business taxes |
| | Other taxes and duties | Public development | Labour and employment |
| | Minerals & ores industries | Medical & public health | Minerals & ores industries |
| | | Urban development | Fiscal services |
| | | Others | Service tax |
| | | | Information & broadcasting |
| 6 | Forestry and wildlife | Agriculture (crop husbandry) | Civil supplies |
| | Taxes and duties on electricity | Other rural development programmes | Stamps and registration fees |
| | Dairy development | Village and small industries | Public development |
| | Medical & public health | Civil supplies | Minor irrigation |
| | Other admn. services | | Public services |
| | Police | | Taxes and duties on electricity |
| | | | Cooperation |
| | | | Other agricultural programmes |
| 7 | Cooperation | Land revenue | Social security and welfare |
| | Information & broadcasting | Other admn. services | Energy |
| | State plan schemes | Other general services | Road transport |
| | Housing | Social security and welfare | Land revenue |
| | Stationery & other materials | Other regional programmes | Stationery & other materials |
| | Education, sports, art and culture | Major and medium irrigation projects | Village and small industries |
| | Tourism | Minor irrigation | Urban development |
| | Other agricultural programmes | Road transport | Other general services |
| | Interest receipts | | Tourism |
| | Major and medium irrigation projects | | Dividends and profits |
| | | | Other admn. services |
| 8 | Other rural development programmes | Interest receipts | Other regional programmes |
| | Public services | Civil aviation | Roads & bridges |
| | Agriculture (crop husbandry) | Roads & bridges | |
| | Other regional programmes | | |
| | Family welfare | | |
| | Public development | | |
| | Social security and welfare | | |
| | Other general services | | |
| | Others | | |
| | Energy | | |

...contd....

II: REVENUE EXPENDITURE

| Code | 2002-03 | 2003-04 | 2004-05 |
|------|---------------------------------------------|------------------------------------------|---------------------------------------------|
| 1 | Urban development | Overseas transport | Plantations |
| | Fisheries | Special programmes for rural development | Overseas transport |
| | Command area development | Rural employment | Transport tax |
| | Industries | Transport tax | Secretariat |
| | Others | Secretariat - economic services | Science, technology and environment |
| | Overseas transport | Power | Command area development |
| | Tourism | Secretariat | Urban development |
| | Foreign trade & export promotion | Stamp registration | |
| | State administrator | Fisheries | |
| | Justice administration | Soil and water conservation | |
| | Other fiscal services | Command area development | |
| | Secretariat | Alternative energy sources | |
| | Grants-in-aid and contributions | | |
| 2 | Art & culture | Village and small industries | Sales and other taxes |
| | Medical & public health | Forests | Road transport |
| | Family welfare | Others | Civil supplies |
| | Water supply and sanitation | Welfare of SCs, STs and OBCs | Other administrative services |
| | Information & broadcasting | Medical & public health | Art & culture |
| | Welfare of SCs, STs and OBCs | Other taxes | Election |
| | Labour and labour welfare | Census, survey & statistics | Welfare of SCs, STs and OBCs |
| | Social security and welfare | Election | Other fiscal services |
| | Others | Labour and labour welfare | Public works |
| | Agriculture (crop husbandry) | Public development | Pensions and miscellaneous general services |
| | Animal husbandry | Social security and welfare | Other taxes |
| | Forests | Civil aviation | Power |
| | Plantations | State excise duty | Justice administration |
| | Food, storage and warehousing | Water supply and sanitation | Mineral & ore industries |
| | Agricultural research and education | Interest payments | Fisheries |
| | Cooperation | State administrator | Grants-in-aid and contributions |
| | Major and medium irrigation | Revenue & accounts administration | Secretariat - economic services |
| | Alternative energy sources | Family welfare | Labour and labour welfare |
| | Civil aviation | | Civil aviation |
| | Science, technology and environment | | Social security and welfare |
| | Secretariat - economic services | | Others |
| | Census, survey & statistics | | State administrator |
| | Other general economic services | | Information & broadcasting |
| | State vidhaan mandal | | Public development |
| | Election | | Other programmes |
| | Land revenue | | Jails |
| | Stamp registration | | Stamp registration |
| | Transport tax | | Police |
| | Other taxes | | Medical & public health |
| | District administration | | Revenue & accounts administration |
| | Revenue & accounts administration | | Other general economic services |
| | Stationery | | |
| | Public development | | |
| | Pensions and miscellaneous general services | | |

contd...

| ...contd.... | | | |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Code | 2002-03 | 2003-04 | 2004-05 |
| 3 | General education Technical education Sports & youth services Dairy development Other programmes Mineral & ore industries Roads and bridges Road transport State excise duty Sales and other taxes Interest payments Public works Jails | Roads and bridges Urban development Other general economic services State vidhaan mandal Other fiscal services Police Dairy development Grants-in-aid and contributions Relief on account of natural calamities Art & culture Sales and other taxes Technical education Cooperation General education Tourism Sports & youth services Housing Land revenue Stationery Major and medium irrigation public works Mineral & ore industries Pensions and miscellaneous general services Other programmes Plantations Food, storage and warehousing Civil supplies Science, technology and environment Justice administration Information & broadcasting Minor irrigation Jails Other administrative services | Family welfare State vidhaan mandal Cooperation State excise duty Land revenue Major and medium irrigation District administration Alternative energy sources Dairy development Village and small industries Rural employment Animal husbandry Food, storage and warehousing Census, survey & statistics Relief on account of natural calamities Roads and bridges General education Agriculture (crop husbandry) Housing Forests Technical education Special programmes for rural development Flood control and drainage |
| 4 | Housing Flood control and drainage Power Civil supplies Appropriation for reduction or avoidance of debt Police Other administrative services | Appropriation for reduction or avoidance of debt Agriculture (crop husbandry) Road transport Flood control and drainage Animal husbandry District administration Agricultural research and education Minister assembly | Interest payments Sports & youth services Stationery Tourism Agricultural research and education |
| 5 | Special programmes for rural development Minister assembly | Minister assembly | Minor irrigation |
| 6 | Relief on account of natural calamities Minor irrigation | | Water supply and sanitation Soil and water conservation Appropriation for reduction or avoidance of debt Minister assembly |
| 7 | Rural employment Village and small industries | | |
| 8 | Soil and water conservation Land development | Land development Industries Others Foreign trade & export promotion | Land development Industries Others Foreign trade & export promotion |

contd...

...contd....

III: CAPITAL RECEIPTS

| Code | 2002-03 | 2003-04 | 2004-05 |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Fertiliser storage & warehousing Electricity Centrally sponsored scheme | LIC loans Fertiliser storage & warehousing | LIC loans Other debt General services Soil & water conservation Fertiliser storage & warehousing Minor irrigation Border area development Centrally sponsored scheme Cooperation |
| 2 | NABARD loans | RBI loans Government servants | State plan scheme NABARD loans Market loans Mountainous regions |
| 4 | GIC loans National cooperation development loans State plan scheme Central plan scheme General services Education, sports, art & culture Information & broadcasting Relief from natural calamity Mountainous regions Government servants National small saving fund | GIC loans NABARD loans National cooperation development loans State plan scheme Central plan scheme General services Education, sports, art & culture Mountainous regions National small saving fund Market loans Crop husbandry | National small saving fund National cooperation development loans Crop husbandry RBI loans Government servants Other loans |
| 7 | RBI loans Market loans | Other debt | Urban development Electricity |
| 9 | LIC loans SBI loans Other debt Non-plan Water & sanitation Housing Urban development SC/ST,OBC welfare Social security & welfare Crop husbandry | SBI loans Non-plan Centrally sponsored scheme Water & sanitation Housing Urban development Information & broadcasting SC/ST,OBC welfare Social security & welfare Relief from natural calamity | GIC loans SBI loans Non-plan Central plan scheme Education, sports, art & culture Water & sanitation Housing Information & broadcasting SC/ST,OBC welfare Social security & welfare |

contd...

| ...contd.... | | | |
|--------------------------------|-------------------------------------------------------|-------------------------------------------------------|-----------------------------------------|
| Code | 2002-03 | 2003-04 | 2004-05 |
| | Soil & water conservation | Soil & water conservation | Relief from natural calamity |
| | Animal husbandry | Animal husbandry | Animal husbandry |
| | Dairy development | Dairy development | Dairy development |
| | Fisheries | Fisheries | Fisheries |
| | Forest & wildlife | Forest & wildlife | Forest & wildlife |
| | Cooperation | Cooperation | Farm programmes |
| | Farm programmes | Farm programmes | Special programmes on rural development |
| | Special programmes on rural development | Special programmes on rural development | Land development |
| | Land development programmes | land development | Other rural development |
| | Other rural development programmes | Other rural development programmes | Other regional programmes |
| | Other regional programmes | Other regional programmes | Village & small scale industries |
| | Minor irrigation | Minor irrigation | Mineral & ore industries |
| | Border area development | Border area development | Cement & non-metal industries |
| | Village & small scale industries | Electricity | Consumer industries |
| | Mineral & ore industries | Village & small scale industries | Other loans for industries & mines |
| | Cement & non-metal industries | Mineral & ore industries | Road transport |
| | Consumer industries | Cement & non-metal industries | |
| | Other loans for industries & mines | Consumer industries | |
| | Road transport | Other loans for industries & mines | |
| | Other loans | Road transport | |
| | | Other loans | |
| IV: CAPITAL EXPENDITURE | | | |
| 1 | Fertiliser storage & warehousing | Fertiliser storage & warehousing | Other |
| | Minor irrigation | Energy | Energy |
| | Energy | Market loans | |
| | Engineering industries | Other | |
| | Science, technology and | General services environment | |
| | Housing | Loans from NABARD | |
| | General services | Electricity | |
| | Market loans | Water supply, sanitation, housing & urban development | |
| | Social security & welfare | Telecom & electronic industries | |
| | Civil aviation | Government servants | |
| | Water supply, sanitation, housing & urban development | | |
| | Water supply & sanitation | | |
| | Cooperation | | |
| | Telecom & electronic industries | | |
| | Roads and bridges | | |
| 2 | Other economic services | Flood control & drainage | |
| | SC/ST, OBC welfare | Public development | |
| | Public development | Police | |
| | Forestry and wildlife | Cooperation | |
| | Major and medium irrigation | Other economic services | |
| | Rural development | Civil aviation | |
| | | Major and medium irrigation | |
| 3 | Stationery | Forestry and wildlife | Fertiliser storage & warehousing |
| | Cooperation | SC/ST, OBC welfare | Civil aviation |

Contd...

...contd....

| Code | 2002-03 | 2003-04 | 2004-05 |
|------|----------------------------------------|-------------------------------------------|-------------------------------------------------------|
| | | Loans from RBI | |
| | | Animal husbandry | |
| | | Education, sports, arts & culture | |
| | | Social security & welfare | |
| | | Minor irrigation | |
| | | Urban development | |
| | | Cooperation | |
| | | Stationery | |
| | | Other industries | |
| 4 | Health & welfare | Health & welfare | Police |
| | Other services | Village and small industries | Stationery |
| | Crop husbandry | Repayment of loans to the centre | Forestry and wildlife |
| | Animal husbandry | Water supply & sanitation | Rural development |
| | Village and small industries | Forestry & wildlife | Flood control & drainage |
| | Other industries | Miscellaneous | Village and small industries |
| | Repayment of loans to the centre | Rural development | Other industries |
| | Urban development | | Market loans |
| | Crop husbandry | | Loans from NABARD |
| | Forestry & wildlife | | Loans from RBI |
| | Other rural development programmes | | Repayment of loans to the centre |
| | Government servants | | General services |
| | Miscellaneous | | Water supply & sanitation |
| | Education, sports, arts & culture | | Urban development |
| | Fisheries | | Forestry & wildlife |
| | Flood control & drainage | | Electricity |
| | | | Government servants |
| | | | Miscellaneous |
| | | | Social security & welfare |
| | | | Telecom & electronic industries |
| | | | Education, sports, arts & culture |
| | | | Dairy development |
| | | | Health & welfare |
| 5 | Electricity | fisheries | SC/ST, OBC welfare |
| | | Crop husbandry | Minor irrigation |
| | | Roads and bridges | Major and medium irrigation |
| 6 | Police | | Roads and bridges |
| | | | Water supply, sanitation, housing & urban development |
| | | | Crop husbandry |
| | | | Animal husbandry |
| | | | Crop husbandry |
| | | | Cooperation |
| | | | Other economic services |
| | | | Cooperation |
| | | | Public development |
| | | | Fisheries |
| 7 | Loans from RBI | | Road transport |
| 8 | Dairy development | Crop husbandry | Other services |
| | | Dairy development | |
| | | Other services | |
| 9 | Road transport | Engineering industries | Engineering industries |
| | Loans from NABARD | Road transport | Science, technology and environment |
| | National cooperation development loans | Science, technology and environment loans | National cooperation development loans |
| | Other | National cooperation development loans | Housing |
| | | Housing | Other rural development programmes |
| | | Other rural development programmes | |



Chapter 4

Poverty and Remedial Programmes

1. Introduction

The Millennium Declaration adopted by the United Nations in September 2000 included eight goals with measurable target to be achieved by 2025 in order to make living of millions of people in developing countries respectable by measurable standards. The concerns included:

- Eradicate extreme poverty and hunger
- Achieve universal primary education
- Promote gender equality and empower women
- Reduce child mortality
- Improve maternal health
- Combat HIV/AIDS, malaria and other diseases
- Ensure environmental sustainability and
- Develop global partnership for development

In principle the extreme poverty and other components of Millennium Development Goals (MDG) tend to make a vicious cycle, yet extreme poverty could be considered as the mother problem, encompassing all other problems. Therefore, it is often argued that eradication of extreme poverty should have the central focus in policy formulation.

Researchers have also emphasised definitional and measurement issues related to poverty. For example, the World Bank measures poverty by surveying population living on one and two purchasing power parity (PPP) dollar of income per day respectively. The one-dollar basis is supposed to represent extreme poverty. Besides, several countries adopt their own cut off points for poverty measurement and conduct surveys periodically to assess changes in poverty level. In order to make the poverty measurement a dynamic process, some countries prefer to

move the level of base income forward, while others adjust the base by consumer price index.

In the case of India, the Planning Commission uses National Sample Survey Organisation (NSSO) data on consumption expenditure and draws a poverty line that differentiates the poor from the non-poor. Since Independence, several attempts have been to frame the methodologies to estimate poverty at different levels. In the quest for establishing a poverty line, the Planning Commission set up a working group under the guidance of D.R. Gadgil in 1962, which recommended that the national monetary minimum monthly requirement at 1960-61 prices for each household of 5 persons (4 adult consumption units) should not be less than INR 100 in rural areas and INR 125 in case of urban areas including a 10 per cent premium for rentals. However, Dandekar and Rath (1971) in their academic studies tried to associate nutrition with poverty and calculated a daily intake of 2250 calories per person to be adequate under the Indian conditions, both in rural and urban areas; the monetary equivalent at 1960-61 prices worked out to be INR 15.20 and INR 22.60 per monthly per capita in rural and urban areas. Subsequently, a Task Force commissioned on 30 July 1977 examined the consumption patterns and standards of living across different rural and urban regions of India and came to conclude that the nutritional requirement for the rural and the urban areas were 2400 and 2100 calories respectively and the per capita per month financial requirements for meeting these calories at 1973-74 prices were INR 49.09 and INR 56.64 in rural and urban areas respectively. The Planning Commission and its subsequent reports of the Expert Groups on estimation of proportion and number of poor have adopted the above nutritional requirement as norm. The Planning Commission uses the thick sample data of NSSO, which is available at the interval of five years to estimate the number of poor and the poverty ratio

(PVR) in each state. In order to neutralise the changes in cost of living, the poverty line is updated each time taking into account the consumer price based inflation.

The estimates of number of poor and the poverty ratio (PVR) using the above method has been useful in identifying the areas of high incidence of head count poverty but it fails to identify the poorest of the poor, an essential requirement to target most deprived families. In order to meet this requirement the Ministry of Rural Development (MRD), since 1993-94 started conducting census for identifying people 'below poverty line' (BPL-census) using poverty line of each state as the criteria. However, the results of 1993-94 BPL-census were found to be at wide variance with respect to the well-established NSS based results at the aggregate level. In particular, the percentage of BPL families arrived at from this survey was almost double the corresponding figure calculated from the NSSO consumption data for the same year. Later, the Ninth Five Year Plan (1997-2002) used a mix of poverty line and exclusion criteria. Thus, the BPL Census in 1996-1997 was conducted in two stages. First, on the basis of certain exclusion criteria (i.e., if the family operates more than two hectares of land, if the household has a permanent house, any resident member of the family has annual income from salary/self-employment exceeding INR 20,000 per annum (about INR 1700/month), or if the family possess a television, refrigerator, ceiling fan, motor cycle/scooter, three wheelers, or if the family owns a tractor, power tiller, combined thresher/harvester, then the family is summarily excluded from BPL Group). In the second stage, the total consumption, both purchased from the market and home grown, are gathered from the remaining families by interview method. This, total consumption of the family is divided by the total persons in the family, treating all the members—adults, adolescents and children as identical units. This yields the per capita consumption of the family. If the per capita consumption of the family falls below the money value of the poverty line used by the Planning Commission to estimate the PVR then the family is counted as poor and included in the BPL Group. Using this method, BPL census conducted in 1997 was published and the same is discussed in subsequent sections.

For the Tenth Plan period (2002-2007), the method of identifying poor was modified once again, and the concept of poverty line and exclusion clause was ignored altogether. The methodology of BPL census 2002, therefore, allows grading of the rural households in descending order based on 13 socio-economic indicators. The state governments were allowed to select the bottom most families of the ranked households such that the total percentage of

families selected is in consonance with the number of BPL households estimated by the Planning Commission. A deviation to the extent of 10 per cent has been allowed over the Planning Commission's estimate. The cut-off points to be determined by the state governments can be at the district, block and any other level. The 13 indicators of level of living chosen are: (a) Land holding (b) Shelter (c) Clothing (d) Food security (e) Sanitation (f) Ownership of consumer durables (g) Education (h) Labour characteristics (i) Occupation category (j) Children's status (k) Indebtedness (l) Migration (m) Preference towards state assistance. For each household, the scores from these 13 indicators are summed up to get the aggregate score of the household, which can range from 0 to 52. The households are chosen for assistance according to their scores. The household with the least score is selected for assistance first. Then the household with next lowest score is selected. This way, the household with the highest score will be the last to be covered for assistance. But, this method gives due recognition to the Right to Development. However, the data collected in 2002 is not yet published because of objection raised in the Supreme Court.

The BPL census is liable to have upward bias because of vested interests and associated incentive to the local leadership. There is no clarity on norms to assign weights to each of the 13 indicators and it appears to heavily depend on the judgement of the Village Development Officer (VDO) or any other agency carrying out the census. In this context it can be argued that exclusion criteria, which is completely ignored in the new method would have provided some transparency and counter check.

Moreover, the BPL census does not provide any information about the urban poverty. Therefore, it is important to compare the results of BPL census with some measure like PVR at the aggregate level. Since the state Uttarakhand was formed in 2001, after 1999-2000, the year of 55th Round of NSSO, the Planning Commission (2002) did not calculate PVR separately for Uttarakhand. It is only after the 61st round that separate poverty estimates are made available by the Planning Commission. In order to bridge this gap, an attempt is also made to calculate the PVR for Uttarakhand using the poverty line of Uttar Pradesh and the consumption data of 55th round NSSO. In addition to this, index of deprivation has been calculated at the district and *tehsil* level using Census 2001 data to map the location of the deprived people in rural as well as urban areas. The rest of the discussion is organised as follows: Section 2 presents the poverty status of Uttarakhand based on the three methods discussed above and identifies the distribution of the poor

people. Section 3 throws light on the poverty alleviation programmes and their appraisal and Section 4 presents concluding remarks and recommendations.

2. Poverty in Uttarakhand

At the national level, during 1973 to 2000 the percentage of population living below the poverty line (PVR) has declined from 56 per cent to 27.1 per cent in rural areas and from 49.0 per cent to 23.6 per cent in urban areas. In total the PVR has gone down from 54.9 per cent to 26.1 per cent. It shows a sharp fall in the poverty ratio over time. However, the problem of poverty is more severe in rural areas than in the urban areas albeit, over the years the difference between rural and urban poverty ratio has gradually come down from 7.0 per cent in 1973-74 to 2.6 per cent in 2004-05. With 72 per cent as the rural population in India during 2001, the

share of poor residing in the rural areas can be approximately estimated as about 74 per cent. It is also clear that maximum decline in the poverty ratio has occurred during the period marked by economic reforms but Uttarakhand does not seem to have been benefited equitably.

It is important to note that the PVR is sensitive to estimates of poverty line. The line used by the Planning Commission to calculate the incidence of poverty for Uttar Pradesh (the parent state of Uttarakhand), Himachal Pradesh, Uttarakhand and India for the different reference years are presented in Figure 4.1. The data in Figure 4.1 raises several interesting questions, the most important being the extreme regional diversity in larger states and the hence the desirability of smaller states. The poverty line of Uttarakhand is way above that of Uttar Pradesh and Himachal Pradesh. It is clear that Uttarakhand has

TABLE 4.1
Pattern of Poverty Ratio for Selected States and India

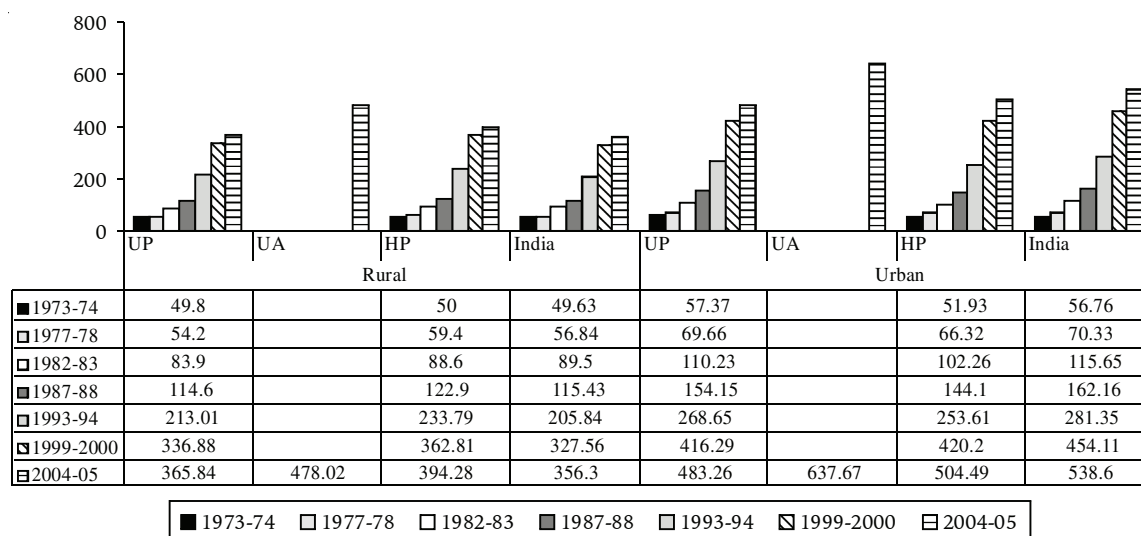
| | UP (Combined up to 1999-2000) | | HP | | UA | | India | |
|-----------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|
| | Rural | Urban | Rural | Urban | Rural | Urban | Rural | Urban |
| 1973-74 | 56.5 | 60.1 | 27.4 | 13.2 | | | 56.0 | 49.0 |
| 1977-78 | 47.6 | 56.2 | 33.5 | 19.4 | | | 53.1 | 45.2 |
| 1982-83 | 46.5 | 49.8 | 17.0 | 9.4 | | | 45.7 | 40.8 |
| 1987-88 | 41.1 | 43.0 | 16.3 | 6.3 | | | 39.1 | 38.2 |
| 1993-94 | 42.3 | 35.4 | 30.3 | 9.2 | | | 37.3 | 32.4 |
| 1999-2000 | 31.2 | 30.9 | 7.9 | 4.6 | 17.9* | 18.2* | 27.1 | 23.6 |
| 2004-05 | 33.4 | 30.6 | 10.7 | 3.4 | 40.80 | 36.5 | 28.3 | 25.7 |

Note: *Authors estimate using poverty line of UP.

Source: NIRD (2005). *Rural Development Statistics, 2003-04*. National Institute of Rural Development, Hyderabad; *Tenth Five Year Plan, Vol. II*, Govt. of India; *11th Five Year Plan, Planning Commission (2007)*; *Human Development Report, Planning Commission 2002*.

FIGURE 4.1

Movements in Poverty Line



Source: (basic data) Planning Commission, 2007.

TABLE 4.2
Comparison of Poverty Ratio and BPL Census Data for the Selected States (2004-05)

| States | Planning Commission (1993-94) | | | Planning Commission (2004-05) | | | BPL Census | |
|------------------|-------------------------------|-------|------|-------------------------------|-------|------|------------|------------|
| | Rural | Urban | All | Rural | Urban | All | Rural 1997 | Rural 2002 |
| Uttarakhand | | | | 40.8 | 36.5 | 39.6 | 36.44 | 31.48 |
| Uttar Pradesh | 42.3 | 35.4 | 40.9 | 33.4 | 30.6 | 32.8 | 36.91 | |
| Himachal Pradesh | 30.3 | 9.2 | 28.4 | 10.7 | 3.4 | 10.0 | 27.59 | |
| India | 37.3 | 32.4 | 36.0 | 28.3 | 25.7 | 27.5 | 41.05 | |

Source: (basic data) Planning Commission (2007). *Eleventh Plan (2007-12)*. NCAER Estimate using NSSO 55th and 61st Round consumption data and poverty line as estimated in Planning Commission; For Uttarakhand the 1999-2000 poverty line is same as Uttar Pradesh. http://www.uard.gov.in/bpl_list_2002/BPL_per_cent20Survey2002.htm for BPL 2002.

been at disadvantage by virtue of being part of Uttar Pradesh. However, it is surprising (and raises doubts about estimates) that the poverty line of Uttarakhand is above both the neighbouring states. This has enormously increased the estimated proportion of poor in Uttarakhand (Table 4.1). Alternatively, it can also be argued that the poverty line of Uttar Pradesh is grossly underestimated. When poverty line of Uttar Pradesh was applied to Uttarakhand data for the period of 1999-2000, the resulting poverty ratio worked out to be much below Uttar Pradesh (Table 4.1).

The results of Uttarakhand's BPL census for 1997 and 2002 are presented in Table 4.2 along with the PVR values for the selected states for the period of 1993-94 and 2004-05, which shows decline in BPL-based rural poverty in the order of 4.96 percentage points. With high rate of growth in GSDP of Uttarakhand during the recent years, the poverty would have declined further in the state. Thus, based on BPL census, incidence of poverty in Uttarakhand is lower than its parent state and all India average but much higher than the neighbouring state of Himachal Pradesh.

2.1 District Level Comparison of Poverty Estimated Using PVR and BPL Census

The BPL survey is conducted only in the rural areas. Considering rural and urban areas separately, the proportion of rural population leaving below poverty line is highest in Bageshwar with PVR of 72.12 followed by Tehri Garhwal (61.2 per cent), US Nagar (45.7 per cent). Bageshwar also tops in urban poverty with PVR of 64.38 per cent followed by Pauri Garhwal (52.58 per cent) and US Nagar (48.88 per cent) (Table 4.3). As discussed earlier, the quantum of BPL families is allowed to be 10 per cent higher than the aggregate poverty represented by the PVR. In the case of Uttarakhand the share of population that can be considered for BPL benefits cannot exceed 50.65 per cent, whereas the estimates indicate it to

be 31.5 per cent only despite the fact that BPL estimates are likely to have upward bias and therefore, other measures of deprivation need to be analysed. Moreover, there is hardly any correlation between the two measures of poverty (Figure 4.2).

TABLE 4.3
Estimated PVR (2004-05) and Results of BPL Surveys for the Districts of Uttarakhand

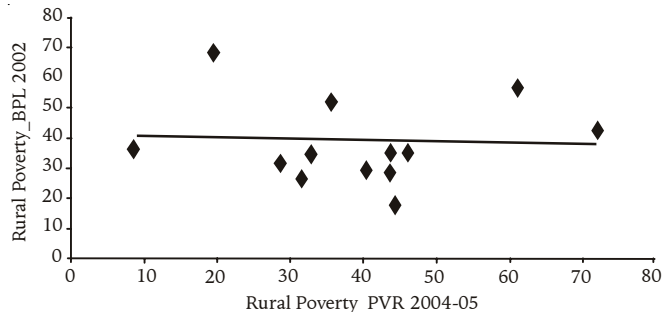
| | PVR (2004-05) | | Percentage of Families Identified for BPL Benefits (Rural) | |
|--------------------|---------------|--------------|------------------------------------------------------------|--------------|
| | Rural | Urban | 1997 | 2002 |
| Almora | 44.06 | 6.26 | 36.58 | 33.76 |
| Bageshwar | 72.12 | 64.38 | 41.63 | 31.17 |
| Chamoli | 35.71 | 28.85 | 51.69 | 44.80 |
| Champawat | 33.68 | 48.20 | 37.35 | 29.23 |
| Dehradun | 30.26 | 40.88 | 34.22 | 30.35 |
| Haridwar | 44.43 | 19.06 | 17.58 | 14.14 |
| Nainital | 40.48 | 46.49 | 30.55 | 22.69 |
| Pauri Garhwal | 31.80 | 52.58 | 26.74 | 23.96 |
| Pithoragarh | 44.32 | 29.54 | 30.81 | 29.03 |
| Rudraprayag | 8.72 | 5.28 | 37.37 | 32.48 |
| Tehri Garhwal | 61.20 | 1.38 | 56.58 | 53.33 |
| Uddham Singh Nagar | 45.70 | 48.88 | 36.68 | 29.20 |
| Uttarkashi | 19.48 | 4.67 | 68.51 | 63.97 |
| Uttarakhand | 40.65 | 36.50 | 36.44 | 31.48 |

Source: BPL Census, 1997, and 2002; http://www.uard.gov.in/bpl_list_2002/BPL_per_cent20Survey2002.htm; District-wise PVR are calculated by the author using poverty line of Uttarakhand.

Taking into account the individual base population of poor in the two methods, the spread of poor people across state can also be consistently compared. PVR based poverty spread and BPL based poverty spread in rural areas confirm to each other in districts such as Almora, Pauri Garhwal and to some extent Tehri Garhwal and Nainital (Figure 4.3). However, the BPL census results do not exactly confirm to this pattern of spread in other parts of the state. The PVR base poverty spread indicates that 18.20 per cent of rural poor live in Haridwar, whereas

FIGURE 4.2

Scatter Plot between Rural_PVR (2004-05) and Rural Poverty indicated by BPL-2002 Survey for the Districts of Uttarakhand



Source: BPL Census, 1997, and 2002; http://www.uard.gov.in/bpl_list_2002/BPL_per_cent20Survey2002.htm; District-wise PVR are calculated by the author using poverty line of Uttarakhand.

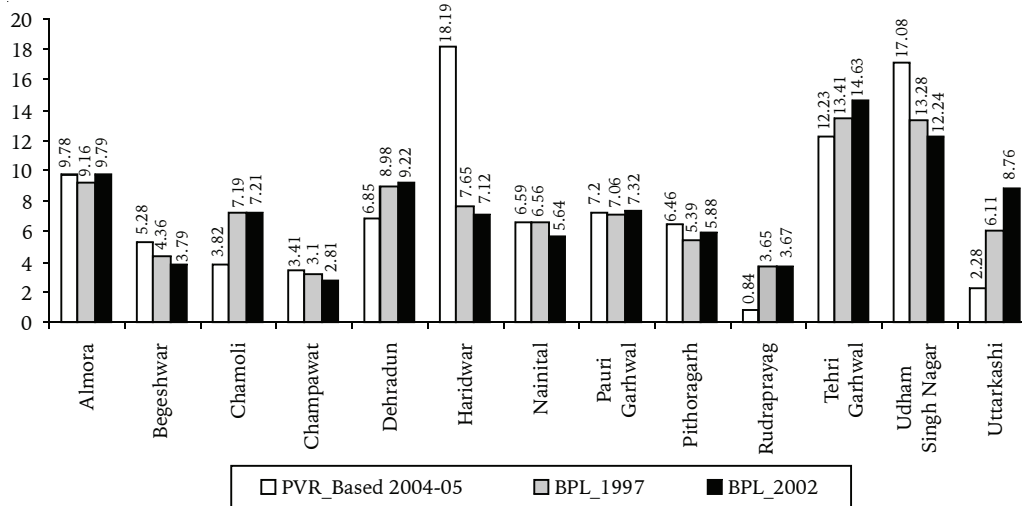
BPL census based poverty spread indicates Haridwar contributes only about 7.1 per cent of rural poor. According to BPL census maximum contributions to rural poverty come from Tehri Garhwal (14.63 per cent) and Udham Singh Nagar (12.24 per cent).

2.2 Distribution of Poor across Rural and Urban Uttarakhand using PVR 2004-05

Almost 78.5 per cent of the poor people in Uttarakhand live in rural areas. However, the distribution of rural and urban poor has wide variation across districts. Dehradun has larger number of poor living in urban areas as compared to the rural areas (Figure 4.4). Similarly, there are large number of poor concentrated in the urban areas of Nainital and Udham Singh Nagar. While poverty is a curse for mankind everywhere, urban poverty has the potential to increase crime rate. Therefore, addressing

FIGURE 4.3

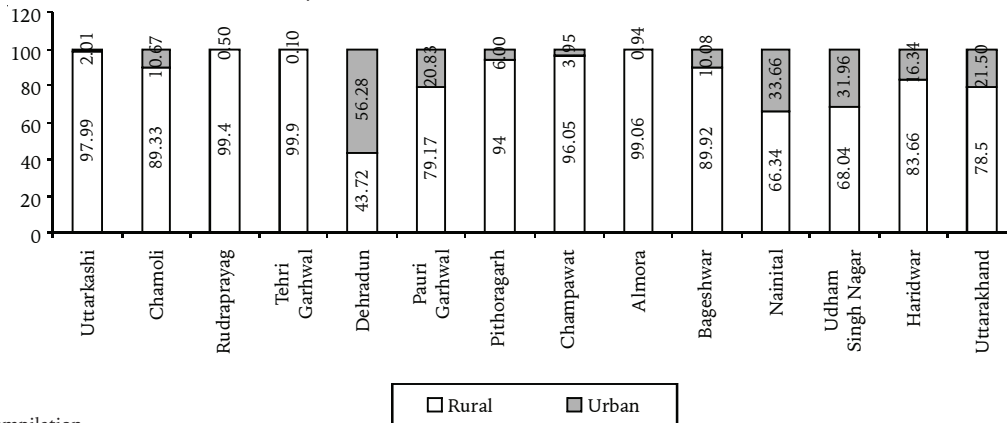
Comparison of the Distribution of Rural Poor across Districts Obtained by Three Different Methods



Source: (basic data) BPL census for Uttarakhand and Author's Estimates.

FIGURE 4.4

Distribution of Poor by Sector (Rural and Urban) across Districts of Uttarakhand



Source: Author's Compilation.

these problems is equally important. Some of the districts such as Bageshwar, Rudraprayag and Pithoragarh have extremely small urban population and therefore, almost all poor population belong to rural areas.

Haridwar and US Nagar, together constitute about 35.3 per cent of rural poor. Another 29.21 per cent of the rural poor live in Tehri Garhwal (12.23 per cent), Almora (9.78 per cent) and Pauri Garhwal (7.20 per cent). On the other hand about 61.48 per cent of the urban poor live in Dehradun and Udham Singh Nagar together. Haridwar and Nainital together, contribute another 25.18 per cent of the urban poor (Figure 4.5).

2.3 Inequality Based on PVR 2004-05 Poverty

Based on NSSO 61st round consumption data, the Gini coefficient of inequality across Uttarakhand districts is presented in Table 4.4. Clearly, rural areas of districts such as Dehradun, Nainital are among the most unequal in consumption distribution, while Rudraprayag has minimal inequality. Among the urban areas, Dehradun is highly unequal while Uttarkashi is most equitable society, rest of the districts are alike.

2.4 Inequality: Estimated Poverty and Household Assets across Districts

Uttarakhand has a very good record in terms of proportions of people having permanent houses or household availing banking facilities or possession of electrical goods (Table 4.5). If exclusion criteria of BPL 1997 condition were to be applied then only 15 per cent of the population, which did not have permanent house would have been included in the final ranking leading to

| Gini Coeff. | Rural | Urban | Total |
|-------------------|-------------|-------------|-------------|
| Uttarkashi | 0.31 | 0.16 | 0.31 |
| Chamoli | 0.18 | 0.28 | 0.21 |
| Rudraprayag | 0.14 | 0.27 | 0.14 |
| Tehri Garhwal | 0.19 | 0.23 | 0.23 |
| Dehradun | 0.26 | 0.38 | 0.35 |
| Pauri Garhwal | 0.22 | 0.25 | 0.22 |
| Pithoragarh | 0.22 | 0.23 | 0.23 |
| Champawat | 0.30 | 0.26 | 0.30 |
| Almora | 0.21 | 0.27 | 0.26 |
| Bageshwar | 0.25 | 0.27 | 0.26 |
| Nainital | 0.47 | 0.26 | 0.42 |
| Udham Singh Nagar | 0.35 | 0.26 | 0.32 |
| Haridwar | 0.25 | 0.28 | 0.31 |
| Total | 0.29 | 0.33 | 0.31 |

Source: Author's Compilation.

overall estimate of beneficiaries to no more than 15 per cent or to 25 per cent with 10 per cent margin. It can be argued, and possibly rightly, that having permanent house in hilly areas is a necessity but when this information is seen in conjunction with the fact that 56 per cent of the households avail banking facility in rural areas, doubts get reinforced. In rural Tehri Garhwal, 97 per cent households have permanent house, 57 per cent households avail banking facility, 50 per cent households own radios or transistors (Table 4.5). On an average a person holds a bank deposit of INR 7200 as against state average of INR 6200 (Table 4.6), and still 53.33 per cent households are covered under BPL 2002 or 56.9 per cent during 1997 BPL census. This is little hard to believe.

FIGURE 4.5
Distribution of Poor across Districts of Urban and Rural Uttarakhand

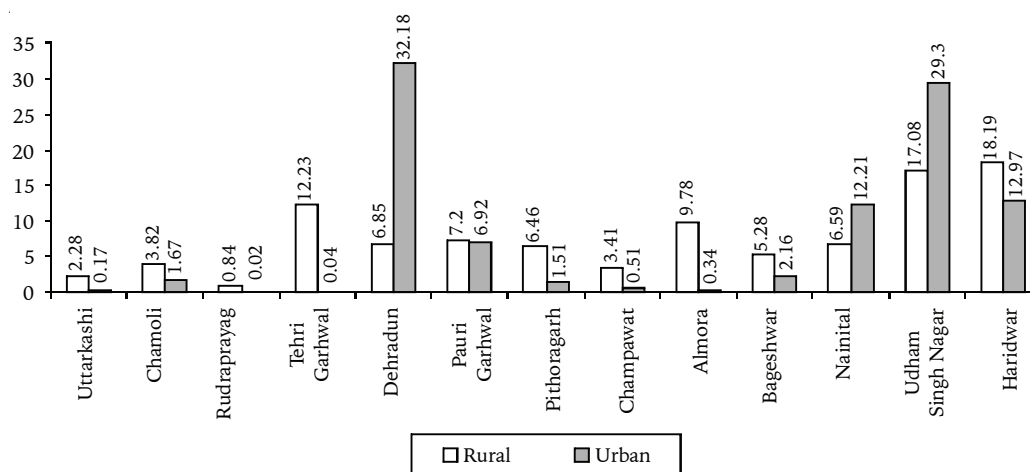


TABLE 4.5
Measures of Well-being in Terms of Percentage of Households having Permanent House and Possessing Specified Assets and Availing Banking Facility

| Districts | Rural Households | | | | | | Urban Households | | | | | |
|-------------------|------------------|-------------|--------------------------------------|-------------------|------------|------------------------------|------------------|-------------|--------------------------------------|-------------------|------------|------------------------------|
| | Permanent House | Electricity | Households Availing Banking Services | Radio, Transistor | Television | None of the Specified Assets | Permanent House | Electricity | Households Availing Banking Services | Radio, Transistor | Television | None of the Specified Assets |
| Uttarkashi | 91 | 45 | 59 | 47 | 21 | 46 | 95 | 91 | 89 | 57 | 73 | 17 |
| Chamoli | 94 | 47 | 64 | 69 | 23 | 29 | 96 | 91 | 80 | 64 | 65 | 21 |
| Rudraprayag | 97 | 46 | 56 | 60 | 23 | 37 | 99 | 93 | 81 | 62 | 67 | 12 |
| Tehri Garhwal | 97 | 43 | 57 | 50 | 24 | 44 | 98 | 97 | 82 | 59 | 70 | 16 |
| Dehradun | 73 | 71 | 55 | 38 | 51 | 24 | 92 | 94 | 75 | 42 | 83 | 8 |
| Pauri Garhwal | 97 | 52 | 66 | 61 | 36 | 31 | 94 | 95 | 84 | 55 | 77 | 13 |
| Pithoragarh | 96 | 45 | 64 | 63 | 25 | 33 | 98 | 95 | 86 | 60 | 77 | 14 |
| Bageshwar | 98 | 42 | 58 | 60 | 19 | 36 | 99 | 93 | 68 | 48 | 72 | 20 |
| Almora | 98 | 46 | 50 | 58 | 25 | 37 | 97 | 94 | 88 | 65 | 81 | 10 |
| Champawat | 91 | 33 | 51 | 57 | 21 | 37 | 78 | 86 | 72 | 45 | 72 | 16 |
| Nainital | 80 | 55 | 59 | 52 | 39 | 27 | 93 | 90 | 68 | 42 | 73 | 18 |
| Udham Singh Nagar | 57 | 60 | 52 | 37 | 43 | 15 | 79 | 84 | 58 | 33 | 65 | 15 |
| Haridwar | 72 | 47 | 47 | 41 | 36 | 20 | 90 | 90 | 66 | 47 | 77 | 8 |
| Uttarakhand | 85 | 50 | 56 | 51 | 32 | 30 | 90 | 91 | 71 | 45 | 76 | 12 |

Note: Specified assets include radio, transistor, television, car, jeep, van, motorcycle, telephone, moped and bicycle.

Source: (basic data) Census 2001.

TABLE 4.6
Per Capita Bank Deposit and Per Capita Credit from the Scheduled Commercial Banks

| Deposit and Credit Outstanding Per Capita (2001 Census) end-March 2004 | Per Capita Deposit (INR '000) | | Per Capita Credit (INR '000) | |
|------------------------------------------------------------------------|-------------------------------|-------------|------------------------------|-------------|
| | Rural | Urban | Rural | Urban |
| Almora | 6.4 | 56.5 | 0.8 | 8.7 |
| Bageshwar | 7.8 | 0.0 | 1.2 | 0.0 |
| Chamoli | 7.2 | 26.0 | 1.2 | 4.0 |
| Champawat | 7.5 | 9.5 | 1.5 | 1.9 |
| Dehradun | 8.4 | 129.5 | 2.2 | 19.8 |
| Pauri Garhwal | 5.6 | 12.4 | 0.7 | 1.8 |
| Haridwar | 7.3 | 69.0 | 2.7 | 18.2 |
| Nainital | 4.4 | 112.6 | 1.1 | 30.7 |
| Pithoragarh | 7.9 | 25.8 | 1.5 | 6.2 |
| Rudraprayag | 7.1 | 0.0 | 1.3 | 0.0 |
| Tehri Garhwal | 7.2 | 46.3 | 1.1 | 2.6 |
| Udham Singh Nagar | 3.6 | 19.2 | 1.9 | 13.8 |
| Uttarkashi | 3.3 | 43.9 | 1.1 | 8.0 |
| Uttarakhand | 6.2 | 64.2 | 1.4 | 13.3 |

Source (basic data) : RBI 2005; Census 2001.

However, for targeting the poorest of poor the BPL surveys provide superior tool as compared to simple PVR base programme. Therefore, there is need to scrutinise the survey methods and results carefully. Particularly,

exclusion criteria need to be included and scoring method should be made more transparent supported by well-defined scale in order to reduce subjectivity and application of mind. Further, the number of scoring indicator should be reduced to those, which reveal deprivation more clearly and fundamentally. Application of information technology should be made compulsory for identifying the BPL families. In particular, the BPL census directly or indirectly depends upon the information contained in the *arthik* register, which is maintained manually at the block level. Computerisation of this register can provide a check on the BPL census.

From the above discussion it is clear that identification of poor in rural (as well as urban areas) is a serious concern in Uttarakhand. The BPL census results appear to be biased due to following reasons:

- There can be no denial of the fact that the people of the hilly districts lead their life in great hardship and difficulties. Limited sources of earnings and lack of industrialisation make them vulnerable to poverty, yet possibility that the poverty level has been over reported with inclusion of a section of the rich cannot be totally ruled out.
- The potential benefits of getting included at the right place (score) in the BPL survey are very

obvious and self-explanatory. There are chances that the respondents did not provide the right information purposively and/or the interviewers did not put in the required efforts and interest to seek the right information.

TABLE 4.7

PVR, BPL-2002, and Asset Ownership of Household Assets in Rural Uttarakhand

| | <i>Rural Rank</i> | <i>0.23</i> | <i>Urban Rank</i> | <i>-0.13</i> |
|---------------|-------------------|--------------------|-------------------|---------------|
| | <i>PVR Rank</i> | <i>Assets Rank</i> | <i>PVR Rank</i> | <i>Assets</i> |
| Almora | 8 | 7 | 4 | 5 |
| Bageshwar | 13 | 13 | 13 | 8 |
| Chamoli | 6 | 8 | 6 | 13 |
| Champawat | 5 | 10 | 10 | 10 |
| Dehradun | 3 | 1 | 8 | 1 |
| Haridwar | 10 | 4 | 5 | 2 |
| Nainital | 7 | 3 | 9 | 4 |
| Pauri Garhwal | 4 | 6 | 12 | 7 |
| Pithoragarh | 9 | 9 | 7 | 9 |
| Rudraprayag | 1 | 11 | 3 | 3 |
| Tehri Garhwal | 12 | 12 | 1 | 11 |
| US Nagar | 11 | 2 | 11 | 6 |
| Uttarkashi | 2 | 5 | 2 | 12 |

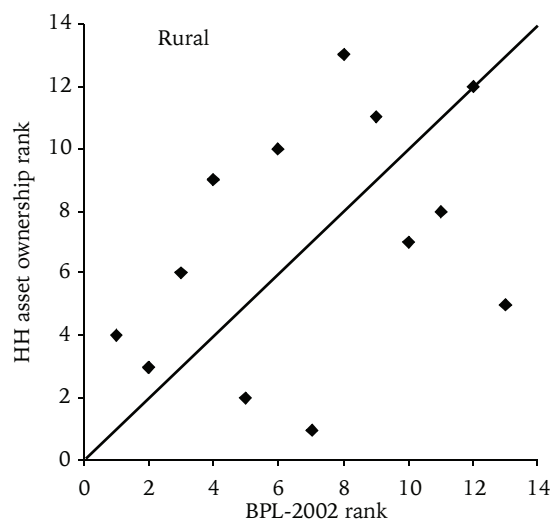
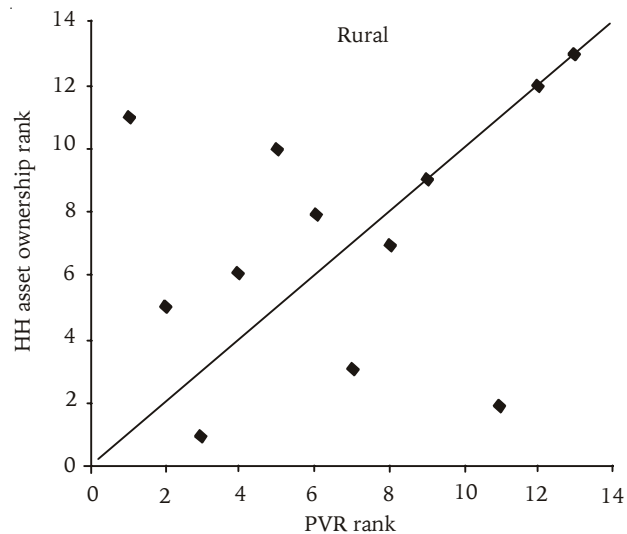
Source: Author's Compilation.

2.5 Poverty and Inequality: Comparing the Household Asset Holding with Poverty Measures

It is reasonable to assume that localities with higher share of household assets should have lesser number of poor. This means that the rank correlation between asset ownership and PVR or between asset ownership and BPL-2002 should be high if there is less intra-regional inequality and the rank correlation should be low if there is high intra-regional inequality. For the purpose of ranking the ownership of assets per household in different regions, a relative price (or weight) is ascribed to a set of selected household assets (HH assets) namely, car, scooter/motorcycle, television, bicycle and radio mentioned in the census 2001. With these values asset ownership per household is calculated for each district and *tehsil*. The regions are then ranked such that a rank of one denotes highest level of average asset ownership. Similarly the PVR and BPL-2002 are also ranked, such that a rank of one denotes the least poor region or conversely a higher rank is most poor region. The rank correlation between the PVR rank and HH asset works out to be 0.16 for the rural area and 0.20 for the urban area. The rank correlation between BPL-2002 and HH asset work out to be 0.41. These are very low values, indicating most of the scattered points to be far away

FIGURE 4.6

Scatter Plot between PVR, BPL_2002, and Asset Ownership of Household Assets in Rural Uttarakhand



from the 45-degree line in Figure 4.6 and 4.7 (see Table 4.8 for data).

In Figures 4.6 and 4.7, all points closer to the origin are desirable situations and those away from the origin along 45-degree line (towards North-east corner) represent worst conditions. All the points (read regions) which are far above 45-degree line show low asset ownership and at the same time low incidence of poverty. This clearly means while most people are above poverty line, they do not hold high value assets either. This also means that most households in these regions are similar in status but surviving, and they need help as much as the people residing in regions falling in North-east corner of Figures 4.6 and 4.7. Similarly, all the points (read

regions), which are far below 45-degree line, show regions with high asset ownership and at the same time high incidence of poverty. This means few households have very high value assets such as cars, television and motorcycles but majority have no assets or very low value assets. We can call them high inequality regions. Rural areas with equitable but low income include Uttarkashi, and Rudraprayag as per PVR ranking. High inequality regions include Haridwar, Nainital and Pauri Garhwal. Worst rural areas include Almora, Bageshwar, Champawat and Pithoragarh.

Similarly, the worst urban areas include Champawat, Chamoli, Nainital, Udham Singh Nagar and Almora (Figure 4.7). Nainital and Rudraprayag also suffer from high level of inequality, while Pithoragarh has low income and low poverty population.

TABLE 4.8

Ranking of Uttarakhand Districts Based on PVR, BPL-2002, and Asset Ownership of Household Assets

| Lower Rank is Better | Rural Uttarakhand | | | Urban Uttarakhand | |
|----------------------|--------------------------|----------|---------------|--------------------------|----------|
| | HH Assets Ownership Rank | PVR Rank | BPL-2002 Rank | HH Assets Ownership Rank | PVR Rank |
| Almora | 7 | 10 | 10 | 5 | 9 |
| Bageshwar | 13 | 12 | 8 | 8 | 3 |
| Chamoli | 8 | 11 | 11 | 13 | 10 |
| Champawat | 10 | 6 | 6 | 10 | 12 |
| Dehradun | 1 | 8 | 7 | 1 | 1 |
| Haridwar | 4 | 9 | 1 | 2 | 4 |
| Nainital | 3 | 7 | 2 | 4 | 13 |
| Pauri Garhwal | 6 | 3 | 3 | 7 | 5 |
| Pithoragarh | 9 | 13 | 4 | 9 | 2 |
| Rudraprayag | 11 | 5 | 9 | 3 | 8 |
| Tehri Garhwal | 12 | 2 | 12 | 11 | 6 |
| US Nagar | 2 | 4 | 5 | 6 | 11 |
| Uttarkashi | 5 | 1 | 13 | 12 | 7 |

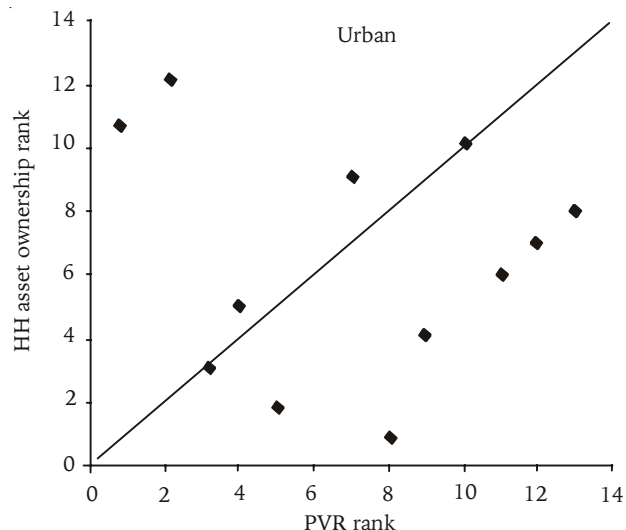
Source: (basic data) Census 2001.

2.6 Poverty and Inequality across Tehsils of Uttarakhand: Comparing the Basic Household Amenities with Ownership of Household Assets

In order to identify worst areas at micro level a similar exercise is carried out at *tehsil* level using census-2001 data. However, due to inadequacies of data it is not possible to estimate poverty level for *tehsils*. In view of this difficulty the *tehsils* have been ranked according to deprivation in basic amenities like toilet facilities, difficulty in getting water and electricity, which proxy poverty in indirect form. Principle component analysis has been used to arrive at the

FIGURE 4.7

Scatter Plot between PVR and Asset Ownership of Household Assets in Urban Uttarakhand



weights for the above variables to be applied on the share of population, which is deprived of these amenities. Thus, the highest rank indicates the most deprived *tehsil*. Ranks arrived at for the ownership of HH-asset is calculated as discussed in the previous section. The exercise has been done for both rural and urban areas and the rank correlation graph is presented in Figure 4.8. The rank correlation between HH-asset ownership and basic amenities is 0.8 in rural area and 0.38 in urban area. Clearly inequality is high in more of the urban areas as compared to rural areas. Forty-nine rural areas are finally grouped in ten categories with a rank interval of five. Similarly, 34 urban areas are grouped in seven categories with a rank interval of five. Each of the *tehsil* is plotted in Table 4.9 according to the district to which it belonged against its rank on a scale of one to ten for rural *tehsils* and one to seven for urban *tehsils*. Data in Table 4.9 also provides the corresponding rank of HH-asset ownership. Most affected rural and urban *tehsils* in terms of deprivation in basic amenities fall in shaded areas in Table 4.9. The findings can be summarised as follows:

Rural Areas

- Rajgarhi in Uttarkashi is a highly unequal society. It ranks among top five HH-asset ownership ranking and at the same time belongs to the last five in respect of the ranking based on availability of basic amenities.
- Rishikesh, Dehradun, Kashipur, Vikashnagar, Khatima, Kichha, Nainital, Haldwani, Kotdwara, Sitarganj, Haridwar, Laksar and Srinagar are among

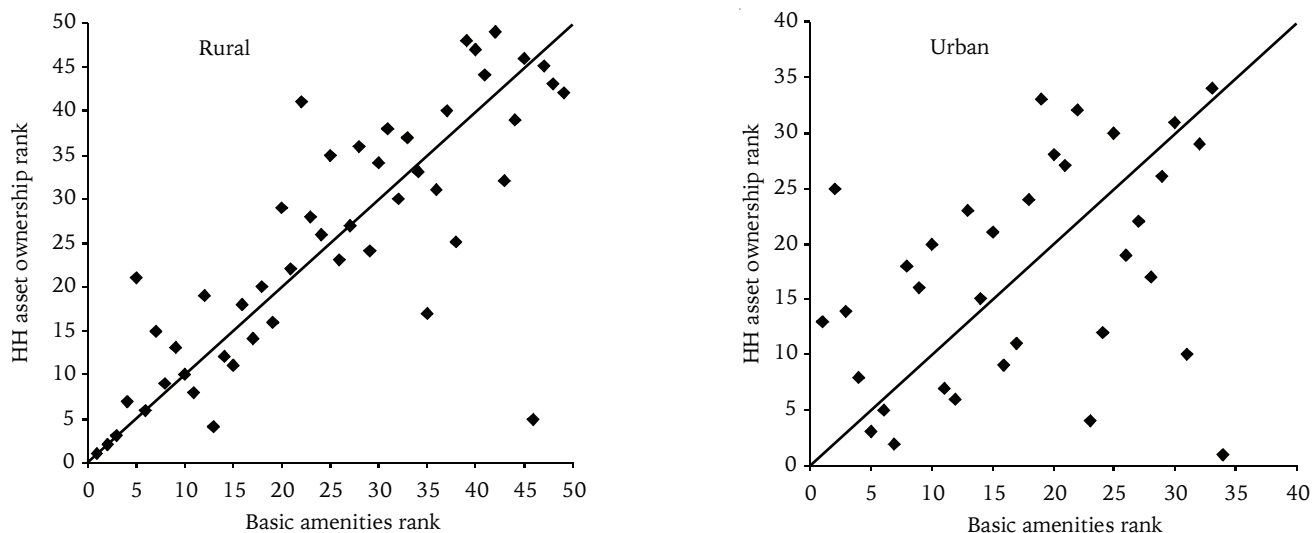
TABLE 4.9
Ranking of Tehsil in Rural and Urban Uttarakhand based on Basic Amenities (Vertical Axis) and Household (HH) Assets (Given in Bracket)

| Rank | Uttarkashi | Chamoli | Rudraprayag | Tehri Garhwal | Dehradun | Pauri Garhwal | Pithoragarh | Bageshwar | Almora | Champawat | Nainital | US Nagar | Haridwar |
|--------------|-----------------------------|---------------------------------|-----------------|---------------------------------|-------------------------------------------------|---------------------------------|-----------------|---------------|-------------------------------|---------------|------------------------------|-------------------------------------------|-----------------------------|
| Rural | | | | | | | | | | | | | |
| 1 | Bharwari (5) | | | | Rishikesh (1) Dehradun (1) Vikasnagar (2) | Thali Sain (10) Srinagar (3) | | | | | | Kashipur (1) Khatima (2) Kichha (2) | Haridwar (3) |
| 2 | | | | | | | | | | | Nainital (2) | | |
| 3 | | | | | | Kotdwara (2) | | | | | Haldwani (2) | Sitarganj (3) | Laksar (4), (3) |
| Roorkee | | | | | | | Pithoragarh (4) | | | | | | |
| 4 | | Pokhari (6), Karnaprayag (4) | | Tehri (4) | | | | | | | Kosya-Kutauli (3) | | |
| 5 | | | Ukhimath (6) | Narendra Nagar (9) | Chakrata (6) | Pauri (7) | Gangolihat (8) | | Ranikhet (5) | | | | |
| 6 | Dunda (8) | Tharali (7) | Rudraprayag (6) | Devprayag (7) | | Lansdowne (8) | Didhat (5) | | Almora (5) Bhikia Sain (8) | | | | |
| 7 | | Gair Sain (6) Chamoli (4) | | | | | | | | | | | |
| 8 | | | | Ghansali (10) | | Dhoomakot (10) | Munsiari (8) | Bageshwar (7) | | Chapawat (5) | | | |
| 9 | | Joshimath (7) | | Pratapnagar (9) | | | | | | | | | |
| 10 | Puraula (9) Rajgarhi (1) | | | | | | Dharchula (9) | Kapkot (9) | | | Dhari (10) | | |
| Urban | | | | | | | | | | | | | |
| 1 | | | | Narendra Nagar (5) Tehri (4) | Srinagar (3) | | | | Almora (3) | | | Khatima (2) Kashipur (4) | Haridwar (1) Roorkee (1) |
| 2 | Bharwari (4) | | | | Dehradun (1) Rishikesh (2) | Pauri (5) | Pithoragarh (3) | | | | | | |
| 3 | | | Rudraprayag (5) | Devprayag (7) | | Kotdwara (2) | Didhat (5) | | | | Haldwani (2) Nainital (3) | | |
| 4 | | Chamoli (6) Karnaprayag (6) | | | Vikasnagar | | | | | | | | Laksar (6) |
| 5 | Rajgarhi (7) | | | | | | | | | | | | |
| 6 | | Joshimath (7) | | | Chakrata (7) | Lansdowne (6) | | Bageshwar (4) | | Champawat (5) | | Sitarganj (4) | |
| 7 | | | Ukhimath (1) | | | | Dharchula (6) | | Ranikhet (2) | | | | |

Source: (basic data) Census 2001.

FIGURE 4.8

Scatter Plot between Basic Amenities and Asset Ownership of Household (HH) Assets in Rural and Urban Uttarakhand



the privileged *tehsils*, which fall under the 10×10 square of rural map in Figure 4.8.

- Bhatwari has relatively lesser problems in terms of basic amenities and its ownership of asset is also moderate.
- The worst hit *tehsils* include Puraula, Dhar, Dharchula, Kapkot, Pratapnagar, Joshimath, Ghansali, Dhoomakot, Munsiri and Bageshwar.

Urban Areas

- Dehradun, Khatima, Roorkee and Haridwar are among the developed *tehsils*, which fall under the 10X10 square of urban map in Figure 4.8.
- Joshimath, Chakrata, Dharchula and Lansdowne are among the most backward *tehsils*.
- *Tehsils* with highest level of inequality include Uknimath and Ranikhet.
- Narendra Nagar is among the least deprived but with small HH-asset ownership. Srinagar and Almora also to some extent fall in this category.

3. Anti-poverty Programmes in Uttarakhand

In order to fight back poverty, the Central as well as state governments have attempted a number of programmes leading to income generation. Some of these programmes lead to creation of common physical assets, such as rural infrastructure including roads; facility for drinking water; sewerages while others create self-employment, promote entrepreneurship and provide support for business to the individuals or groups. Yet,

another type of programme, mainly in the form of public intervention, includes those that reduce the cost of livelihood. Often assets creating schemes are criticised because they are one-of employment opportunities and at the same time the assets created are also not durable. However, in the case of programmes with temporary employment can also lead to sustainable development if the resultant income could be deployed in profitable activity through self help groups (SHGs). Since poverty reduction on a permanent basis requires a sustainable income stream, it is worth initiating schemes with such end results. Therefore, a meaningful classification of all such programmes can be done in to three broader categories.

- (1) Temporary employment generating programmes;
- (2) Sustainable employment and income generating programmes;
- (3) Reducing cost of livelihood programmes.

Under the first category of the programmes the prominent ones include Jawahar Rozgar Yojana (JRY)/Jawahar Gram Samridhhi Yojana (JGSY), Million Well Scheme (MWS), Employment Assurance Scheme (EAS), Food for Work Programme (FPW), National Rural Employment Programme (NREP), Rural Landless Employment Guarantee programme (RLEGP) and most recently the National Rural Employment Guarantee Programme (NREGP) under National Rural Employment Guarantee Act (2005). Sustainable employment and income generating programs include Swarna Jayanti Gram Swarozgar Yojana (SJGSY), Swashakti, Swayamsiddha projects and Joint Forest Management Programme (JFM).

However, the success of these programmes largely depends on the success of community based organisations such as self help groups (SHGs) and village forest management committee (VFMC), which work as conduit to facilitate micro-financing and management of the economic activities leading to effective transmission of the benefits of macroeconomic reforms. Finally, the programmes aimed at reducing the livelihood cost include public distribution system (PDS), Swajal Dhara (a drinking water programme to ensure safe drinking water in the rural areas), and Indira Awaas Yojana (IAY).

3.1 Temporary Employment Generating Programmes

3.1.1 Jawahar Rozgar Yojana and its Variants

JRY was launched in 1989 as a centrally sponsored programme after clubbing two programmes namely NREP & RLEGP. The main objective of this programme was to generate additional gainful employment for unemployed men and women in rural areas through creation of rural infrastructure including community and social assets. The resources under the scheme were allocated to the states/union territories on the basis of proportion of rural poor in these states/UTs to the total rural poor in the country. The special features of this programme include preference for people living below poverty line (BPL), belonging to scheduled caste (SC) or scheduled tribe (ST) community, bonded labourers, and 30 per cent reservation for women. The works under this scheme could be taken up during any part of the year as per the need felt for employment generation preferably during the lean season of agriculture cycle but could be continued as per the necessity (GoI, 1998).

On 1 January 1996, JRY was restructured again. The Indira Awaas Yojana (IAY) and Million Well Scheme (MWS), which were till then the sub-schemes of JRY were made independent schemes. The Hashim Committee (details) proposed further steps to restructure and streamline JRY. Accordingly, the programme was modified and renamed as JGSY with effect from 01.01.1999. The objective of this programme was to create demand driven village infrastructure and assets in favour of rural poor. The special features of JGSY was different from JRY in terms of the emphasis it placed on creation of durable assets, relaxation in the ratio between wage and material component to 50:50 and preferably to start them during the lean agriculture season. The allocation under the central assistance is again made according to a progressive formula i.e., on the basis of proportion of rural poor in a state to the total rural poor in the country. In each state, the districts are indexed according to the backwardness,

which is calculated on the basis of equal weight to the proportion of rural SC/ST population in the state and inverse of per capita population of the agricultural workers. Sixty per cent of the resources are supposed to be earmarked for village *panchayats* on the basis of adjusted SC/ST population and 40 per cent on the basis of adjusted total population (including SC/ST) population (GoI, 1999). JGSY is made flexible with respect to resource generation under certain strict guidelines by incorporating following provisions (Selvarajan, 2004).

- Freedom to generate additional resource for material by dovetailing JRY funds with finances from *panchayats*, cooperatives, other public bodies and community contribution.
- Freedom to select one person from among the beneficiary group as facilitator for maintenance of muster rolls, payment of wages, monitoring of quality works etc.
- The village *panchayats* need to make an annual action plan of an amount, which should be 125 per cent larger in size than the previous year.
- No works can be taken up under this scheme, unless and until it becomes a part of the annual plan.
- The *panchayat* is bestowed with the power to execute a *gram sabha* approved plan to the extent of INR 50,000 without any technical/administrative approval of the concerned government departments.
- Every village need to appoint a vigilance committee to closely monitor the programme.

3.1.2 Employment Assurance Scheme (EAS)

The EAS is also a centrally sponsored scheme with BPL families being exclusive target group with the following objectives:

- To create additional wage employment through manual work opportunities during the lean period when there is an acute shortage of wage employment.
- To create durable community, social and economic assets for sustained employment and development.

This programme was launched in October 1993 in 1778 identified blocks in 257 districts situated in the drought prone areas where revamped public distribution system (RPDS) was operational, with a sharing of expenditures between state and the Central government in the ratio of 25:75. The basis of the allocation of funds

for the district is again based on the backwardness index, calculated on the basis of the two indicators namely proportion of SC/ST population of the district and the inverse of agricultural production per agricultural worker with equal weight. Flow of funds from district to the blocks will be in the proportion of the rural population of the block. The DRDA will release 30 per cent out of the district allocation to *Zila Parishad* and 70 per cent to *Panchayat Samiti*. Like JGSY, EAS too has similar guideline (see GoI, 2005 for more details).

- The implementing agency of EAS is the *Zila Parishad* or any line department or corporation of the state governments or panchayat raj institutions at all the three levels.
- The process of execution requires:
 - Preparation of annual action plan by the implementing agency on recommendations of the *gram sabhas*.
 - The wage-material ratio of 60:40 would be strictly implemented and block will be the unit of consideration.
 - Maintenance of employment register by the *panchayat samitis*, and
 - Provision to make available the employment register to the public on demand after charging a small fee, if necessary.

3.1.4 National Rural Employment Guarantee Programme (NREGP)

The basic objective of this programme is to enhance livelihood security in rural areas by providing right to work for at least 100 man-days in a financial year through guaranteed wage employment to every household whose adult members volunteer to do unskilled manual work. The cost is shared between Central and state governments in the ratio of 75:25 for wage and material costs. In order to get employment under this scheme, one has to register his/her name in the project. The eligibility criteria for getting registration include attainment of adulthood of 18 years of age who resides in that *gram shabha* and willingness to do unskilled manual work. The Act ensures employment within 15 days of the date of registration failing which the state government is liable to pay unemployment allowance to the applicant. This programme was formally inaugurated in Uttarakhand on 22 December 2005 in selected districts.

3.1.5 Evaluation of Selected Temporary Employment Generating Programmes

Clearly, the Central as well as the state governments continue to struggle with various options available for poverty alleviation. Although some rationalisation has been done in reducing the multiplicity of programmes having the same end results, the two ongoing programmes, viz., JGSY & EAS themselves do not differ much in content and spirit, while NREGP has just started and difficult to evaluate at this stage. Even with regards to JGSY and EAS, nothing can be said with authenticity about success of these programmes due to inadequate good quality secondary data. In order to have an insight, four focus group discussions (FGD) were conducted for this study in districts of Nainital, Dehradun, Almora and Haridwar. The findings are presented below:

The programmes reach the villages: It was found that some works have been undertaken under these schemes in each of the villages surveyed.

But, no major role played in respect of poverty alleviation: A majority of the participants of the FGD strongly believed that these programmes have not played any major role towards alleviation of poverty for the economically vulnerable section of the society, despite generating employment opportunities from time to time. In other words, the benefits are short term and unsustainable.

Mishandling of the project fund: It was alleged that the funds have not been fully spent for the purpose they were meant for. Block offices have a strong tendency to collect rent out of the amount to be disbursed for the village and the village chiefs are helpless to fall in line. They were rather scared of discussing the prevalent level of corruption.

Fictitious master roles with fake entries: Majority of the participants, considered the master role to be the most fictitious record maintained in the project. Though there is a provision to see the master role by the people at a nominal fee, in reality, the common people are not aware of this provision. There are cases where the master roles included the names of those who have already migrated to urban areas in search of jobs.

Lack of transparency: In most of the cases, the *gram pradhans*, his agents or *panchayat* secretaries supervised the work. The community do not participate in the process of execution, supervision and monitoring in most of the cases and therefore, it is difficult to ensure procedural transparency.

Irregularities in the payments: In a number of cases, some workers were either not paid for all the days they had worked and/or the unit wage paid was lower than the wage rate fixed in the projects.

Insufficient number of man-days generated: Almost everybody in the FGD felt that the number of man-days of work generated in the scheme was too low.

More resources on maintenance than creating new assets: Majority of the activities undertaken are construction of *kharanja* road, installation of hand pumps, repair of old hand pumps, construction of drains, repair of old school buildings, construction of connecting roads etc. There is hardly any expenditure made on creating new assets.

Poor quality of material: The materials used in many cases are not up to the mark, which indicates lack of quality control in the construction activities.

No role of annual plans: Contrary to the provisions of the project, the concept of an annual plan was almost unknown even to the key players, namely, village *pradhans* and other representatives of the village *panchayat*.

Lack of monitoring: There is no proper monitoring of these projects at any level. A section of the beneficiaries felt that the block level officials and the village *panchayat*/

village *pradhans* were hand in gloves to promote corruption and weaken the development process.

3.2 Sustainable Income Generating Programmes and Efficacy of the Micro Financing

Like many other states, Uttarakhand too has introduced different schemes like Swarna Jayanti Gram Swarozgar Yojana (SJGSY), Swashakti Project, Swayamsiddha programme and JFM, which are expected to generate self-employment leading to sustainable poverty alleviation and economic empowerment. The aims and the objectives of these programmes are summarised in Table 4.10.

In all these programmes the SHG is taken as the key unit and the success of the programme is tightly linked to the operational success of these SHG units. The poverty alleviation programmes target the people living below poverty line or just above poverty line through SHG units, that are given loans without any mortgage and less paper work at a reasonably lower interest rate of 12 per cent per annum. Though this is not the desired rate of interest, yet it is considered as reasonable for two reasons. First, the target groups do not have any asset/assets to be used as collateral for availing loans from formal financial institutions like banks and secondly, the alternative

TABLE 4.10
Summary of Poverty Alleviation Programme

| Projects | Swarna Jayanti Gram Swarozgar Yojana (SJGSY) | Swashakti | Swamsiddha | Joint Forestry Management Programme (JFM) |
|----------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date of Commencement | 01.04.1999 | 01.04.1999 | 01.04.2003 | 01.04.1998 |
| Present Status | It is in operation at present. | The project has been wound up in March 2004. | The project is in operation. | The project has been wound up in March 2004. |
| Objectives | To increase the income of the rural poor and the other spheres of life. | To empower the women in the economic, social and and socially stronger. | To make the womenfolk economically self-sufficient. | <ul style="list-style-type: none"> • Protection of forests from fire and degradation • Sustainable livelihood for the rural mass. |
| Key Target Group | Rural families living below and just above the poverty line. | The economically and socially deprived women in the society of the rural areas. | The economically and socially deprived women in the society of the rural areas. | People living in the surrounding areas of the forest and dependent on the forest for their livelihood. |
| Preference/Priority if any | Preference to the women and SC/ST families. | Illiterate/semiliterate women of the rural areas. | Illiterate/semiliterate women of the rural areas. | No special priority group. |
| Funding Agency | The central & the state government contribute the fund in the ratio of 75:25 respectively. | The World Bank & IFAD. | The World Bank & IFAD. | The World Bank. |

Source: (1) Govt. of India (1999). *Guideline for Swarna Jayanti Swarozgar Yojana*. Govt. of India, New Delhi. (2) Govt. of India (1999). *Guideline on Joint Forestry Management Project*. Govt. of India, New Delhi. (3) Women Development Council (1999). *Guideline Swashakti Project*. Women Development Council, New Delhi.

private sources of finance (private money lenders) is about four to five times costlier.

The process of group formation and the loan distribution to SHG units is required to a step-by-step procedure as prescribed by the NABARD. The first step is to create awareness among the target group about SHG concept, using tools like formal and informal meetings and other techniques of information, education and communication (IEC). In the second step, with the help of a trained NGO, SHG units are formed in an informal way consisting of about 10-20 (or about 15) like-minded people with common set of problems. They are encouraged to create voluntary thrift on a regular basis. They use this pooled resource to make small interest bearing loans to their members. This makes them learn the art of financial intermediation, handling of resources of a size much beyond their individual capacity and importance of financial discipline and cost of finance. Such groups are encouraged to run with active participation of all its members for at least 2-3 months smoothly in terms of conducting meetings at a regular interval, collecting savings and extending internal loans. If all these activities run smoothly then the said SHG is considered to be operating as per the norms. In the third step, a savings account of the SHG unit is opened in a nationalised bank. Six months after opening of the account, a SHG unit can apply for a need based loan, provided it satisfies the conditions laid down, which includes holding of regular meetings, collecting regular savings, disbursement of internal loan on a regular basis and return of the intra-group loans in time. The groups are entitled for a loan amounting up to four times of the total savings of the

group subject to maximum of INR 25,000 in the first round, which can be used for internal loaning at an interest rate of their choice. The bank loan amount can be increased in subsequent rounds depending on the performance of the group.

3.3 Status of Self Help Groups (SHGs)

In all the three programmes of SJGSY, Swashakti Project and Swayamsiddha, SHGs are considered as the key units and therefore, evaluation of the SHGs in Uttarakhand is important. As of 31 March 2005, about 16.18 lakh SHGs were linked to the banks in India, which means, on an average one SHG for every 660 persons (Table 4.11). Considering the fact that most of the SHGs are operating in rural India, where 72 per cent of the population live, the population per SHG would appear to be just about 475 and in terms of number of 5-unit families, it would work out to be 95 families per SHG, which is a remarkable number given the fact that desirable number of members per SHG is 15-20. Thus, roughly, about one-fifth of the target members are already linked to this movement.

The leading states in this movement include Andhra Pradesh, Karnataka and Himachal Pradesh, while the concentration of SHGs in Uttarakhand is far thinner. At present, more than 25,000 SHGs are reported to be operative in Uttarakhand (informal discussion with NABARD officials), out of which 14,043 were linked to the banks till 31 March 2005 with outstanding loan in the order of INR 5761 crore (Table 4.11).

Whether the high concentration of SHGs in Andhra Pradesh, where almost every family appears to have been

TABLE 4.11
Concentration of Bank-linked SHGs and Bank Loans to SHGs across Selected States—2005

| States | Total Population (lakh) 2004 | Number of SHGs as on 31.03.05 | SHG Share in India | Population/SHG | Estimated Number of 5-unit Rural Families per SHG* | Loan Distributed by the Banks (INR lakh) (31.03.05) | Loan Outstanding per SHG (INR) | Annual Growth in SHGs during 2004-05 | Annual Growth in Loan during 2004-05 |
|------------------|------------------------------|-------------------------------|--------------------|----------------|----------------------------------------------------|-----------------------------------------------------|---------------------------------|--------------------------------------|--------------------------------------|
| Uttarakhand | 88.25 | 14043 | 0.87 | 628 | 90 | 5761 | 41020 | 28.74 | 56.74 |
| Uttar Pradesh | 1743.8 | 119648 | 7.39 | 1457 | 210 | 31558 | 26376 | 51.05 | 83.86 |
| Himachal Pradesh | 62.49 | 17798 | 1.10 | 351 | 51 | 5650 | 31747 | 34.55 | 79.35 |
| Karnataka | 543.7 | 163198 | 10.08 | 333 | 48 | 55015 | 33711 | 57.12 | 93.98 |
| Andhra Pradesh | 778.73 | 492927 | 30.46 | 158 | 23 | 274609 | 55710 | 27.84 | 58.88 |
| Maharashtra | 1003.09 | 71146 | 4.40 | 1409 | 203 | 22341 | 31402 | 84.63 | 96.65 |
| India | 10682.14 | 1618456 | 100.00 | 660 | 95 | 689846 | 42624 | 49.98 | 76.69 |

Note: * Based on assumption that 72 per cent population lives in villages and all SHG exist in rural areas only.

Source: (basic data) *Statistical Abstract of India, 2004*; NABARD (2005). *Progress of SHG-Bank Linkage in India, 2004-05*.

TABLE 4.12
Distribution of SHGs in Uttarakhand (As on 31.03.2005)

| | Rural Population (Estimate) | No. of SHGs Linked to Bank | | Loan Given (INR lakh) | | Annual Growth in SHGs during 2004-05 | Annual Growth in Loan during 2004-05 | Population/ Linked Groups | Estimated Number of 5-unit Rural Families per SHG | Unit Loan (INR) | |
|---------------|-----------------------------|----------------------------|-------|-----------------------|-------|--------------------------------------|--------------------------------------|---------------------------|---------------------------------------------------|-----------------|------------|
| | | Number | Share | INR lakh | Share | | | | | Per group | Per Member |
| Almora | 8.41 | 621 | 4.42 | 440 | 7.64 | | 247.5 | 966 | 193 | 70837 | 4720 |
| Bageshwar | 4.81 | 269 | 1.92 | 191 | 3.32 | | 220.8 | 1277 | 255 | 71078 | 4740 |
| Chamoli | 4.72 | 370 | 2.63 | 275 | 4.78 | | 22.3 | 912 | 182 | 74378 | 4960 |
| Champawat | 2.86 | 296 | 2.11 | 196 | 3.41 | | 175.6 | 689 | 138 | 66284 | 4420 |
| Dehradun | 9.32 | 5205 | 37.06 | 1585 | 27.51 | | 11.7 | 128 | 26 | 30446 | 2030 |
| Haridwar | 15.54 | 421 | 3.00 | 269 | 4.67 | | 78.3 | 2635 | 527 | 63943 | 4260 |
| Nainital | 7.87 | 1700 | 12.11 | 656 | 11.39 | | 38.2 | 331 | 66 | 38588 | 2570 |
| Pauri Garhwal | 9.90 | 686 | 4.88 | 353 | 6.13 | | 82.1 | 1030 | 206 | 51472 | 3430 |
| Pithoragarh | 6.08 | 853 | 6.07 | 384 | 6.67 | | 118.8 | 509 | 102 | 45041 | 3000 |
| Rudraprayag | 3.65 | 290 | 2.07 | 64 | 1.12 | | 45.7 | 898 | 180 | 22207 | 1480 |
| Tehri Garhwal | 9.69 | 1249 | 8.89 | 529 | 9.18 | | 123.6 | 554 | 111 | 42346 | 2820 |
| US Nagar | 12.98 | 1094 | 7.79 | 595 | 10.34 | | 96.3 | 847 | 169 | 54424 | 3630 |
| Uttarkashi | 4.17 | 989 | 7.04 | 222 | 3.86 | | 13.8 | 301 | 60 | 22457 | 1500 |

Source: Projected on the basis of the back data, Annual Report of NABARD, 2004-05.

attached to this movement has led to any significant improvement in poverty reduction is a debatable matter and only after new data on poverty ratio or the BPL survey is available, comments could be made. However, looking at the incidence of high debt related suicide cases reported from rural Andhra Pradesh, it is important to actually assess the effectiveness of SHG movement in Uttarakhand. The burden of loan per SHG is the highest in Andhra Pradesh and Uttarakhand is not much far behind.

It may be noted, that debt has been found to bear the highest risk factor in suicide cases (Mishra, 2006; Shiva, 2004). During the recent years, the growth in SHGs have been very high in Maharashtra, Karnataka and Uttar Pradesh but the loan per SHG remained at the lower side unlike Uttarakhand, where the volume of loan has increased faster than the number of SHGs (Table 4.11).

The district-wise data on SHGs presented in Table 4.12 indicates that around half of the total bank-linked groups are drawn from two districts, namely, Dehradun and Nainital and around 40 per cent of the total loan has been disbursed in these two districts. Table 4.12 also indicates that unit loan per group as well as per member varies widely across the districts. The rural families linked per group widely vary from 26 in Dehradun to

527 in Haridwar (Table 4.12) but in terms of loan concentration, Haridwar has almost double loan per unit compared to Dehradun. The highest concentration of loan is in Almora district with INR 4720 per unit. Other districts with relatively higher loan concentration include Bageshwar, Champawat, Chamoli and Haridwar. These districts have recorded relatively much higher rate of annual growth in disbursement of loan to the SHGs during 2004-05.

Importantly, the distribution of SHGs is broadly at odd with the distribution of poor across districts. The highest percentage share of poor resides in Haridwar, but it has the least concentration of SHGs. However, the distribution of SHGs in Nainital, Dehradun, Almora is in conformity with the status of poverty (Table 4.4 and Table 4.12).

3.4 Performance Evaluation of SHGs in Uttarakhand

According to the data compiled in NABARD (2005), only 5.6 per cent of SHGs in Uttarakhand were given repeat loans during 2004-05 as against 39.9 per cent in Andhra Pradesh, 32.3 per cent in Tamil Nadu, 23.3 per cent in West Bengal, 19.5 per cent in Himachal Pradesh and 15.0 per cent in Maharashtra. Further, the ratio of SHGs having repeat loans to the new SHGs linked to banks (Ratio-RN) in Uttarakhand was also among the

smallest. While Ratio-RN was of the order of 1.43 in Andhra Pradesh, 0.56 in Himachal Pradesh and 0.48 at the all-India level, it was just about 0.19 in the case of Uttarakhand. These results call for caution and scrutiny. Particularly, in view of the fact that individual loan size is fairly high in the case of Uttarakhand (Tables 4.11 and 4.12), the possibility that new SHGs were being created to cover those individuals who took loans for consumption and were not able to save the required amount cannot be overlooked.

The data on performance of SHGs under SJGSY across the blocks of Dehradun district indicate that the share of SHGs involved in income generating activities (IGA) during 2004-05 was just about 23 per cent (Table 4.14).

TABLE 4.13

Performance of SHG Movement across Selected States: Repeat Loans

| State | Share in Number of SHGs | Share in Loans Disbursed | Share of SHGs going for repeat Loan over their Population during 2003-04 | Ratio-RN* during 2004-05 |
|------------------|-------------------------|--------------------------|--------------------------------------------------------------------------|--------------------------|
| Uttarakhand | 0.87 | 0.84 | 5.59 | 0.19 |
| Uttar Pradesh | 7.39 | 4.57 | 5.60 | 0.11 |
| Himachal Pradesh | 1.10 | 0.82 | 19.47 | 0.56 |
| Karnataka | 10.08 | 7.98 | 11.94 | 0.21 |
| Andhra Pradesh | 30.46 | 39.81 | 39.92 | 1.43 |
| Maharashtra | 4.40 | 3.24 | 14.99 | 0.18 |
| Tamil Nadu | 13.64 | 24.32 | 32.32 | 0.69 |
| Kerala | 3.7 | 3.62 | 10.62 | 0.13 |
| West Bengal | 5.73 | 1.83 | 23.56 | 0.30 |
| Orissa | 7.62 | 3.65 | 14.4 | 0.24 |
| India | 100 | 100 | 23.92 | 0.48 |

Note: *the ratio of SHGs having repeat loans to the new SHGs linked to banks.

Source: (basic data) Annual Report of NABARD, 2004-05.

TABLE 4.14

Block-wise Participation in IGAs at Dehradun District (Year 2004-05)

| Blocks | Total Number of SHGs Formed | Number of SHGs Involved in IGA | Share of SHGs Involved in IGA |
|----------------|-----------------------------|--------------------------------|-------------------------------|
| Chakrata | 247 | 51 | 20.64 |
| Kalsi | 161 | 38 | 23.60 |
| Vikashnagar | 469 | 134 | 28.57 |
| Sahaspur | 416 | 81 | 19.47 |
| Doiwala | 334 | 60 | 17.96 |
| Raipur | 159 | 47 | 29.56 |
| Total Dehradun | 1786 | 411 | 23.02 |

Source: Office of District Rural Development Agency, district Dehradun, 2004-05.

3.4.1 Field Analysis of SHGs in Uttarakhand

Clearly, there are problems with SHG movement in Uttarakhand and therefore, the likelihood of the success of all those programmes where involvement of SHG unit is central, are doubtful. In order to get more insight and to identify the problems and prospects of the possible contributions of SHG campaign towards poverty alleviation and economic empowerment of the most vulnerable section of the society, a small survey of 49 SHGs spread over 5 blocks in 2 districts of Dehradun and Almora was conducted during July-August 2005. The distribution of the groups surveyed according to the size of membership is presented in Table 4.15. Most of the SHGs are having 10-19 members, which is the ideal size recommended by NABARD. Only around 10 per cent of SHGs are having less than 10 members in the groups.

Although, the size of the survey was small and localised in two districts, the findings do confirm broadly the problem pointed out earlier and it can guide to take corrective measures by the state government.

TABLE 4.15

Distribution of the Groups Surveyed

| Districts | Blocks | Number of SHGs Surveyed | Number of people interviewed | Number of Groups | | | Total |
|-------------|-------------|-------------------------|------------------------------|------------------|-------|------|-------|
| | | | | < 10 | 10-19 | > 20 | |
| Dehradun | Vikashnagar | 8 | 113 | 2 | 6 | 0 | 8 |
| | Sahaspur | 8 | 116 | 2 | 6 | 0 | 8 |
| | Kalsi | 9 | 144 | 0 | 9 | 0 | 9 |
| Almora | Dwarahat | 12 | 109 | 2 | 10 | 0 | 12 |
| | Howalbaugh | 12 | 104 | 0 | 12 | 0 | 12 |
| State total | | 49 | 586 | 6 | 43 | 0 | 49 |

Source: Field survey, 2005.

Most loans are taken for meeting consumption needs. About 79 per cent of the loans are used for consumption purposes. Internal loaning is a common phenomenon, yet about 40 per cent of the members did not avail the loan facility even for a single time (Table 4.16). Another important finding is that the group enterprise is still not a common activity in the state. Most of the loans are taken on individual basis. During the field visits, it was also observed that the major reasons behind this include the following:

- A sizeable section of the group members do not know how to use the money except for consumption purpose.

- The influential members in the groups do not allow others to borrow from the SHGs.
- A section of members who get loan do not repay it back in time.
- Lack of trust among the members prevails.

The above problems breed misunderstanding among the group members and ultimately many of them leave the group (Table 4.17). However, in order to maintain the group strength, new members are added. The results indicate that in 66.7 per cent to 100 per cent of groups, more than 60 per cent of the original members were replaced by new memberships. The groups suffer losses and depletion in membership. In the surveyed sample 14.3 per cent of the groups have experienced depletion in membership. This reflects lack of training and the awareness about the driving force behind success of SHG movement elsewhere.

TABLE 4.16

Distribution of Loans according to Purpose and across Members

| Indicators | Dehradun | Almora | Total |
|-----------------------------------------------------------------|----------|--------|-------|
| Number of groups interviewed | 25 | 24 | 49 |
| Number of people interviewed | 373 | 213 | 586 |
| Percentage of total loan used for consumption | 78 | 81 | 79 |
| Percentage of members who have never availed loan | 48 | 25 | 40 |
| Percentage of members who have availed loan for group activity* | - | 8 | 3 |

Note: * Only one group of 16 members in the sample undertook group activity.

Source: Field survey, 2005.

TABLE 4.17

Change in SHG Membership

| | Total Number of Groups | Share of Groups where Membership Decreased | Share of Groups where Membership Increased | Groups where more than 60 per cent Members have been Inter-changed | |
|--------------|------------------------|--------------------------------------------|--------------------------------------------|--------------------------------------------------------------------|-------------|
| | | | | Nos. | per cent |
| Dehradun | Vikashnagar | 8 | 25.00 | 0 | 6 75.0 |
| | Sahaspur | 8 | 25.00 | 0 | 6 75.0 |
| | Kalsi | 6 | 0.00 | 0 | 9 66.7 |
| Almora | Dwarahat | 12 | 16.67 | 0 | 12 100.0 |
| | Howalbaugh | 12 | 8.33 | 0 | 11 91.7 |
| Total | 49 | 14.29 | 0 | 44 | 89.8 |

Source: Field survey, 2005.

Animal Husbandry as the most Preferred Economic Activity

There is fairly a long list of economic activities against which members have taken loans. This includes animal husbandry, poultry, floriculture, marketing of spices, diversification of agriculture, general shops and workshops for cycle repairing (Table 4.18). However, among the ongoing IGAs, the most popular activity is animal husbandry. As noted earlier, group enterprise is still not a common activity in the state. During the fieldwork only one example of group enterprise was found at Railapali village in Almora district (Table 4.18).

TABLE 4.18

Distribution of IGA according to the Type of Activities

| | Dehradun | | Almora | | Total | |
|--------------------------------|----------|-------|--------|-------|--------|-------|
| | Number | Share | Number | Share | Number | Share |
| Animal husbandry | 24 | 42.10 | 18 | 34.61 | 42 | 38.53 |
| Poultry | 4 | 7.02 | 9 | 17.31 | 13 | 11.92 |
| Floriculture | 4 | 7.02 | 0 | 0 | 4 | 3.66 |
| Fish culture | 4 | 7.02 | 0 | 0 | 4 | 3.66 |
| Diversification in agriculture | 13 | 22.80 | 0 | 0 | 13 | 11.92 |
| Marketing network of spices* | 0 | 0.00 | 13 | 25.00 | 13 | 11.92 |
| Shops | 8 | 14.04 | 12 | 23.08 | 20 | 18.35 |
| All | 57 | 100 | 52 | 100 | 109 | 100 |

Note: * There was only one group of Swashakti involved in it collectively consisting of 16 members (three members of this group are silent and they do not take much interest).

Source: Field survey, 2005.

SJGSY is Least Intensive in Economic Activity

As noted above, participation in income generating activities with the help of group finance is not a wide spread phenomenon in the state. More importantly, the government sponsored SJGSY has performed worst as compared to other projects (Table 4.19). On an average, around 38.6 per cent of the total members of the Diversified Agriculture Support Programme (DASP) and 36 per cent of the Swashakti Project participated in some or other form of income generating activities with the help of the group loan. On the other hand, only about 8.5 per cent of SJGSY members participate in IGA. This is extremely poor a situation in view of the fact that SJGSY is the only programme, which exclusively targets SC/ST families.

TABLE 4.19

Part-A: Income Generating Activities in the Groups

| Type of Project to which the Groups are Associated | Total Number of Members | Number of Members Involved in Income Generating Activities | Share of Members Involved in Income Generating Activities |
|----------------------------------------------------|-------------------------|------------------------------------------------------------|-----------------------------------------------------------|
| SJGSY | 378 | 32 | 8.46 |
| Swashakti Project | 125 | 45 | 36.00 |
| DASP | 83 | 32 | 38.55 |
| Total | 586 | 109 | 18.60 |

Note: Out of 16 members involved in group-enterprise, 13 active members are included in the above list.

Source: Field survey, 2005.

The failure of SJGSY amounts to the failure of anti-poverty programme. The survey results revealed that around 58 per cent of the total group members are from the above poverty line (APL) families (Table 4.21). Even in case of SJGSY, around 14 per cent of the beneficiaries are from the APL families. A similar observations has been made in the "Concurrent Evaluation of SJGSY" conducted by the Central Ministry of Rural Development in the year 2002 (see GoI, 2003).

TABLE 4.20

Percentage of Total Beneficiaries Belonging to BPL Families

| | Percentage of Total Beneficiaries Belonging to BPL Families | | |
|----------|-------------------------------------------------------------|----------------|-------|
| | SJGSY | Other Projects | Total |
| Almora | 92 | 59 | 62 |
| Dehradun | 84 | 62 | 57 |
| Total | 86 | 61 | 58 |

Source: Office of District Rural Development Agency, District Dehradun, 2004-05.

Not surprising, the survey team came across some of the highly successful women entrepreneurs, but most of them were attached to non-SJGSY groups and from APL families. Table 4.21 presents details of such case studies.

A close look at the cases presented in Table 4.21 clearly indicate that a member has to arrange at least half of the total investment on her own. However, groups led by some influential person, could get most of the required investment financed through bank. Clearly, all such programme are not useful for BPL people, who cannot arrange the seed money and the working capital.

TABLE 4.21

Details of Selected Successful Case Studies through Sustainable Income Generating Programmes

| Case Number | 1 | 2 | 3 | 4 |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | X1 | X2 | X3 | G1 |
| Poverty status | APL | APL | APL | |
| Village | Chandra Dour | Chandra Dour | Garapani | Sarkar Ki Ali |
| District | Almora | Almora | Almora | Almora |
| Type | Single | Single | Single | Group |
| Self help group | Ganga Swashakti | Ganga Swashakti | Diksha Swashakti | Jagriti Swashakti |
| Project | Swashakti | Swashakti | Swashakti | Swashakti |
| Activity | Animal husbandry | Animal husbandry | General stores | Marketing spices |
| Total initial investment | 11,000 | 10,000 | 5,000 | 52,500 |
| Loan from group | 5,000 | 4,000 | 2,000 | 42,500 |
| Loan from others | 5,000 | 5,000 | 3,000 | 5000 |
| Self finance | 1,000 | 1000 | | 5000 |
| Avg. monthly income from the activity | 1200 | 1500 | 800 | 6000 |
| Comment/observation | The member feels herself a proud entrepreneur. She has already repaid all the loans, which she took to buy the buffalo and more importantly she has earned enough to buy one more buffalo of her own. | The member has already repaid most of the loan and the activity had become important alternative source of income for her family. More importantly, the member has easier access to emergency finance, which has brought her more prestige in the family. | The shop has given economic stability to the family of the member and she intends to develop this shop as one of bigger shops in the locality. | The village chief herself is the group leader. The group has got a grinding machine worth INR 16,500 and they can handle more than 30 kg. of spices every day. |

Note: * The Swashakti Project is over but some of the SHGs continue to operate.

Source: Field survey, 2005.

TABLE 4.22
Group Formation Process in SJGSY (Followed vs. Recommended)

| <i>Standard Steps Laid Down by NABARD</i> | <i>Steps Followed during Implementation</i> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Selection of NGOs. • Training of NGO workers. • Motivation & awareness campaign in the rural mass. • Formation of SHGs through informal way. • Selection of group leaders. • Let the group work for 2-3 months smoothly. • Before opening of an account the bank should ensure that the group has already held 2-3 meetings with participation of all the members and that all the members were aware of the benefits of the group. • Opening account in the bank. | <ul style="list-style-type: none"> • Groups were formed by the village development officials without any motivation and campaign. • Leaders were selected without any/proper consent of all the members. • NGOs were selected and the groups were handed over to them without any proper training of the NGO workers. |

Source: NABARD training manual (2005); Field survey, 2005.

There is no doubt that the income generating activities with the help of the SHGs raised hopes in certain cases. These activities help women specially, in acquiring economic and social empowerment. However, in most of the situations the benefits do not reach the poorest of the poor. Unforeseen consumption expenditure has become the major purpose of internal loaning. Therefore, the basic goals of economic empowerment and poverty alleviation get defeated.

3.4.2 Causes of Problems to SHG Movement in Uttarakhand

The field survey revealed that many members joined the groups just for getting loan without cultivating a habit of saving. They leave the groups in between even without repaying the loan, making the group vulnerable. Such groups are compelled to look for and include other persons to substitute the outgoing member, but often the new incumbent joining the SHG too has similar intentions. This reflects an unhealthy and negative attitude of the people towards the SHG movement, which has developed mainly due to faulty implementation of the programme and lack of awareness among the people about the basic objective and purpose of the SHGs.

Deviations from Standard Method of Formation of SHGs

In most cases, the groundwork for group formation is not carried out as per the prescribed norm (Table 4.22).

As a result, the base itself has become weak and in the process the regular activities like savings, meetings, internal loaning, repayment of the loan in time etc., have been affected. These activities have not been done, the way it should have been. Among the projects, the SJGSY appears to have been affected and abused the most.

Lack of Awareness

One of the most important activities of the SHG movement is to hold regular meetings of its members and run awareness campaigns. The field survey carried out indicated lack of all these aspect as almost 78 per cent of groups did not meet regularly (Table 4.23). In many villages instead of regular meetings the village development officers (VDO or village secretary) or NGO workers collect monthly savings through door-to-door visits. It is also reported during informal discussions that the registers are maintained by the VDOs or NGO workers and for getting the signatures/thumb impression the registers are sent to the group members at their residence.

Six-monthly audit of accounts is accomplished in about 86 per cent of the groups but only a few members are aware of this and its implications. Thus, the decision-making, and finance management process are in the hands of a few influential members or the functionaries like VDOs or NGO workers. In this context, the opinion (in Hindi) of a village *sabhapati* (president) who wanted to remain anonymous, is worth quoting:

TABLE 4.23
Factors Indicating Awareness and Internal Consistency about Group Activities

| Indicators | Dehradun | Almora | Total |
|-------------------------------------------------------------------------------------------------|----------|--------|-------|
| Number of groups interviewed | 25 | 24 | 49 |
| Groups which have got a properly framed bye laws | 32.0 | 37.5 | 34.7 |
| Groups where meeting are held regularly | 24.0 | 20.8 | 22.4 |
| Groups where more than half of the members attend meetings regularly | 12.0 | 8.3 | 10.2 |
| Records are maintained properly | 84.0 | 87.5 | 85.7 |
| Groups where at least 25 per cent of the members are aware of audit done in the group | 8.0 | 4.2 | 6.1 |
| Groups where more than 50 per cent of the members are aware of the points mentioned in agenda | 8.0 | 4.2 | 6.1 |
| Groups which discussed other issues beyond savings and internal loaning in more than 3 meetings | 12.0 | 4.2 | 8.2 |
| Groups where audits have been done at least once in 6 months | 68.0 | 58.3 | 63.3 |

Source: Field survey, 2005.

secretary ne group banane ke samay 25,000 rupiyae ka lalach dikhaiye the. Us samay unhone bachat, meeting yeh sab ki bate kutch nahi kiya tha. To kaiyase umid kare ki SJGSY ka group chalega. Paysa milne ke bad group to toot hi jayega.

Which means the following: “the secretary had promised INR 25,000 at the time of forming the group. At that time he did not tell us about the savings and meetings. Then, how can we believe that the groups belonging to SJGSY will run successfully? After getting the money the group disintegrates inevitably.”

Biased Targeting by the Bankers

Apparently, bankers’ attitude towards SHGs seems to be fair and forthcoming irrespective of the group’s affiliation. However, the Swashakti officials strongly opposed this view. In their opinion, SJGSY groups manage to get favour from the bankers due to the repeated intervention of the chief development officers and at times the banks are coursed to even violate the NABARD guidelines for approving the loans to the SJGSY groups, which are not even six months old. On the other hand, in many cases, Swashakti group leaders had to take help of Assistant General Manager of NABARD to get loans.

Excessive Intervention by the Group Facilitators

Important aspects of group management like holding regular meetings have been neglected and as a result, the group becomes highly unstable. One of the main reasons behind this was too much of external influence from the group facilitators like VDOs and NGO workers.

Preference for Easy Success

Though the focus of the programme was on the BPL population but a major component of the benefits of the programme goes to the APL population. The reasons are apparently linked to the financial condition and availability of own source of finances to supplement the loans besides marketing constraints. In reality, it becomes easier for the NGO workers and the VDOs to attract the APL population towards the groups as compared to the people of the BPL community.

Inadequate Entrepreneurship Development Programmes

Almost all the programmes have ignored the component of capacity building specially, for entrepreneurship development programme. In some cases, in the name of entrepreneurship development, a few training programmes have been conducted from time to time but these programmes were lacking in quality of training materials, trainers and follow-up programmes. Involvement of inactive NGOs is also highly responsible for this. As a result, the members have failed to initiate new enterprises in most of the situations.

Lack of Marketing Support

Marketing support forms the backbone in establishing tiny new enterprises. In most of the projects, this concept was not taken seriously. In the projects like Swashakti, Swayamsiddha etc., a special unit called marketing unit has been formed and experts have been appointed in this unit from time to time, but this too has not been able to go beyond a few stray cases such as one reported in Almora district for spices marketing. In the case of SJGSY, it was expected that district rural development agency (DRDA) would help the farmers for creating a forward and backward linkage for their products in the market. However, the evaluation study done by the Ministry of Rural Development on SJGSY reveals that DRDA in Uttarakhand is nothing but merely a show piece (GoI, 2003).

Lack of Transparency in Training Programmes

During the discussion with the project officials in their offices, they talked about different kinds of training imparted to the groups but there was no reflection of such training in the field. Trainings are supposed to be given mainly for two components, namely, group management and IGA. The proposed training calendar and the final training report needs to be shared with the members along with the cost incurred. However, none of the groups surveyed reported such transparency. In fact,

many of them did not know about the provision of such training.

3.5 Poverty Alleviation through Sustainable Forest Management

Forest plays an important role in livelihood of the people living in several rural areas of Uttarakhand. Therefore, in such regions of the state, poverty alleviation and the forest management go hand in hand. However, several segments of forest in Uttarakhand have been degraded due to poor management of regeneration and consumption of forest products. Government's own efforts to save the forests have been inadequate and at some stage it was felt that the management of forests could be improved by involving local people who know the forests better. Accordingly, with the assistance of the World Bank, the Joint Forestry Management (JFM) programme was conceived for implementation in the state. Under this strategy, the forest department and village community enter into an agreement to jointly protect and manage the forestland in the adjoining areas of populated villages and to share the benefits. The specific objectives of the project include protection of forest from fire and degradation; sustainable livelihood for the rural mass; reduction of drudgery of women fetching water and firewood from far flung places; and economic rehabilitation of people. It seeks to educate and provide resources to the people for suitable silvicultural practices (raising nurseries like use of mulches, and clonal propagation); quick growing species; multi-tier plantation; high yielding varieties of NTFPs; and multi-use, high yielding varieties of fuel wood, fodder and fruit-bearing species.

In JFM project, the village community is represented through an institution known as 'village forest management committee' (VFMC), which consists of the representatives from the government department as well as from the village community. Unlike other projects discussed earlier, here, the beneficiary village community has to share a part of the project cost. The implementation of the project takes place in defined steps. First, a VFMC is constituted, which prepares action plan using different participatory learning approach (PLA) techniques. VFMC presents this plan in an open meeting with the gram sabha to get its approval. Once the *gram sabha* approves the plan, it is sent to the district level committee (DLC) for financial and technical approval. The DLC carry out financial and technical feasibility study of the submitted project and gives approval on case-by-case basis. VFMCs deposit 20 per cent of the total estimated project cost to the district level committees and then the balance of the project money is released by the DLC. At a

regular interval the projects are to be monitored jointly by the district and village level committees.

The idea of people's participation has achieved success in many areas. In fact, the officials have several encouraging stories to tell and give credit to JFM project for providing new lease of life to the forest management and the surrounding areas. Common problems, such as frequent fire, stealing of the fuels, fodder, leaf litter, dry grass and water are reduced. In order to highlight the success, some successes stories have been documented in Table 4.20. Examples in Table 4.24 are indeed encouraging and bring out importance of community participation. It has examples where the rural masses and the forest guards are working hand in hand to protect the forest from trespassers and degradation. In one of the case studies, villagers of a particular area "A" have evolved a methodology to generate additional resource by charging levy from people of the neighbouring villages if they wanted to collect forest products from area "A". There is also an example where the community has taken up initiative to raise fund on their own in the absence of any government programme.

3.5.1 But All is Not Well

The JFM project ended in 2003 and it was expected to continue its effects on a sustained basis. The duration of five years was structured with activities such that by the end of fourth year the community would be empowered enough with adequate skill and assets to sustain the project on their own. The fifth year was to be dedicated to the preparation and implementation of withdrawal strategy. The project ended on schedule but the required training and skill could not be imparted before the withdrawal phase was implemented. With the withdrawal of the programme, all the backlogs on training and documentation were imposed on the poor villagers leading to collapse of the programme. In fact, the success of any such programme lies in continuity and expansion of the concept. The project guideline viewed VFMC as the key weapon to ensure sustainability. It was expected that after the project period the VFMCs would take care of the assets created. A sizeable portion of the project fund was spent for training of VFMCs albeit in the last phase of the program. A number of NGOs were involved to ensure community participation on a sustained basis. However, the ground reality appears to be far from satisfactory and the VFMCs have turned out to be paper tiger.

In order to assess the sustainability of this programme, a small survey was conducted based on personal interviews of 98 people in two of the forest divisions of

TABLE 4.24
Details of Selected Case Studies of Successful Forest Use

| Attributes | Details of Cases | | | |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 1 | 2 | 3 | 4 |
| Project name | Bakku Project | Bhal Forest Project | Corbett Tiger Project | Reserve Forest falling within the boundary of village Jarhargaon |
| Location Area | Ushad, Uttaranchal | Bhal Reserve Forest 250 Hectare | 128.8 Hectare | Jarhargaon 500 Hectare |
| Importance of forest for the local economy | Forest products as means of livelihood. | Contributes more than 50 per cent of the total village needs for fuel wood, fodder, leaf litter, dry grassland water. | Source of water for major hydroelectric power plants and irrigation system. Preventing the streams from widening and downstream flooding. The buffer zone provides timber, and grasses. | Over exploitation and acute scarcity of forests near Jarhargaon village leading to depletion of forest products as means of livelihood. 20 years ago, negative ecological impacts were common. |
| Managing entity (during project period) | Forest <i>panchayat</i> , Bakku village | JFM Unit | JFM Unit | Vam Suraksha Samiti Jarhargaon |
| Managing entity (post project period) | Forest <i>panchayat</i> , Bakku village | Community/VFMC | Community/VFMC | Vam Suraksha Samiti Jarhargaon |
| Traditional care | Villagers | Villagers | | Villagers |
| Extent of involvement of forest officials | Modest | Substantial | Substantial | None |
| Managing objective | Forest protection & sustainable livelihood. | Multiple use, sustainable livelihood. | Bio-diversity conservation & water shed protection. | Watershed conservation, multiple use. |
| Management style | The local community appoints guard to maintain the forest and hold open meetings to take the decisions. Strong action is taken against those who violate the rules. The forest is divided into compartments and harvesting of forest products is strictly regulated. Neighbouring villages are also allowed to collect forest products in exchange of a collection levy. | The local community managed this forest without any external resource, until Joint Forestry Management Programme came in. Here the villagers decide on rules and regulations for access through consensus at open village meetings. | Rights are explicitly allocated to local people for timber and grasses and irrigation from water canals. Management Plan incorporates ways for people to enjoy and learn about the protected area, as well as providing for income generation for local people. | Around 1980, local leaders mobilised the entire village to reverse forest degradation. New and revised customary regulations were established to ensure forest protection, including employing a forest guard and forming special committees to deal with the offenders. The local people re-established a traditional system of irrigation that ensures equitable distribution of water to every household. |
| Outcome | Collection of additional resources for sustainable development | <ul style="list-style-type: none"> Wildlife population has increased significantly in recent years. Villagers could increase forest collection on a sustainable basis with legal access. | <ul style="list-style-type: none"> Significant increase in park's tiger population. New job opportunities as tourist guides and habitat protection agents. | <ul style="list-style-type: none"> Jarhargaon slopes are now completely regenerated and populated with wild animals such as bears and leopards. <i>De facto</i> control of locals through the forest protection. |

Source: (basic data) <http://www.Fao.Org/docrep/007/are542eod.htm>. JFM Unit includes Uttarakhand Forest department (SDO forest), NGO and VFMC.

Uttarakhand. The results are at sharp variance to what one would like to conclude from the success stories of Table 4.24.

The survival rate of VFMCs is as low as 29 per cent in Almora division, while it was found to be 40 per cent in Chakarata division (Table 4.25). The 2002-03 report of the Comptroller and Auditor General for Uttarakhand (CAG-UA, 2003) in respect of five forest divisions noted that 20 VFMCs stopped working after receiving one or

TABLE 4.25
Sustainability of VFMCs

| Indicators | Almora Division | Chakrata Division |
|---------------------------------------------|-----------------|-------------------|
| Total number of VFMCs formed | 52 | 32 |
| Number of VFMCs surveyed | 7 | 5 |
| Percentage of VFMCs found still operational | 29 | 40 |

Source: Field survey, 2005.

TABLE 4.26
Fund Utilisation by JFM Programme
(1998-99 to July 2004)

| Sl. No. | Forest Division | No. of VFMCs | Total Cost of Micro Plans (INR lakh) | Average per Unit Cost of Micro Plans (INR lakh) | Total Expenditure (INR lakh) | Average Expenditure per VFMC (INR lakh) | Percentage of Fund Unutilised |
|---------|-----------------|--------------|--------------------------------------|-------------------------------------------------|------------------------------|-----------------------------------------|-------------------------------|
| 1. | Nainital | 85 | 674.33 | 7.93 | 360.30 | 4.24 | 46.57 |
| 2. | Almora | 52 | 422.66 | 8.13 | 217.40 | 4.18 | 48.56 |
| 3. | Bageshwar | 52 | 304.12 | 5.85 | 170.06 | 3.27 | 44.08 |
| 4. | Mussorie | 52 | 609.92 | 11.73 | 257.81 | 4.96 | 57.72 |
| 5. | Chakrata | 32 | 181.99 | 5.69 | 77.21 | 2.41 | 57.57 |
| 6. | New Tehri | 33 | 263.08 | 7.97 | 150.48 | 4.56 | 42.80 |
| 7. | Garhwal | 52 | 497.00 | 9.56 | 262.91 | 5.06 | 47.10 |
| 8. | Karna Prayag | 51 | 373.59 | 7.33 | 191.90 | 3.76 | 48.63 |
| 9. | Pithoragarh | 60 | 493.51 | 8.23 | 192.11 | 3.20 | 61.07 |
| | Total | 469 | 3820.20 | 8.15 | 1880.18 | 4.01 | 50.78 |

Source: Annual Report of the Department of Forest, Government of Uttarakhand, 2003-04.

two instalments and also did not submit account of INR 25.61 lakh received from the forest department. The key reasons being, failure to submit the utilisation certificate and infighting among villagers.

The above finding is further corroborated by the fact that almost 51 per cent of the assigned fund for the JFM could not be utilised during the period of implementation. The extent of unutilised funds varied from 42.8 per cent in New Tehri division to 61.07 per cent in Pithoragarh (Table 4.26). Non-utilisation of funds indicates non-completion of activities of the micro plans and its activities such as plantation and protection.

3.5.2 Inadequacies Leading to Failure of JFM Movement

Several problems have been raised with respect to the implementation and monitoring of the JFM programmes, which led to collapse of the groups even before takeoff and in many cases after moving forward for some time even though there are examples of textbook success stories. A critical analysis of problems could lead to better corrective measures.

Lack of Awareness

Majority of the villagers are not aware of VFJM (Village Forest Joint Management) rule as well as about the Joint Forestry Management Project (Table 4.27). Majority of the VFMC heads in 12 villages of Almora and Chakrata divisions could not appreciate, why it took more than 4-5 months for the district level committees to approve the micro plans.

TABLE 4.27
Awareness among the Villagers about JFM Project and VJFM Rule

| Forest Division | Persons Interviewed | Percentage of People Aware of JFM | Percentage of People Aware of VJFM Rule |
|-----------------|---------------------|-----------------------------------|-----------------------------------------|
| Almora | 46 | 39 | 26 |
| Chakrata | 52 | 37 | 31 |

Source: Field Survey, 2005.

Complacency and Delays on Part of Government Officials

As noted earlier, almost half of the project money remained unutilised. Non-utilisation of funds is often contemplated to be the handiwork of delay in preparation of micro plans and delay in formation of VFMCs as well as time taken in imparting training to the officials and the villagers. However, still stronger reason is improper planning of the government department due to which more than 75 per cent of the total villages were adopted in the third year of the five-year project period. This means three-fourth of the total adopted villages got only three years instead of five years to implement the plan targets (Table 4.28). As a result, the grass root level organisations like VFMC units did not get enough time to mature before the withdrawal started taking place. This has adversely affected the sustainability of the project in several units.

Inadequacies in Training Process

The training modules were not designed and delivered

properly. The follow-up of the training programmes were not designed before hand due to which actions/activities taken up on the basis of short-term measures. In addition, there is no mechanism to evaluate and monitor the quality of training. A section of the NGOs showed interest on technical aspects but did not give much importance to the capacity building aspect in the project.

TABLE 4.28
Adoption of Villages in JFM

| Year | Total Number of Villages | Number of Villages Adopted | Percentage of Villages Adopted |
|-----------|--------------------------|----------------------------|--------------------------------|
| 1998-99 | 1217 | 65 | 5.34 |
| 1999-2000 | 1217 | 229 | 18.81 |
| 2000-01 | 1217 | 923 | 75.84 |

Source: CAG-UA Report of JFM Project, Uttarakhand, 2002-2003.

3.5.3 Conclusion and Way Forward

Given the survey results and record of poor utilisation of funds, it would appear that success stories stated in Table 4.24 could be stray incidents, yet there could be no denial that effective participation of people is the key to sustainable development as achieved in certain cases. However, in order to ensure that the process of development continues during post-project period also, it is important to take care of some basic aspects:

- Involvement of the community and the key stakeholders right from pre-planning to evaluation stage is important.
- Training of the people in groups.
- All the steps in the project should be transparent for all the stakeholders.
- Cost sharing by the beneficiary group brings sense of ownership in creating a shared asset.
- The project management needs to be done in a systematic manner so that the situations like adoption of the three fourth of the total villages in the last phase can be avoided.
- The finance can be used fully in a planned fashion so that the sustainable assets can be created and released funds could be utilised properly.
- Only trained and capable NGOs and government officials should be given charge of the execution. Therefore, even before execution of any such programme the implementation agencies need to ensure availability of such trained personnel.

Alternatively, the first step should be to train the people through a properly designed manpower development programme.

- A properly designed monitoring and evaluation network plays an important role. In JFM, during the field visits as well as discussions with the different segments we could not find any effective monitoring and evaluation system except certain visits of the representatives of the World Bank from time to time. It has been found that except preparation for those visits, State Project Management Unit (SPMU) and District Project Management Unit (DPMU) have not followed formal monitoring system in the field.
- Finally, all such programmes should have a properly designed withdrawal strategy and it should be implemented at a proper time. In case of JFM, informal discussion with the villagers revealed that in many cases, the withdrawal strategy was framed at the eleventh hour and these could not be implemented properly.

3.6 Programmes Providing Cheap Public Services and Food Subsidies to the Poor

These are direct helps to the poor people in order to raise their standard of living and enable them to be more productive.

3.6.1 Indira Awaas Yojana

The purpose of the programme is to provide dwelling units free of cost to poor families. Funds are allocated among the districts according to the proportion of SC/ST population. Expenditure on non-SC/ST households should not exceed 40 per cent of the expenditure. The beneficiaries have to be involved in the construction of the houses. The housing programme is based on a grant. The programme has been fairly successful in Uttarakhand and the state has reported to have already met 100 per cent target for the year 2005-06 by constructing 7863 houses. The state has good record in slum improvement by covering 1,04,311 persons.

3.6.2 Food and Nutrition Schemes

Although public distribution system in India dates back to pre-Independence, the concept of Target Public Distribution System (TPDS) was started around 1997. Poor households are eligible for 10 kilograms of food grain in the plains and 20 kg in the hilly areas. Uttarakhand being an hilly area, TPDS face an additional challenge. Around 21 per cent of the villagers need to

cover more than 3 km of hilly road for getting access to fair price shops (FPSs) (Table 4.29). The situation is worst in Champawat district.

TABLE 4.29
Access to Public Distribution System

| Districts | Percentage Distribution of Villages by Distance from FPSs | | | |
|---------------|-----------------------------------------------------------|----------|----------|---------|
| | At village | 0-1 Kms. | 1-3 Kms. | >3 Kms. |
| Almora | 19.61 | 16.58 | 38.05 | 25.76 |
| Bageshwar | 25.93 | 23.37 | 31.86 | 18.84 |
| Chamoli | 28.57 | 23.37 | 30.86 | 17.20 |
| Champawat | 32.66 | 13.06 | 18.04 | 36.24 |
| Dehradun | 39.36 | 12.02 | 16.44 | 32.18 |
| Haridwar | 71.69 | 15.06 | 9.64 | 3.61 |
| Pauri Garhwal | 28.06 | 19.77 | 37.19 | 14.97 |
| Nainital | 27.95 | 21.46 | 25.89 | 24.70 |
| Pithoragarh | 37.44 | 16.15 | 28.01 | 18.40 |
| Rudraprayag | 38.66 | 22.48 | 27.83 | 11.01 |
| Tehri Garhwal | 47.39 | 1.02 | 28.81 | 22.78 |
| US Nagar | 51.07 | 8.38 | 21.19 | 19.36 |
| Uttarkashi | 61.27 | 16.68 | 11.35 | 10.74 |
| Uttarakhand | 34.90 | 16.34 | 27.57 | 21.20 |

Source: Office of the Public Distribution System, Govt. of Uttarakhand.

The PDS network in Uttarakhand is no better than the country average because of faulty policies and bad management. An evaluation of the TPDS leads to the following conclusions:

- i) The identification of poor households has proved to be a considerable problem as the existing lists appear to be significantly inflated.
- ii) Dual pricing under the scheme provides a considerable incentive for grain diversion and the scheme has proved to be extremely difficult to monitor.
- iii) There is a problem of erratic supply, which has led to a mismatch between demand and supply of food grains.
- iv) In several cases, poor households are unable to purchase their rations in time.

3.6.3 The Integrated Child Development Scheme (ICDS)

This scheme caters to the nutrition and health needs of young children and pregnant and lactating mothers.

4. Policy Recommendations

Poor governance and weak implementation are the main causes of persistent poverty, backwardness and low

human development in India. There cannot be harder attack on poor governance than the following words of Late Rajiv Gandhi: "We have government servants who do not serve but oppress the poor and the helpless, who do not uphold the law but connive with those who cheat the state and whole legions whose only concern is their private welfare at the cost of society. They have no work ethics, no feeling for the public cause, no involvement in future of the nation, no comprehension of national goals, no commitment to the values of modern India. They have only a grasping mercenary outlook, devoid of competence, integrity and commitment". The Department of Administrative Reform & Public Grievance vide letter No. K-11022/23/96P dated 06.11.1996 observed similar observations (Saxena, 1999).

The case studies and the field survey in this study lead to similar conclusions. Therefore, there is a need to improve the system and it should be designed to take care of itself. In the current context the following issues are relevant for implementation:

1. Methodology to identify the poor needs to be improved. For targeting the poorest of poor, the BPL surveys provide superior tool as compared to simple PVR base programme, but that too suffer from flaws. There is a need to scrutinise the survey methods and results carefully. Particularly, exclusion criteria need to be included and scoring method should be made more transparent supported by well-defined scale in order to reduce subjectivity and application of mind. Further, the number of scoring indicator should be reduced to those, which reveal deprivation more clearly and fundamentally. Application of information technology should be made compulsory for identifying the BPL families. In particular, the BPL census directly or indirectly depends upon the information contained in the *arthik* register, which is maintained manually at the block level. Computerisation of this register can provide a check on the BPL census.
2. The planners need to develop the vision for a long-term goal instead of short-term goal, which means concrete steps towards improving rural infrastructure, education, health and opportunities of self-employment. The evaluation process of the programmes revealed the drawbacks in implementation procedure. The success of programmes like Joint Forest Management (JFM) depends upon the continuity and expansion of it which unfortunately did not happen. Hence, the

approach should be more futuristic that involves avoidance of unnecessary delays at the authoritative level along with appropriate time scheduling for structuring training and awareness programmes rather than imposing it in the last phase of the programmes.

3. The system should be made more transparent than the present in all areas of programme design, implementation and monitoring. In this context, the system needs a massive administrative reform at all levels, which could guarantee more serious monitoring than the existing level. This also requires sincere efforts to involve active community participation. Therefore, while chalking out training programmes for SHGs, training calendar and final

reports coupled with costs involved should be shared with the members of the group.

4. The policy approach in employment generation programmes should aim at the ultimate goal of poverty alleviation, not one-time employment generation.
5. In any project planning, execution and monitoring cannot be done by the same person. It has become visible in the programmes like SJGSY and the similar kind of programmes. Responsibility of execution and monitoring must be separated.
6. Sound policy needs to be framed in the state keeping the issues on participatory management in mind.

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Chapter 5

Health

1. Introduction

It has amply been acknowledged that good health promotes economic growth and social stability, while reducing poverty and income inequality. Rightly so in this context, the Indian Constitution has guaranteed the 'right to life' as a basic human right to every citizen of India under Article 21. In Article 47 of the Directive Principles of State Policy, the government's responsibility concerning public health has also been laid down.

The UNDP introduced annual Human Development Reports (HDR) with its first report in 1990, which analysed the progress in human welfare by developing a Human Development Index (HDI).¹ The ranking of countries on the basis of HDI over the years reveals that a country by investing in health and education can achieve higher levels of human welfare even at lower levels of per capita income, and higher per capita income does not necessarily imply achieving higher HDI.²

Education and health are both end goals as well as means to achieve other goals. The countries which have achieved higher growth rates of per capita income during the last few decades—South Korea, Taiwan, Singapore, Hong Kong and more recently China—also had higher education and health levels before embarking on their growth path (Dreze and Sen, 1996), indicating the instrumental role of education and health.

The importance of investing in health to promote economic development and reduce poverty has also been well recognised by the World Health Organisation's Commission on Macroeconomics and Health (CMH) in

the Indian Health Report (IHR), (Bajpai, 2004). The CMH found that extending the coverage of crucial health services, including a relatively small number of specific interventions could save millions of lives each year, reduce poverty, spur economic development and promote global security.

The aim of this study is to assess the present condition of the health services and related issues for the state of Uttarakhand, a new state that came into being on 1 November 2000. Being mostly a hilly terrain possess the most challenging hindrance towards providing quality health services to the people of the state. India is a signatory to the Alma Ata Declaration of 1978. It had committed itself towards attaining the goal of 'health-for-all' by 2000 through the primary healthcare approach. The National Health Policy of 1983 further set targets to improve the health status of the people as well as reduce fertility. However, the bulk of the population even after five decades of Independence is being deprived of the basic 'right to health care' (2005; <http://news.webindia123.com/news>)

However, due to high status of women, positive growth in female literacy and healthy climate, the state has performed better than the national average in terms of lower population growth, birth rate, death rate and infant mortality rate. Therefore, in order to fulfill the goal enshrined in our constitution there is an urgent need to overcome deficiencies in the health care system. Focus has to be made in the context of Uttarakhand how performance of public health services can be improved by the involvement of private parties, NGOs, *panchayats* and cooperatives.

1. HDI is based on three end products of development: (1) longevity measured by life expectancy at birth, (2) knowledge as measured by a weighted average of adult literacy (2/3rd weight) and mean years of schooling (1/3rd weight) and (3) standard of living as measured by per capita income adjusted for purchasing power of each country's currency and for the assumption of diminishing marginal utility of income—each country is ranked on a scale of 0 (lowest human development) to 1 (highest human development).

2. For example, HDR 2001 shows that Angola with per capita GDP (PPP\$) 3,179 was at 6 ranks lower in HDI from Tanzania with per capita GDP (PPP\$) of 501 only.

TABLE 5.1
Achievements of National Health Targets: India versus Uttarakhand

| Sl. No. | Parameters | National Health Targets for 2000 | Level of Achievement | |
|---------|----------------------------------------------|----------------------------------|----------------------------|----------------------------|
| | | | India | Uttarakhand |
| 1. | Population (annual growth rate) | 1.2 | 1.96 (2001) | 1.93 (2001) |
| 2. | Birth rate (per '000) | 21 | 25.0 (2002) 24.8(SRS-2003) | 17.0 (2002) 17.2(SRS-2003) |
| 3. | Death rate (per '000) | 9 | 8.1 (2002) 8 (SRS-2003) | 6.4 (2002) 6.5(SRS-2003) |
| 4. | Infant mortality rate (per '000 live births) | 60 | 64.0 (2002) 60(SRS-2003) | 48.0 (2002) 41(SRS-2003) |
| 5. | Total fertility rate | | 3.2(SRS-2000) | |
| 6. | Couple protection rate (per cent) | 60 | 46.2 | |

Source: *Economic Survey, 2001-02*; Health Information of India, 2004 and SRS-2003.

For this study, the information/data have been gathered from various sources including the Ministry of Health and Family Welfare, Government of India; Medical Health and Family Welfare and Directorate of Health, Government of Uttarakhand; data gathered by IIPS in 2002-03 from eight districts of Uttarakhand, as part of All India survey of facilities in health institutions, is also used extensively.

2. State of Health Care Services

2.1 Health Status

It may be observed that the target set by the Government of India to achieve “health for all in terms of key health indicators by 2000” is far from being achieved. But, there are reasons for complacency in case of Uttarakhand, in this regard, in certain fronts. This may be observed from the figures on the “National Health Targets” set for the year 2000 and the achievements so far (Table 5.1). The target was to achieve 1.2 per cent annual growth in population by the 2000, whereas the same at the all-India level was still 1.96 per cent and for Uttarakhand it was slightly at a lower level being 1.93 per cent in 2001. The birth rate was targeted at 21 and death rate at 9 per 1,000 population in the year 2000. In 2002, the birth rate for all-India was still at a much higher level being 25 per 1,000 but there was a slight decline in the death rate at 8.1 per 1000. In respect of Uttarakhand, the birth rate was reported at 17 and death rate at 6.4, much below the national targets. The infant mortality rate was targeted at 60 per 1,000 live births. But in year 2001 the same was 64 for all-India and at a much lower level in Uttarakhand being 48. Across states, Uttarakhand is the third lowest state in achieving much lower IMR than targeted. According to experts, deprivation among people of a particular region, class of ethnic group within a country is likely to show in the form of an increased IMR

(Dr. Abhay Bang and Dr. Rani Bang). As per Sample Registration System (SRS-2003), mortality rate in Uttarakhand is lower than all-India averages. The crude death rate is 6.4 per 1,000. Infant mortality rate in Uttarakhand is 41 per 1,000 as compared to 64 for India. The crude birth rate is 17 per 1,000 and the sex ratio is 964 per 1,000 (2001 Census). The percentage of females having knowledge of AIDS is around 66.6.

From Table 5.2, it may be observed that expenditure on medical and public health and family welfare as ratio to aggregate disbursements (revenue and capital outlay) in the year 2005-06 is highest in Himachal Pradesh at 3.8, followed by U.P. 2.6, Uttarakhand 2.4 per cent. In Kerala the share is the lowest at 2.0 per cent but it ranks at the highest among states in respect of several health indicators. Uttarakhand also reported less share than U.P. but performed better in respect of many health outcomes.

TABLE 5.2
Expenditure on Medical and Public Health and Family Welfare as Percentage to Aggregate Disbursement

| Sl. No. | State | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 |
|---------|------------------|---------|---------|---------|---------|---------|---------|
| 1. | Uttarakhand | 3.1 | 3.93 | 3.06 | 3.16 | 3.44 | 2.4 |
| 2. | Uttar Pradesh | 4.0 | 3.6 | 3.8 | 0.9 | 2.1 | 2.6 |
| 3. | Himachal Pradesh | 5.6 | 4.9 | 4.5 | 2.1 | 3.9 | 3.8 |
| 4. | Kerala | 5.3 | 5.8 | 4.8 | 1.6 | 1.7 | 2 |
| | All States | 4.7 | 4.4 | 4.1 | 1.4 | 1.8 | 2.0 |

Note: Revenue and capital outlay ratios from 2000-01 to 2002-03 will not be comparable to those of 2003-04 to 2005-06 as capital expenditure includes all corresponding items of capital receipts on a gross basis for the latter years while these items were included on a net basis in capital receipts in the earlier years.

Source: *State Finances: A Study of Budget of 2005-06*, Reserve Bank of India.

Morbidity and mortality are important indicators of health status. Communicable diseases are major causes of

burden of diseases in India. Data on morbidity patterns in Uttarakhand are inadequate. The only important source is National Family Health Survey (NFHS-II&III) data, published in 2002 and 2007-08 respectively. The data shows that among the children below three years, 25 per cent were suffering from fever during the two weeks preceding the survey (Table 5.3). The proportion of those suffering from cough accompanied by fast breathing (symptoms of Acute Respiratory Infection (ARI)) was 16.5 per cent, those affected by diarrhoea was 17.7 per cent and over 4 per cent had diarrhoea with blood. In fact, these are three major reasons for mortality among children. As far as rural-urban differences are concerned, the proportion was significantly higher in case of rural children. Gender differences were however, insignificant. Seventy-one per cent of the children who were ill with ARI and 64 per cent of those with diarrhoea were taken to the health facility or to the health care provider. NFHS-III data sheet reveals that 76 per cent of children below three years suffering from ARI and 64.8 per cent suffering from diarrhoea were taken to the health facilities. Further, the percentage of children with ARI symptoms who received antibiotics was highest in Mizoram (52 per cent) followed by Uttarakhand (46 per cent). The Survey found that only 56 per cent of mothers had the knowledge that Oral Dehydration Salt (ORS) is to be administered in case of diarrhoea. Nineteen per cent of the mothers wrongly believed that when the child is down with diarrhoea, less fluid should be given.

As regards the prevalence of tuberculosis, asthma, malaria and jaundice among all household members, the Survey results show that two per cent of the population in Uttarakhand suffers from asthma, two per cent from malaria during the three months preceding the survey and one per cent suffered from jaundice during the twelve

months preceding the survey. Also prevalence of asthma, jaundice and especially malaria was found to be much higher in rural than urban areas. As per the Census 2001, prevalence of tuberculosis in Uttarakhand is 1225 cases per lakh population as compared to the national average at 544. In fact, the UNSPSS study (2005) reveals that the number of TB patients, especially among women, are much higher, than even Census figures. The under reporting that is expected could be due to the taboos and social stigma attached to the disease for which people are hesitant to reveal their status. Nearly 41 per cent of the currently married women in the state are suffering from some or the other reproductive health problems.

The Health and Population Policy Document of Uttarakhand (2002) indicates that prevalence of malaria is very high in Haridwar and Udham Singh Nagar and the two districts together account for 79 per cent of malaria cases in the state. The document also point out that seasonal surge in communicable diseases such as gastroenteritis, typhoid and different types of hepatitis is due to unhygienic practices and non-availability of safe drinking water.

2.2. Nutritional Status

Improved nutritional status helps the child to grow physically and mentally. In developing countries like India, higher occurrence of infectious and other diseases reduces the capacity of a body to absorb and utilise nutrients efficiently. Under Reproductive and Child Health (RCH) programme, efforts are made to improve the coverage, content and quality of Ante Natal Care (ANC) in order to achieve substantial reduction in maternal and prenatal morbidity and mortality. NFHS-III (2005-06) indicates, 44.8 per cent pregnant mothers received at least three

TABLE 5.3

Percentage Distribution of Children under 3 Years by Prevalence of Acute Respiratory Infection, Fever and Diarrhoea during Two Weeks Preceding the Survey, Sex and Residence

| Background Characteristics | Percentage of Children Suffering in Past Two Weeks from | | | | Number of Children |
|----------------------------|---------------------------------------------------------|-------|---------------|----------------------|--------------------|
| | Cough Accompanied by Fast Breathing | Fever | Any Diarrhoea | Diarrhoea with Blood | |
| <i>Sex of Child</i> | | | | | |
| Male | 16.1 | 26.3 | 18.6 | 5.0 | 193 |
| Female | 16.9 | 23.4 | 16.6 | 3.3 | 164 |
| Total | 16.5 | 25.0 | 17.7 | 4.2 | 357 |
| <i>Residence</i> | | | | | |
| Urban | 7.6 | 21.5 | 15.0 | 0 | 73 |
| Rural | 18.8 | 25.9 | 18.4 | 5.3 | 283 |

Source: IIPS (2002); National Family Health Survey (NFHS II).

antenatal visits for their last birth as compared to 19.7 per cent in NFHS-II, which is quite an impressive improvement.

For proper growth of a child, various feeding practices are advised. Most of the mothers of new born babies do not follow the highly recommended practice of breastfeeding. The NFHS-III have reported an increase of 33 per cent in breastfeeding in the first hour by mothers in the state while it was just 24 per cent in NFHS-II. But in case of rest of the children, mothers still squeeze the first milk out and let it go waste. Only 13 per cent of children in 6-9 months age group in the state receive the recommended combination of breast milk and solid/mushy foods.

The NFHS-II used three internationally recognised standards to assess children's nutritional status: weight-for-age, height-for-age, and weight-for-height. The children who are more than two standard deviations below the median of an international reference population are considered underweight (measured in terms of weight-for-age), stunted (height-for-age) or wasted (weight-for-height). Stunting is a sign of chronic, long-term undernutrition, wasting is a sign of acute, short-term undernutrition and underweight is a composite measure that takes into account both chronic and acute undernutrition.

Based on these standards, the Survey recorded that 42 per cent of children below three years of age in Uttarakhand are underweight, 47 per cent are stunted, and 8 per cent are wasted. Undernutrition is higher in rural areas than in urban areas and is particularly high among children from households with a low standard of living. The percentage of undernourished children is higher for girls than for boys, according to all three measures of nutrition. The proportion of undernourished women in Uttarakhand is 32 per cent. Nutritional deficiency is much higher for women in rural areas, illiterate women and among women from households with a low standard of living.

Anaemia among Children

The proportion of children (age 6-35 months) with any anaemia is very high in the state; 77.4 per cent (Table 5.4) which has come down to 61.5 per cent in NFHS-III. Out of these 5.7 per cent have severe anaemia. The prevalence of anaemia is particularly high among children living in households with a low to medium standard of living. Children whose mothers are anaemic are more likely to be anaemic themselves than are other children. However, the prevalence of anaemia is relatively lower among girls than boys.

TABLE 5.4

Percentage Distribution of Children (6-35 months) with Iron Deficiency Anaemia by Sex, Residence and Mother's Education in Uttarakhand, 1998-99

| <i>Background Characteristics</i> | <i>Percentage of Children with any Anaemia</i> | <i>Percentage of Children with Severe Anaemia</i> |
|-----------------------------------|------------------------------------------------|---------------------------------------------------|
| <i>Sex of child</i> | | |
| Male | 86.3 | 9.0 |
| Female | 66.3 | 1.7 |
| Total | 77.4 | 5.7 |
| <i>Residence</i> | | |
| Urban | 78.3 | 9.2 |
| Rural | 77.1 | 4.8 |
| <i>Mother's education</i> | | |
| Illiterate | 79.7 | 7.6 |
| High school complete and above | 58.2 | 6.2 |
| <i>Standard of living index</i> | | |
| Low | 85.1 | 6.4 |
| Medium | 87.4 | 5.4 |
| High | 52.0 | 4.3 |

Source: IIPS (2002); National Family Health Survey (NFHS II).

Anaemia among Women

Anaemia is most prevalent among Indian women. Overall, 52 per cent women in India have some degree of anaemia. Among Uttarakhand women, the proportion is little lower, around 46 per cent (Table 5.5). Anaemia is a serious problem among women in every population group in the state, varying between 33-55 per cent. Pregnant women are more likely to be moderately to severely anaemic than non-pregnant women.

TABLE 5.5

Percentage Distribution of Ever Married Women having Iron Deficiency Anaemia by Residence, Caste and Pregnancy/Breast Feeding Status in Uttarakhand, 1998-99

| <i>Background Characteristics</i> | <i>Percentage of Women with any Anaemia</i> | <i>Percentage of Women with Mild Anaemia</i> | <i>Percentage of Women with Moderate Anaemia</i> | <i>Percentage of Women with Severe Anaemia</i> |
|----------------------------------------|---------------------------------------------|----------------------------------------------|--------------------------------------------------|------------------------------------------------|
| <i>Residence</i> | | | | |
| Urban | 44.8 | 32.0 | 10.8 | 2.0 |
| Rural | 45.9 | 33.2 | 11.5 | 1.1 |
| Total | 45.6 | 33.0 | 11.4 | 1.3 |
| <i>Caste/Tribe</i> | | | | |
| Scheduled caste | 44.4 | 29.6 | 10.1 | 4.6 |
| Other backward | 32.7 | 24.0 | 8.6 | 0 |
| Others | 47.0 | 35.0 | 11.0 | 1.0 |
| <i>Pregnancy/breast feeding status</i> | | | | |
| Pregnant | 49.8 | 29.6 | 17.1 | 3.1 |
| Breastfeeding (not pregnant) | 54.3 | 43.7 | 9.8 | 0.8 |
| Not pregnant/not breastfeeding | 42.1 | 29.3 | 11.4 | 1.4 |

Source: IIPS (2002); National Family Health Survey (NFHS II).

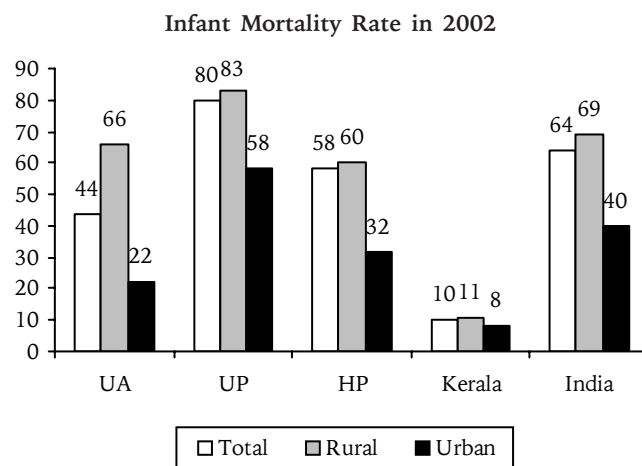
2.3 Demographic Features

Fertility, mortality, immunisation, childcare and reproductive health of women are other indicators that affect health status. India has made a significant progress as far as Crude Birth Rate (CBR) is concerned, with a decline from 36.9 to 25.0 during the period 1971 to 2002. Among the major states, Kerala experienced a faster decline and achieved CBR of 16.8 in 2002. Uttarakhand is also making a steady progress in this respect. Sample Registration System (SRS) data show that between 1999 and 2002 CBR in Uttarakhand declined from 19.6 to 17.0, a much better achievement than most other states, including Himachal Pradesh and almost close to Kerala. Especially the decline is more striking in rural areas where it has come down from 24.5 to 18.1 between 1999 and 2002 resulting in reduced rural-urban differences, a trend towards homogenisation (Refer Appendix Table A-5.1). Death rates in the state, during the same period, are not declining but low, matching with those of Kerala (Refer Appendix Table A-5.2). However, rural-urban differences are higher in Uttarakhand compared to Kerala where both the rates are almost the same. In fact, urban death rate at 4.4 in Uttarakhand is almost two points lower than the corresponding rate in Kerala at 6.2 in 2002. Lower urban death rate in Uttarakhand and a gap of 4.6 points between rural-urban rates shows that there is a distinct possibility that the state can improve further on this count by reducing death rate in rural areas, through special efforts, and can even leave Kerala behind in near future.

One of the objectives of Health and Population Policy of Uttarakhand (HPPU)-2002 is to reduce the IMR from 50 per 1000 live births in 2000 to 40 by 2006 and 28 by 2010. The SRS figures show that a notable achievement has been made on this account. The IMR has come down from 52 to 44 between 1999 and 2002, but it is much higher. In Kerala, being only 10 in 2002, and the gap between rural and urban rates is quite high at 66 and 22 respectively (Table 5.6; Figure 5.1). A wide gap in IMR

between Uttarakhand and Kerala and rural-urban within Uttarakhand demonstrates that much needs to be done to reduce the IMR from the present level.

FIGURE 5.1



Source: (basic data) Sample Registration System Bulletin 37(2).

The data made available by the Office of the Director General of Health, Government of Uttarakhand, give higher figures for birth rate, death rate and IMR compared to SRS figures. For example, for year 1999-2000 the DG office figures are 26.7, 9.0 and 61 respectively, compared to 20.2, 6.9 and 50 based on SRS data for the year 2000 (Tables 5.6, 5.7 and Appendix Tables A-5.1 and A-5.2). As per the former source, Uttarakhand achieved birth and death rates of 17 and 6.4 respectively in year 2004-05 and in the latter the IMR was reported at 41 in 2002.

It is generally agreed that even for population control, reducing infant and child mortality is a prerequisite. The NFHS-II (2002) provides estimates of infant and child mortality and factors connected with the survival of young children. During the five years preceding the Survey, the IMR in Uttarakhand was 38 and child mortality rate 19. The Survey noted that infant and child mortality is

TABLE 5.6
Changes in Infant Mortality Rate

| State | 1999 | | | 2000 | | | 2001 | | | 2002 | | |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | Total | Rural | Urban | Total | Rural | Urban | Total | Rural | Urban | Total | Rural | Urban |
| Uttarakhand | 52 | 75 | 27 | 50 | 73 | 26 | 48 | 69 | 26 | 44 | 66 | 22 |
| Uttar Pradesh | 84 | 88 | 66 | 83 | 87 | 65 | 83 | 86 | 62 | 80 | 83 | 58 |
| Himachal Pradesh | 62 | 63 | 38 | 60 | 62 | 37 | 54 | 56 | 32 | 58 | 60 | 32 |
| Kerala | 14 | 14 | 16 | 14 | 14 | 14 | 11 | 12 | 9 | 10 | 11 | 8 |
| India | 70 | 75 | 44 | 68 | 74 | 44 | 66 | 72 | 42 | 64 | 69 | 40 |

Source: Sample Registration System Bulletin 37(2).

TABLE 5.7
Changes in Birth and Death Rate in Uttarakhand

| Indicators | Year | | | | | |
|-----------------------|-----------|---------|---------|---------|---------|---------|
| | 1999-2000 | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 |
| Birth rate | 26.7 | 26.0 | 23.5 | 20.2 | 18.5 | 17.0 |
| Death rate | 9.00 | 6.5 | 6.9 | 6.9 | 7.8 | 6.4 |
| Infant mortality rate | 61 | 52 | 50 | 48 | 44 | 41 |

Source: Office of the Director General of Health, Government of Uttarakhand.

particularly high in rural areas, among children whose mothers are illiterate or have little education, and children from households with low to medium standard of living. Infant mortality is more than 60 per cent higher among children born to mothers under age 20 than to mothers age 20-29. In fact, NFHS-II observed that although the proportion of women who marry young is declining in the state but still more than one-fourth of women marry before reaching the legal age of 18. The Survey also pointed out that IMR is almost five times higher among children born within 24 months following a previous birth than the child born after a gap of 24 months or more. The IMR for children born within 24 months following a previous birth is reported at 110 per 1000 live birth while it is 23 for the children born after a gap of 24 months or more. Thus, the focus of childcare programmes should be on these specific groups. And there is need to promote contraceptive use for delaying and spacing births and educating people not to marry their daughters before the minimum legal age.

As regards Maternal Mortality Rate (MMR), no data is available from any known sources for the state. However, the state's Health and Population Policy document observes that MMR in the state is expected to be quite high because of the physiographic features and inaccessible terrain (HPPU 2002). To reduce MMR the focus should be on provisioning of essential obstetric care, promotion of institutional and safe home child deliveries, especially in remote rural areas.

Total Fertility Rate (TFR)

The TFR is a summary measure, based on the age-specific fertility rates (ASFRs), that gives the number of children a woman would bear during her reproductive years if she were to experience the prevailing ASFRs. The NFHS-II estimates that, on an average a woman in Uttarakhand have 2.61 children throughout her childbearing years. The same, in case of an urban women

being 2.14 and 2.76 for rural women. In the state of U.P., the TFR is much higher at 4.11 whereas in Kerala, it is lower 1.96. The mean number of children born to women in 40-49 age group in Uttarakhand is 4.2 and in UP it is 5.9 but in Kerala the same being 3 only. Thus, the state has lower TFR than its parent state but still there is a long way to accomplish the fertility levels of Kerala.

The median age at first childbirth for women in 25-49 age group in Uttarakhand is 20.2 years. However, women in 15-19 age group contribute 10 per cent of total fertility. There is still some scope for reducing the overall fertility by focusing the family planning programmes and MCH services more on the young women. The mean ideal number of children for a woman in Uttarakhand is 2.7. For 13 per cent of births in Uttarakhand over the three years preceding NFHS-II, mothers report that they did not want the pregnancy at all, and another 11 per cent of the mothers stated that they would have preferred to delay the pregnancy. In response to a question about ideal family size, 27 per cent of women having three children and 17 per cent having four or more children consider a family with two children as ideal. It shows the need to expand or improve family welfare services to help women to achieve their fertility goals.

Sex Ratio

The sex ratio in Uttarakhand has improved during the last decade; from 936 females per 1000 males in 1991 to 964 in 2001. The overall sex ratio in 2001 was still uneven but better than UP at 898 and all-India at 933. In fact, eight hill districts in the state registered favourable sex ratio in 2001. Sex selective migration is partly responsible for this favourable sex ratio in hill districts. Due to lack of sufficient job opportunities, male members migrate to other states especially to urban centres like Delhi. The lower sex ratio in the overall is mainly due to the lower sex ratios in three plain districts of Haridwar being 868, Dehradun, 893 and Udham Singh Nagar, 902.

2.4 Interventions

Immunisation

The focus of children's immunisation programme in India is on six serious but preventable diseases to reduce child mortality and morbidity. These include tuberculosis, diphtheria, pertusis, tetanus, polio and measles. Under the Universal Immunisation Programme (UIP) the target is to achieve 100 per cent immunisation of children. According to the data collected by third National Family Health Survey (NFHS-III), 60 per cent children of age 12-23 months are fully vaccinated in Uttarakhand (Table 5.8)

TABLE 5.8
Percentage Distribution of Children (Aged 12-23 Months) by Type of Vaccination at Any Time Before the Interview and Before 12 Months of Age, Source of Information and District, 1998-99

| Source of Information | Percentage Vaccinated | | | | | | | | | | Number of Children |
|------------------------------------|-----------------------|------|------|-------|-------|------|-------|---------|------|------|--------------------|
| | BCG | DPT | | | Polio | | | Measles | All | None | |
| | | 1 | 2 | 3 | 1 | 2 | 3 | | | | |
| Either card (mother or child card) | 76.8 | 73.8 | 68.0 | 56.1 | 87.8 | 80.2 | 62.4 | 56.0 | 40.9 | 11.5 | 123 |
| | 83.5* | | | 67.1* | | | 80.3* | 71.6* | 60* | | |
| Vaccinated before 12 months of age | 74.9 | 70.5 | 64.1 | 54.2 | 83.8 | 78.1 | 58.4 | 48.6 | 34.6 | 15.5 | 123 |

Note: (*) refers to figures of NFHS-III.

Source: IIPS (2002); National Family Health Survey (NFHS-II).

which is a satisfactory improvement over only 41 per cent children in NFHS-II. Around 88 per cent received the first polio vaccination but only 62 per cent completed all three doses. Similarly, 74 per cent children received the first dose of DPT vaccine but only 56 per cent received all three doses. The low percentage of full vaccination is not only because of this drop out after first dose of polio and DPT but also since only 56 per cent of children are vaccinated against measles. Nearly 12 per cent children did not receive any vaccination.

Childhood Vaccinations

Another all-India survey (Rapid Rural Appraisal, 1998-1999)³ presents relatively more positive district-wise picture of Uttarakhand (Table 5.9). The table shows that the number of fully vaccinated children varies between the lowest at 47 per cent in Haridwar to the highest at 83 per cent in Nainital. The number of children not receiving any vaccination is highest in Haridwar at 30 per cent followed by Uttarkashi at 26 per cent. In five districts, the proportion of children not receiving any vaccination is below 10 per cent. However, compared to Kerala and Tamil Nadu where in many districts, above 95 per cent children are fully vaccinated, much remains to be achieved in Uttarakhand.

It is recommended that children below five years should receive oral doses of Vitamin-A, every six months starting from nine months. The NFHS-II noted that in Uttarakhand, only 24 per cent of children, between 12-35 months, have received any Vitamin-A supplement. Thus three-fourth children are not receiving Vitamin-A supplement.

TABLE 5.9

Percentage Distribution of Children by Vaccination Status and Districts, 1998-99

| Districts | Indicators | |
|--------------------|------------------|----------------|
| | Full Vaccination | No Vaccination |
| Almora | 79.5 | 8.0 |
| Chamoli | 78.0 | 8.2 |
| Dehradun | 64.9 | 10.1 |
| Haridwar | 47.2 | 30.4 |
| Nainital | 82.7 | 6.5 |
| Pauri Garhwal | 78.6 | 4.6 |
| Pithoragarh | 79.2 | 5.3 |
| Tehri Garhwal | 66.0 | 12.2 |
| Uddham Singh Nagar | 65.6 | 15.9 |
| Uttarkashi | 50.3 | 26.4 |

Source: IIPS (1999); RCH Project-Rapid Rural Survey, 1998-99.

Reproductive Health

Mother and childcare is the main focus of Health and Family Welfare programmes. Health facilities in the public sector are supposed to give each pregnant woman at least three antenatal (ANC) check-ups, two tetanus toxic injection and full course of iron and folic acid supplement. In Uttarakhand, mothers of only 44 per cent of the children born in the three years preceding NFHS-II received at least one antenatal check-up compared with 65 per cent in India as a whole. The Survey noted that mothers of only 18 per cent children in Uttarakhand received at least three antenatal check-ups. Percentage of women who received two tetanus toxic injections is 54 per cent and those receiving iron and folic acid tablets and

3. Rapid Rural Survey (RRS) conducted in 1998-99, collected data from 25 states and five union territories. It covered 529,817 households and contacted 474,463 eligible women (15-44) and 198,566 men.

TABLE 5.10

Percentage Distribution of Births in the Three Years Preceding the Survey in which Mothers Received Various Types of Antenatal Services by Selected Background Characteristics, Uttarakhand, 1998-99

| Background Characteristics | Antenatal Check Up (only at Home from Health Worker) | Received Antenatal Check Up (Outside the Home) from | | | Received ANC (Total of 1,2 and 3) | Percentage who Received Two or More Tetanus Toxoid Injection | Percentage who Received Iron and Folic Acid Tablets and Syrup |
|--------------------------------|------------------------------------------------------|-----------------------------------------------------|----------------------------|----------------------------------------|-----------------------------------|--------------------------------------------------------------|---------------------------------------------------------------|
| | | Doctor | Other Health Professionals | Traditional Birth Attendant and Others | | | |
| | | 1 | 2 | 3 | 4 | | |
| <i>Residence</i> | | | | | | | |
| Urban | 1.2 | 73.3 | 3.8 | 0.9 | 78.2 | 76.9 | 56.5 |
| Rural | 1.8 | 25.2 | 7.9 | 0.3 | 35.2 | 48.5 | 34.1 |
| Total | 1.7 | 34.6 | 7.1 | 0.2 | 43.6 | | |
| <i>Mother's education</i> | | | | | | | |
| Illiterate | 0.8 | 19.8 | 7.4 | 7.4 | 28.0 | 42.2 | 22.4 |
| Literate, < middle school | 1.9 | 25.8 | 5.6 | 5.6 | 35.1 | 46.5 | 42.0 |
| Middle school complete | 6.8 | 40.8 | 7.2 | 7.2 | 54.8 | 62.6 | 55.2 |
| High school complete and above | 1.6 | 69.5 | 6.9 | 6.9 | 78.0 | 80.9 | 66.1 |

Source: IIPS (2002); National Family Health Survey (NFHS-II).

syrup is 39 per cent. In Kerala, 99 per cent mothers receive antenatal check-ups. Thus, much needs to be done in Uttarakhand to achieve what Kerala could.

Coverage of antenatal check-up is not uniform in the state. Only 35 per cent rural mothers of the children born in the three years preceding the Survey received at least one antenatal check-up compared to 78 per cent in case of urban mothers. The gap is even larger between illiterate mothers being 28 per cent and those completed at least high school at 78 per cent. In fact, coverage increases uniformly with higher and higher level of educational qualification of the mothers (Table 5.10).

The district-wise RRS also depict similar picture (Table 5.11). Full ANC is received by very low percentage of women in most of the districts in the state, highest being 35 per cent in Dehradun followed by Pauri Garhwal (24 per cent). Mothers who received at least one antenatal check-up vary between 35 per cent in Tehri Garhwal and 70 per cent in Dehradun. To achieve full ANC in the state, the approach should be to concentrate more on rural areas, illiterate women and backward districts.

Family welfare services promote institutional deliveries for those attended by trained health professionals and three check-ups after delivery are recommended. In Uttarakhand, NFHS-2 data show that just 21 per cent deliveries take place in health institutions and only 8 per cent in public health institutions (Table 5.12). Proportion of institutional deliveries is higher at 40 per cent in urban than 16 per cent in rural areas. Rural-urban gap is higher when place of

delivery is private health institution. Proportion of institutional delivery increases with the increase in the mother's education, especially in case of deliveries conducted in private health facilities (Table 5.12). The RRS data also brings out that, except in Dehradun district, in all other districts institutional deliveries are less than one-fourth (Table 5.11). Even safe deliveries are less than 30 per cent in districts other than Dehradun. In Dehradun, the proportions of institutional and safe deliveries are 39 and 46 per cent respectively. NFHS-II observed that only one out of seven births outside a medical facility were followed by a postpartum check-up.

TABLE 5.11

Percentage Distribution of Women by Extent of Antenatal Check-up, Source of Delivery and Districts, 1998-99

| Districts | Indicators | | | |
|-------------------|------------|----------|------------------------|---------------|
| | ANC | Full ANC | Institutional Delivery | Safe Delivery |
| Almora | 40.5 | 18.1 | 11.9 | 20.1 |
| Chamoli | 42.4 | 18.4 | 11.8 | 16.2 |
| Dehradun | 69.7 | 35.6 | 39.0 | 45.6 |
| Haridwar | 40.5 | 18.5 | 23.6 | 27.3 |
| Nainital | 46.2 | 17.4 | 19.3 | 25.1 |
| Pauri Garhwal | 51.7 | 24.0 | 18.7 | 24.3 |
| Pithoragarh | 49.1 | 20.9 | 12.8 | 21.7 |
| Tehri Garhwal | 34.8 | 16.6 | 13.3 | 16.4 |
| Udham Singh Nagar | 37.6 | 14.2 | 18.1 | 26.5 |
| Uttarkashi | 41.0 | 18.6 | 12.7 | 19.3 |

Source: IIPS (1999); RCH Project-Rapid Rural Survey, 1998-99.

TABLE 5.12

Percentage Distribution of Births during the Three Years Preceding the Survey by Place of Delivery and Selected Background Characteristics, 1998-99

| Background Characteristics | Place of Delivery | | | | | |
|--------------------------------|-----------------------------|---------------|---------|----------|---------------|--------|
| | Health Facility/Institution | | | Home | | Others |
| | Public | NGO/ Trust | Private | Own Home | Parent's Home | |
| <i>Residence</i> | | | | | | |
| Urban | 9.7 | 0 | 32.0 | 48.6 | 7.2 | 2.4 |
| Rural | 8.0 | 0.3 | 7.2 | 79.8 | 2.1 | 2.6 |
| Total | 8.3 | 0.2 | 12.1 | 73.7 | 3.1 | 2.5 |
| <i>Mother's education</i> | | | | | | |
| Illiterate | 4.1 | 0 | 4.1 | 85.5 | 2.1 | 4.2 |
| Literate | | | | | | |
| < middle school complete | 11.0 | 0 | 5.7 | 79.9 | 3.4 | 0.0 |
| Middle school complete | 11.0 | 2.5 | 5.9 | 73.5 | 4.6 | 2.5 |
| High school complete and above | 15.6 | 0 | 35.3 | 44.5 | 4.6 | 0.0 |

Source: IIPS (2002); National Family Health Survey (NFHS-II).

The USNPSS, 2005 study (Survey of Health Status of Children) observed that in Uttarakhand, the Auxiliary Nurse Midwife (ANM) responsible for health and care of women and infants at the sub-centre levels are often considered by communities as staff appointed to meet family planning targets only. Physical as well as social distance between the staff at the sub-centre and the women around is large. A rural woman participant in a workshop held at Almora reported that people are made to pay in cash or kind like *saree* to the ANM for helping at the time of delivery of a child. If the baby born is a boy the rate is INR 500 and for a girl it is INR 300. So, only those who can afford that much call an ANM at home or go to a hospital. Poor people prefer a *dai*.

The low utilisation of health services during pregnancy and delivery and after childbirth in Uttarakhand should be a matter of concern for the health department. It affects negatively both mother and child's health and consequently also influences the child's learning capacity, which in turn leads to reduced income-earning capacity, thus creating a vicious circle. There is a need to integrate the traditional birth attendant in health care system. Increasing the number of SCs by establishing at least one SC for every five villages, sensitising health workers towards needs of the people, forming (officially recognised) committees of local people to disseminate information about existing services and the health rights of the people and to coordinate between health workers

and the population for efficient delivery of services, are some of the interventions which can improve the services.

NFHS-II discovered that 41 per cent of currently married women in Uttarakhand are having some type of reproductive health problem. A large majority of them, 69 per cent (72 per cent rural and 55 per cent urban), have not sought any advice or treatment and only 12 per cent sought advice or treatment from public medical facility (See Appendix Table A-5.3). As noted earlier, almost complete non-availability of female medical officer and public health nurse in almost all PHCs in different districts may be an important reason that Uttarakhand women in general and rural women in particular avoid discussion or treatment of their reproductive health problems. Health department should create conditions by appointing female health staff and also play a proactive role in convincing women not to ignore these problems and must consult health care providers.

Family Planning

One of the objectives of the state's Health and Population Policy is to achieve replacement level of fertility by 2010. The policies to achieve this objective include providing universal access to quality contraceptive services in order to lower TFR to 2.1 and attaining two-child norm.

NFHS-II data show that knowledge about contraceptive is almost universal among currently married women in Uttarakhand (See Appendix Table A-5.4). Yet only 43 per cent of married women in Uttarakhand are currently using any contraceptive method, compared with 48 per cent at the national level. Proportion of women using modern methods is 40 per cent in Uttarakhand. Contraceptive prevalence is higher in urban (57 per cent) than in rural (39 per cent) areas. Female sterilisation is the most popular method; 27 per cent of currently married women are sterilised. Use of pill is 1 per cent, IUD 2 per cent and condom 6 per cent. Because of higher emphasis on sterilisation, women tend to adopt Family Planning (FP) only after they have achieved their desired family size.

Insofar as knowledge about contraceptives is concerned, the picture presented by RRS data is little different than that of NFHS-II. The proportion of those who know all family planning methods varies between 69 per cent in Uttarkashi to 96 per cent in Udham Singh Nagar district (Table 5.13). CPR is lowest in Haridwar at 35 per cent and highest in Chamoli at 51 per cent. A significant proportion of women, varying between 7 per cent in Pauri Garhwal to 28 per cent in Udham Singh Nagar, marry below 18 years of age and around half of the

married women have birth order 3 plus. Around one-third in each district are having unmet need for family planning.

TABLE 5.13

Percentage Distribution of Women by Selected Health Indicators and Districts, 2001

| Districts | Indicators | | | | |
|-------------------|-------------------------|-------------------|----------------------------------|----------------|------------|
| | Marriage Below 18 Years | Birth Order 3Plus | Know All Family Planning Methods | CPR Any Method | Unmet Need |
| Almora | 14.0 | 46.4 | 73.8 | 41.3 | 36.3 |
| Chamoli | 7.8 | 50.6 | 71.0 | 51.1 | 29.6 |
| Dehradun | 14.2 | 49.1 | 86.5 | 47.3 | 33.3 |
| Haridwar | 12.5 | 56.5 | 85.6 | 35.2 | 36.6 |
| Nainital | 9.5 | 50.9 | 80.5 | 39.2 | 36.5 |
| Pauri Garhwal | 6.7 | 50.8 | 77.7 | 48.4 | 33.2 |
| Pithioragarh | 22.8 | 47.6 | 76.4 | 43.4 | 34.9 |
| Tehri Garhwal | 13.1 | 50.4 | 76.2 | 38.2 | 32.9 |
| Udham Singh Nagar | 28.2 | 53.9 | 96.7 | 39.2 | 30.6 |
| Uttarkashi | 17.1 | 54.8 | 68.8 | 46.0 | 29.7 |

Source: IIPS (2001); Reproductive and Child Health Project-Rapid Rural Survey (Phase I & II)-1998-1999, IIPS, Mumbai.

NFHS-II data depict little lower unmet need of women in Uttarakhand for family planning being 21 per cent (See Appendix Table 5.5). The need is higher at 28 per cent among women coming from poor background. Unmet need is equally divided between spacing and limiting the family. Need for family planning methods for spacing is mainly coming from recently married women without any child or having one child. Thus, there is a need to chalk out strategies to fulfil this unmet need, especially targeting newly married and poor women.

Providing information about different contraceptive methods, their side effects and follow-up services by the health workers are important indicators of the quality of family planning services. NFHS-II data show that only 15 per cent of the current users of contraceptive methods

were told about other methods (Table 5.14). The proportion is 25 per cent in urban and 13 per cent in rural areas. Only one-fourth—more or less equal proportion in rural and urban areas—were told about side effects or other problems with the current methods by a health worker at the time of accepting the current method. Around 61 per cent received follow-up services after accepting current method. This proportion is higher in urban areas at 71 per cent than in rural areas at 57 per cent. Much more needs to be done to improve the quality of family planning services.

Spread of HIV/AIDS is another area of major concern in India. However, awareness about this menace is still low, especially among women. NFHS-II recorded that 64 per cent of women in Uttarakhand have not heard about it. Awareness about AIDS is particularly low among rural, illiterate, scheduled caste and poor women and among those who are not regularly exposed to mass media. Moreover, among women who have heard of AIDS, 37 per cent do not know of any way to avoid infection. Just less than 2 per cent of women, who are aware, got information from health workers. Given the increasing threat of spread of AIDS in poor countries like India, there is an urgent need to gear up the health machinery to perform their duty of increasing awareness about HIV/AIDS.

NFHS-II data show that during illness, three-quarters of households in Uttarakhand use private doctors for treatment and only 23 per cent usually go to public health facility. Almost similar pattern is observed among households with low standard of living.

3. Network of Health Services and an Overview

The network of health services in the State can broadly be divided into: (1) rural health care, and (2) urban health care services. The hierarchical structure of these services (starting from the highest to the lowest) is as shown in Figure 5.2.

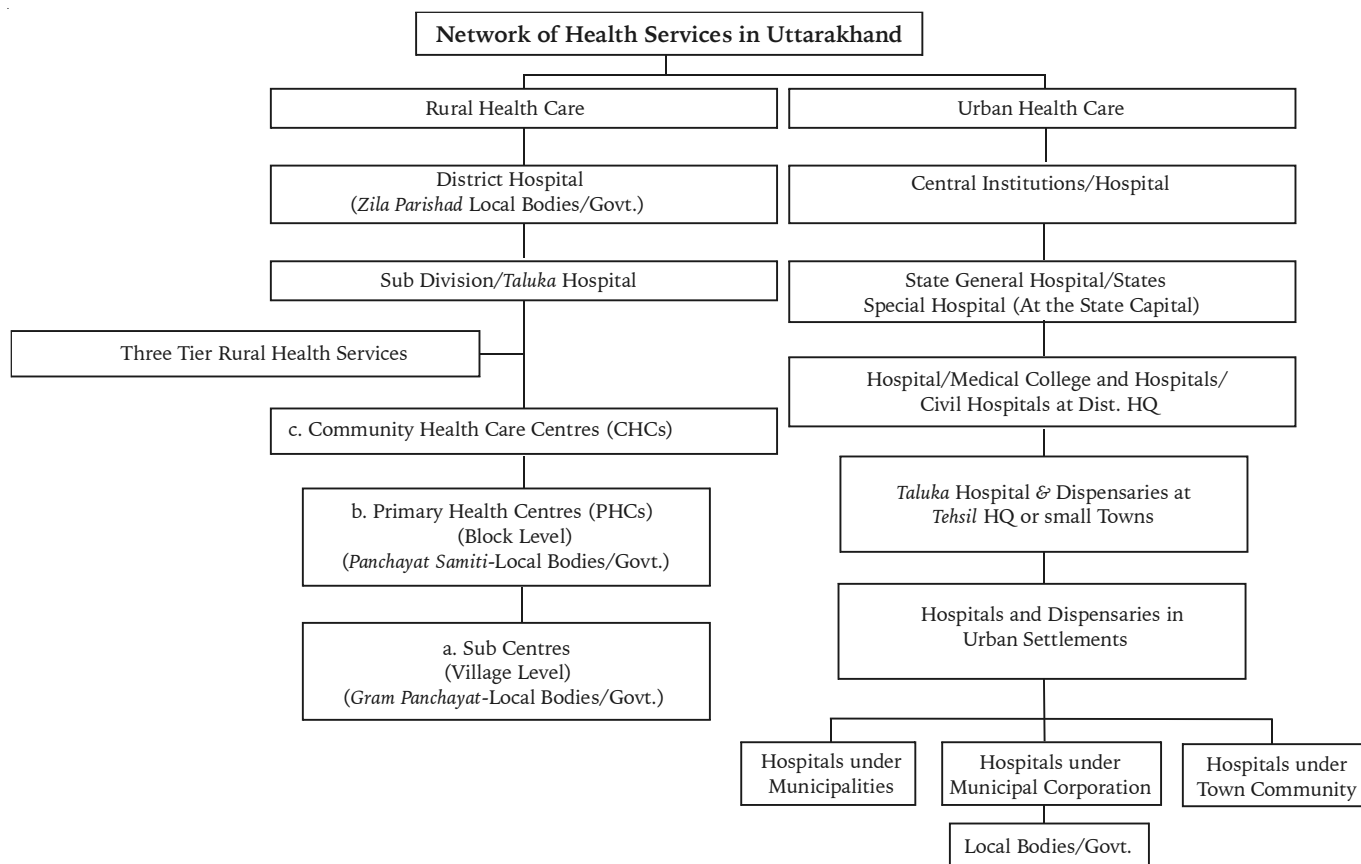
TABLE 5.14

Percentage Distribution of Current Users of Modern Contraceptive Methods who were Told about Other Methods, Side Effects and Other Problems, and who were Given Follow-up Services by Residence, 1998-99

| Residence | Percentage of Current Users of Modern Contraceptive Methods | | | | |
|-----------|--------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-----------------|
| | Percentage who were Told about Other Methods by Motivators (It Excludes those Women who were Self-motivated) | Number of Users | Percentage who were Told about Side Effects or Other Problems with Current Methods by a Health Worker at the Time of Accepting the Current Method | Percentage who Received Follow Up after Acceptance of Current Method | Number of Users |
| Urban | 25.0 | 33 | 26.7 | 70.5 | 118 |
| Rural | 13.1 | 145 | 24.4 | 57.1 | 298 |
| Total | 15.3 | 177 | 25.1 | 60.9 | 415 |

Source: IIPS (2002); National Family Health Survey (NFHS-II).

FIGURE 5.2
Hierarchical Structure of Health Services



Source: Annual Report, 1999-2000, Ministry of Health and Family Welfare, Government of India.

Table 5.15-A and 5.15-B presents the entire network of health services in Uttarakhand comprising of primary health care services, hospitals and dispensaries and, special category hospitals. It may be observed that district-wise variation in the number of beds per lakh population in government hospitals is very large. The same varies from the lowest in Rudraprayag, US Nagar and Bageshwar being 29, 37 and 56, respectively to the highest in Nainital, Dehradun and Almora being 218, 206 and 169 respectively. At present, there are 1765 sub-centres, 84 main centres (MCs) attached to block PHCs, 322 Allopathic Dispensaries, 232 PHCs (187 Additional PHC and 45 BPHCs) and 49 CHCs, at primary level serving

people in rural settlements in Uttarakhand. Further, at secondary level 3 base hospitals, 11 district hospitals, 15 combined hospitals and 6 district female hospitals are providing health services to both men and women. Out of total sub-centres currently functioning, 893 are rented buildings and 121 are under construction. During 2006-2007, 130 sub-centre buildings are proposed for which an amount of INR 7.15 crore would be required. To cover the total population of 1991 census, additional 240 sub-centres are needed to be established.

Rural health care consists of a three-tier health services, viz., (a) Sub-centres (SCs), (b) Primary Healthcare Centres (PHCs), and (c) Community Healthcare Centres (CHCs).⁴

4. a) SCs: It is the most peripheral contact between the primary health care system and the community. The SCs have mainly promotive and adductive functions relating to maternal and child health, family welfare, nutrition, immunisation, diarrhoea control and control of communicable disease programmes. They also provide basic drugs for minor ailments that are needed for taking care of essential needs of women and children. It is manned by one male and one female multipurpose worker/ANM. Of the total functioning SCs, 71 per cent is funded by the Department of Family Welfare and the rest are funded under the state minimum needs programme (MNP)/basic minimum services (BMS) programme.
- b) PHCs: The PHC is the first contact point between the village community and the medical officer. These are established and maintained by the state government under the minimum needs programme (MNP). A medical officer supported by 14 paramedical and other staff man a PHC. It acts as a referral unit for six SCs and has 30 beds. The activities of PHCs involve curative, preventive, promotive and family welfare services.
- c) CHCs: These are established and maintained by the state government under the MNP/BMS programmes. Four medical specialist men it, i.e., one surgeon, one physician, one gynaecologist and one paediatrician supported by 21 paramedical and other staff. It has 30 beds with one X-ray machine, labour room and laboratory facilities. It serves as a referral centre for four PHCs.

TABLE 5.15a
Network of Health Services in Uttarakhand (2002-03)

| Districts | Primary Health Care Services | | | | Hospitals & Dispensaries | | | | Special Category Hospitals | | | | |
|---------------|-----------------------------------------------|-----------------------------|-------------------------------|---------------------------------------------|--------------------------------|---------------------------------|----------------------------------|-----------------------------|----------------------------|---------------------------|-------------------------------------------|----------------------------------------|------------------------------------------|
| | Sub-Centres (Family & Child Welfare) | Primary Health Centre | Community Health Centre | Family Welfare & Child Care Centre | Govt. Allopathy Hospital | Govt. Ayurvedic Hospitals | Govt. Homeopathy Hospitals | Govt. Unani Hospitals | TB Clinic | Leprosy Care Centre | Hospital for Contagious Diseases | No. of Beds in Govt. Hospital | No. of Beds per lakh Population |
| Almora | 124 | 27 | 3 | 24 | 51 | 48 | 5 | 0 | 0 | 0 | 0 | 899 | 169 |
| Bageshwar | 68 | 10 | 1 | 3 | 17 | 11 | 2 | 0 | 0 | 0 | 0 | 138 | 56 |
| Chamoli | 91 | 11 | 3 | 0 | 29 | 54 | 5 | 0 | 1 | 0 | 0 | 380 | 103 |
| Champawat | 50 | 2 | 2 | 3 | 20 | 16 | 1 | 0 | 1 | 0 | 0 | 165 | 74 |
| Dehradun | 129 | 21 | 3 | 4 | 86 | 45 | 8 | 1 | 2 | 1 | 0 | 2644 | 206 |
| Haridwar | 139 | 24 | 3 | 5 | 31 | 19 | 5 | 3 | 1 | 0 | 1 | 1327 | 92 |
| Nainital | 127 | 22 | 3 | 0 | 48 | 22 | 8 | 0 | 2 | 0 | 0 | 1664 | 218 |
| Pauri Garhwal | 203 | 27 | 4 | 15 | 88 | 49 | 7 | 0 | 0 | 0 | 0 | 945 | 135 |
| Pithoragarh | 145 | 18 | 3 | 8 | 47 | 51 | 4 | 0 | 1 | 1 | 1 | 610 | 132 |
| Rudraprayag | 65 | 8 | 2 | 0 | 27 | 25 | 3 | 0 | 0 | 0 | 0 | 222 | 29 |
| Tehri Garhwal | 128 | 9 | 1 | 13 | 61 | 59 | 8 | 0 | 1 | 1 | 0 | 428 | 71 |
| US Nagar | 147 | 28 | 4 | 7 | 18 | 13 | 2 | 0 | 0 | 0 | 0 | 458 | 37 |
| Uttarkashi | 64 | 10 | 2 | 4 | 25 | 45 | 4 | 0 | 1 | 2 | 1 | 310 | 105 |
| Uttarakhand | 1480 | 217 | 34 | 86 | 548 | 457 | 62 | 4 | 10 | 5 | 3 | 8526 | 142 |

Source: District Statistical Handbooks, Government of Uttarakhand, 2002-03.

TABLE 5.15b
Network of Health Services in Uttarakhand as on 31-03-2007

| Districts | Primary Health Care Services | | | | Hospitals & Dispensaries/ Special Category Hospitals | | | | | | |
|---------------|-------------------------------------------------|-----------------------------|-------------------------------|------|---------------------------------------------------------|---------------------------------|-------------------|--------------|---------------------------|----------------------|--|
| | Sub-Centres (Family and Child Welfare) | Primary Health Centre | Community Health Centre | SADs | Distt. Hospitals Male+ Female | District Hospitals Female | Base Hospitals | TB Clinic | Leprosy Care Centre | Combined Hospital | |
| Almora | 195 | 27 | 4 | 40 | 1 | 1 | 1 | 1 | 0 | 1 | |
| Bageshwar | 77 | 9 | 3 | 14 | 0 | 0 | 0 | 1 | 0 | 0 | |
| Chamoli | 104 | 10 | 5 | 23 | 1 | 0 | 0 | 1 | 0 | 0 | |
| Champawat | 66 | 5 | 2 | 10 | 0 | 0 | 0 | 1 | 0 | 1 | |
| Dehradun | 167 | 23 | 5 | 24 | 1 | 1 | 0 | 2 | 1 | 3 | |
| Haridwar | 159 | 24 | 3 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | |
| Nainital | 136 | 18 | 4 | 31 | 1 | 1 | 1 | 1 | 0 | 4 | |
| Pauri Garhwal | 218 | 27 | 5 | 67 | 1 | 1 | 1 | 1 | 0 | 2 | |
| Pithoragarh | 154 | 18 | 4 | 32 | 1 | 1 | 0 | 1 | 1 | 0 | |
| Rudraprayag | 65 | 8 | 2 | 22 | 1 | 0 | 0 | 1 | 0 | 0 | |
| Tehri Garhwal | 190 | 26 | 4 | 30 | 1 | 0 | 0 | 1 | 1 | 1 | |
| US Nagar | 153 | 26 | 6 | 8 | 1 | 0 | 0 | 1 | 0 | 1 | |
| Uttarkashi | 81 | 11 | 2 | 21 | 1 | 0 | 0 | 1 | 0 | 0 | |
| Uttarakhand | 1765 | 232 | 49 | 322 | 11 | 6 | 3 | 14 | 3 | 15 | |

Source: District Statistical Handbooks, Government of Uttarakhand.

Table 5.16 indicates shortfall as percentage of requirements of SCs, PHCs and CHCs. These show a dismal performance as regards setting up these three primary rural health care services. In case of SCs, the shortage is to the extent of even 1/3rd in several districts; in respect of PHCs, the shortage reported even goes upto

the extent of 50 and 60 per cent. The picture in respect of CHCs is the most disappointing. The extent of shortage varies between the minimum at 25 per cent to as high as 86 per cent. From the very fact, as explained above, the roles that the SCs, PHCs and CHCs are supposed to play in making provision for most primary health needs of the

TABLE 5.16
Shortfall as Percentage of Requirement of Sub-centres (SC), Primary Health Care Centres (PHC) and Community Health Centres (CHC)-2004

| Districts | Rural Health Care Centres | | | | | | | | |
|-------------------|---------------------------|-----|-----|---------------------|-----|-----|--------------------------|------|------|
| | Existing Number (E) | | | Required Number (R) | | | Shortfall (Per cent) (S) | | |
| | Sub-centres | PHC | CHC | Sub-centres | PHC | CHC | Sub-centres | PHC | CHC |
| Hilly | | | | | | | | | |
| 1. Almora | 136 | 11 | 3 | 202 | 30 | 8 | 32.7 | 63.3 | 62.5 |
| 2. Bageshwar | 68 | 9 | 2 | 85 | 13 | 3 | 20.0 | 30.8 | 33.3 |
| 3. Chamoli | 91 | 12 | 3 | 113 | 17 | 4 | 19.5 | 29.4 | 25.0 |
| 4. Champawat | 50 | 5 | 2 | 67 | 10 | 3 | 25.4 | 50.0 | 33.3 |
| 5. Dehradun | 129 | 21 | 4 | 213 | 32 | 8 | 39.4 | 34.4 | 50.0 |
| 6. Pauri Garhwal | 232 | 35 | 4 | 213 | 32 | 8 | 8.9* | N.A. | 50.0 |
| 7. Nainital | 126 | 19 | 3 | 173 | 26 | 7 | 27.2 | 26.9 | 57.1 |
| 8. Pithoragarh | 145 | 18 | 3 | 143 | 21 | 5 | 1.4* | 14.3 | 40.0 |
| 9. Rudraprayag | 65 | 8 | 2 | 79 | 12 | 3 | 17.7 | 33.3 | 33.3 |
| 10. Tehri Garhwal | 128 | 29 | 1 | 192 | 29 | 7 | 33.3 | 0.0 | 85.7 |
| 11. Uttarkashi | 64 | 10 | 2 | 96 | 14 | 4 | 33.3 | 28.6 | 50.0 |
| Sub total | 1234 | 177 | 29 | 1576 | 236 | 60 | 21.7 | 25.0 | 51.7 |
| Non-hilly | | | | | | | | | |
| 12. Haridwar | 144 | 24 | 3 | 211 | 35 | 9 | 31.8 | 31.4 | 66.7 |
| 13. US Nagar | 147 | 28 | 4 | 175 | 29 | 7 | 16.0 | 3.5 | 42.9 |
| Sub-total | 291 | 52 | 7 | 386 | 64 | 16 | 24.6 | 18.8 | 56.3 |
| All | 1525 | 229 | 36 | 1962 | 300 | 76 | 22.7 | 23.7 | 52.6 |

Note: N.A.= Not Applicable. * These two districts have reported excess in the existing number over the requirement.

Source: Ministry of Health and Family Welfare, Government of India, New Delhi.

TABLE 5.17
Percentage Distribution of Allopathic Hospitals/Dispensaries by Distance from Village and Districts, 2002-03

| Districts | All | At Village | <1 Km. | 1-3 Kms. | 3-5 Kms. | >5 Kms. | All |
|--------------------------------------------------------------|-------|------------|--------|----------|----------|---------|-----|
| (As percentage to total number of villages in the districts) | | | | | | | |
| 1. Almora | 2155 | 3.2 | 4.22 | 11.65 | 35.5 | 45.43 | 100 |
| 2. Bageshwar | 858 | 2.8 | 3.73 | 20.51 | 25.76 | 47.2 | 100 |
| 3. Chamoli | 1154 | 2.77 | 3.21 | 13.86 | 11.44 | 68.72 | 100 |
| 4. Champawat | 651 | 2.61 | 3.84 | 4.3 | 17.82 | 71.43 | 100 |
| 5. Dehradun | 718 | 6.55 | 0.14 | 12.67 | 25.07 | 55.57 | 100 |
| 6. Haridwar | 505 | 3.56 | 1.19 | 20.79 | 36.44 | 38.02 | 100 |
| 7. Nainital | 1065 | 5.35 | 5.45 | 27.42 | 26.29 | 35.49 | 100 |
| 8. Pauri Garhwal | 3137 | 3.41 | 3.63 | 8.89 | 7.05 | 77.02 | 100 |
| 9. Pithoragarh | 1566 | 3.51 | 4.53 | 15.64 | 32.76 | 43.56 | 100 |
| 10. Rudraprayag | 652 | 4.91 | 0.77 | 12.88 | 27.15 | 54.29 | 100 |
| 11. Tehri Garhwal | 1760 | 3.3 | 0.8 | 11.93 | 27.39 | 56.58 | 100 |
| 12. US Nagar | 653 | 6.13 | 3.52 | 20.83 | 22.66 | 46.86 | 100 |
| 13. Uttarkashi | 665 | 4.66 | 7.67 | 15.79 | 18.8 | 53.08 | 100 |
| State Total | 15539 | 3.78 | 3.4 | 13.91 | 22.81 | 56.1 | 100 |

Source: District Statistical Handbook, Govt. of Uttarakhand, 2002-03.

rural masses, in its absence or shortage, the extent of suffering and deprivation it could cause can well be imagined.

Apart from the availability of rural health care services as discussed above, the issue of accessibility of allopathic hospitals and dispensaries for the rural people is a vital issue.

Table 5.17 presents percentage and number of allopathic hospitals and dispensaries by distance from the village. Overall in the state, only 3.78 per cent of the villages have this facility within the village. For 56 per cent of the villages the nearest hospital/dispensary is at a distance of more than 5 kilometres. This, across districts varies between the minimum 38.12 to the maximum 77.02 per cent of villages. The extent of difficulty the villagers have to undergo in order to cover distance of more than 5 kilometres in the hilly regions, is enormous due to non-availability of well-connected roads and suitable vehicle being the other major bottleneck.

For providing quality health care, existence of appropriate health care infrastructure is a precondition. Availability or non-availability of health institutions, accessibility in rural and remote areas, proper buildings, basic facilities, adequacy of staff and equipments etc., are important factors that influence delivery of health services.

3.1 Need-Gap Analysis

3.1.1 Rural Health Care Institutions: Requirements and Shortfall against Availability

Sub-centres

Table 5.16 presents the required number of sub-centres as per the population norms, number existing at present and the shortfall as per cent to the required number in the year 2004. In the state as a whole, the requirement as per the recommended population norm is 1962 whereas the number existing is 1525 leading to a shortfall of 437 sub-centres. Shortfall as against the requirement is to the extent of 23 per cent or 1/5th. However out of 13 districts, 2 districts have reported excess in the existing number over the requirement to the extent of 8.9 per cent in Pauri Garhwal district and 1.4 per cent in Pithoragarh district. In rest of the 11 districts, the maximum shortfall has been found in district Dehradun and minimum shortage was at 16 per cent in district US Nagar.

The State has 16,414 villages and each sub-centre is serving, on an average 10.8 village. In fact, in most of the hilly districts where settlements are small, each sub-centre is serving on an average more than 15 villages. How difficult it is for a health worker to cover the entire area

TABLE 5.18
Projected Annual Requirement of Sub-centres: Cumulative and Net by Hilly and Non-hilly Districts

| Districts | 2005 | | 2006 | | 2007 | | 2008 | | 2009 | | 2010 | |
|------------------|------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|
| | Cumulative | Net | Cumulative | Net | Cumulative | Net | Cumulative | Net | Cumulative | Net | Cumulative | Net |
| <i>Hilly</i> | | | | | | | | | | | | |
| Almora | 205 | 3 | 208 | 3 | 211 | 6 | 215 | 10 | 218 | 13 | 221 | 16 |
| Bageshwar | 87 | 2 | 87 | 0 | 89 | 2 | 90 | 3 | 91 | 4 | 93 | 6 |
| Chamoli | 114 | 1 | 116 | 2 | 117 | 3 | 119 | 5 | 121 | 7 | 123 | 9 |
| Champawat | 68 | 1 | 69 | 1 | 70 | 2 | 72 | 4 | 73 | 5 | 74 | 6 |
| Dehradun | 216 | 3 | 219 | 3 | 223 | 7 | 226 | 10 | 229 | 13 | 232 | 16 |
| Pauri Garhwal | 216 | 3 | 219 | 3 | 223 | 7 | 226 | 10 | 229 | 13 | 232 | 16 |
| Nainital | 175 | 2 | 178 | 3 | 181 | 6 | 184 | 9 | 186 | 11 | 189 | 14 |
| Pithoragarh | 144 | 1 | 147 | 3 | 149 | 5 | 151 | 7 | 153 | 9 | 156 | 12 |
| Rudraprayag | 80 | 1 | 81 | 1 | 83 | 3 | 84 | 4 | 85 | 5 | 86 | 6 |
| Tehri Garhwal | 194 | 2 | 197 | 3 | 200 | 6 | 203 | 9 | 206 | 12 | 209 | 15 |
| Uttarkashi | 97 | 1 | 98 | 1 | 100 | 3 | 101 | 4 | 103 | 6 | 104 | 7 |
| Sub-total | 1596 | 20 | 1619 | 23 | 1646 | 50 | 1671 | 75 | 1694 | 98 | 1719 | 123 |
| <i>Non-hilly</i> | | | | | | | | | | | | |
| Haridwar | | | | | | | | | | | | |
| US Nagar | 177 | 2 | 180 | 3 | 183 | 6 | 186 | 9 | 188 | 11 | 191 | 14 |
| Sub-total | 390 | 4 | 396 | 6 | 403 | 13 | 409 | 19 | 414 | 24 | 420 | 30 |
| State Total | 1986 | 24 | 2015 | 29 | 2049 | 63 | 2080 | 94 | 2108 | 122 | 2139 | 153 |

Source: Calculated on the basis of projected population done by the government of Uttarakhand.

and also the villagers to visit the sub-centres can be well imagined.

In Table 5.18, the annual cumulative requirement and net requirement of number sub-centres for hilly and non-hilly districts up to 2010 have been projected. The same has been arrived at by applying the population norms for setting up a sub-centre on the estimates of projected population by Uttarakhand government. As per the projection, the requirement of sub-centre in the state would increase from 1986 in 2005 to 2139 in 2010 or additional 153 sub-centres have to be set up during the span of five years i.e., 2006 to 2010. In other words on average 30.6 sub-centres have to be set up each year. In addition to this as can be observed from Table 5.16, till 2004 the shortage of sub-centres over requirement was to the extent of 437 indicating a huge backlog. Therefore, the need of the hour is to clear the backlog within a minimum span of time so that the huge gap between the requirement and availability is reduced considerably.

Population norm for setting up a sub-centre (SC) is 3000 for hill districts and 5000 for plain districts. Except for Haridwar and Udham Singh Nagar, remaining eleven districts in Uttarakhand are hilly districts. Even if in all the districts the sub-centres are set up as per population norm then each sub-centre will serve 8.4 villages on an average. The number will be much higher in remote hilly

areas. In the state where half the villages don't have road connectivity, it is hardly possible for an ANM to cover 10 or more villages under a sub-centre. In fact, there is need to revise the norm in hilly areas where settlement pattern is highly scattered. Along with the population norm to set up one sub-centre for every 3000 population, there should be another criteria that each sub-centre should cover not more than five villages. If that condition is accepted then the present requirement of sub-centres will be more than double at 4032 from 2016 at present i.e., 2006.

Primary Health Care (PHC)

Population norm for setting up of PHC is that for every 20,000 population in hills and every 30,000 population in plains there should be one PHC. As per these norms the state required 300 PHCs in 2004 but had only 229; a shortfall of around 24 per cent (Table 5.16). Shortfall is little higher in hilly districts and 50 per cent and above in two districts of Champawat and Almora.

The annual cumulative requirement and net requirement of number of PHCs for hilly and non-hilly districts up to 2010 have been projected (Table 5.19). The same have been arrived at by applying the population norms for setting up a sub-centre on the estimates of projected population by Uttarakhand government. As per the projection the requirement for PHCs in the state

TABLE 5.19
Projected Annual Requirement of Primary Health Centres (PHC): Cumulative and Net by Hilly and Non-hilly Districts

| Districts | 2005 | | 2006 | | 2007 | | 2008 | | 2009 | | 2010 | |
|------------------|------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|
| | Cumulative | Net | Cumulative | Net | Cumulative | Net | Cumulative | Net | Cumulative | Net | Cumulative | Net |
| <i>Hilly</i> | | | | | | | | | | | | |
| Almora | 31 | 1 | 51 | 20 | 52 | 1 | 52 | 0 | 53 | 1 | 53 | 0 |
| Bageshwar | 13 | 0 | 17 | 4 | 17 | 0 | 18 | 1 | 18 | 0 | 18 | 0 |
| Chamoli | 17 | 0 | 22 | 5 | 23 | 1 | 23 | 0 | 23 | 0 | 23 | 0 |
| Champawat | 10 | 0 | 15 | 5 | 16 | 1 | 16 | 0 | 16 | 0 | 16 | 0 |
| Dehradun | 32 | 0 | 44 | 12 | 44 | 0 | 45 | 1 | 45 | 0 | 46 | 1 |
| Pauri Garhwal | 32 | 0 | 30 | -2 | 30 | 0 | 31 | 1 | 31 | 0 | 32 | 1 |
| Nainital | 27 | 1 | 35 | 8 | 35 | 0 | 36 | 1 | 36 | 0 | 36 | 0 |
| Pithoragarh | 22 | 1 | 26 | 4 | 26 | 0 | 27 | 1 | 27 | 0 | 27 | 0 |
| Rudraprayag | 12 | 0 | 16 | 4 | 16 | 0 | 17 | 1 | 17 | 0 | 17 | 0 |
| Tehri Garhwal | 29 | 0 | 30 | 1 | 30 | 0 | 30 | 0 | 31 | 1 | 31 | 0 |
| Uttarkashi | 15 | 1 | 20 | 5 | 20 | 0 | 20 | 0 | 20 | 0 | 21 | 1 |
| Sub-total | 240 | 4 | 306 | 66 | 309 | 3 | 315 | 6 | 317 | 2 | 320 | 3 |
| <i>Non-hilly</i> | | | | | | | | | | | | |
| Haridwar | 35 | 0 | 47 | 12 | 48 | 1 | 48 | 0 | 49 | 1 | 49 | 0 |
| US Nagar | 30 | 1 | 32 | 2 | 32 | 0 | 33 | 1 | 33 | 0 | 34 | 1 |
| Sub-total | 65 | 1 | 79 | 14 | 80 | 1 | 81 | 1 | 82 | 1 | 83 | 1 |
| All | 305 | 76 | 385 | 80 | 389 | 4 | 396 | 7 | 399 | 3 | 403 | 4 |

Source: Calculated on the basis of projected population done by the government of Uttarakhand.

would increase from 305 in 2005 to 403 in 2010 or additional 98 PHCs have to be set up during the span of five years i.e. 2006 to 2010. In other words on average 19.6 PHCs have to be set up each year. In addition to this as can be observed from Table 5.16, that till 2004 the shortage of PHCs over requirement till 2004 was to the extent of 71 indicating a huge backlog. Therefore, the need of the hour is to clear the backlog within a minimum span of time so that the big gap between the requirement and availability is reduced considerably.

Community Health Centre (CHC)

Population norm for setting up of CHC is 80,000 and 120,000 respectively for hilly and plain areas. The number required is 76 CHCs but have only 36, nearly 53 per cent less than the number required (Table 5.16). The shortfall is as high as 86 per cent in Tehri Garhwal, 67 per cent in Haridwar and 63 per cent in Almora. The present shortfall for the state as a whole is 40 CHCs and will increase to 46 in 2010 (Table 5.20). To increase peoples' access to health services, an effort should be made to reduce/eliminate the present shortfall of 24 per cent and 53 per cent respectively of PHCs and CHCs in the overall in the year 2004.

3.1.2 Ownership of Building at the Rural Health Facilities

Only 28.66 per cent of the sub-centres are in government owned buildings, nearly 71 per cent are in rented buildings and around half a per cent in rent free buildings in 2004 (See Appendix Table A-5.6). In the states of Himachal Pradesh and Kerala the proportion of SCs in government buildings is 57 and 59 per cent respectively.

In fact, in Himachal Pradesh only around 2 per cent SCs are in rented buildings, the remaining are in rent free buildings, which are generally community owned. Even around 28 per cent PHCs in Uttarakhand are in rented buildings. However, all the 36 (100 per cent) CHCs are in government buildings (See Appendix Table A-5.7). Ownership of building has its own advantages. Whereas rented building may keep on shifting thus creating information gap, owned building gives permanency to the institution, which also makes it possible to furnish it properly. A study of functioning of sub-centres (SCs) conducted by NCAER (2005) based on data collected from 15 major states of India noted that compared to SCs in rented buildings, SCs having owned or rent-free buildings

TABLE 5.20
Projected Annual Requirement of Community Health Centres (CHC): Cumulative and Net

| Districts | 2005 | | 2006 | | 2007 | | 2008 | | 2009 | | 2010 | |
|------------------|------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|
| | Cumulative | Net | Cumulative | Net | Cumulative | Net | Cumulative | Net | Cumulative | Net | Cumulative | Net |
| <i>Hilly</i> | | | | | | | | | | | | |
| Almora | 8 | 0 | 13 | 5 | 13 | 0 | 13 | 0 | 13 | 0 | 13 | 0 |
| Bageshwar | 3 | 0 | 4 | 1 | 4 | 0 | 4 | 0 | 4 | 0 | 4 | 0 |
| Chamoli | 4 | 0 | 5 | 1 | 5 | 0 | 5 | 0 | 6 | 1 | 6 | 0 |
| Champawat | 3 | 0 | 4 | 1 | 4 | 0 | 4 | 0 | 4 | 0 | 4 | 0 |
| Dehradun | 8 | 0 | 12 | 4 | 12 | 0 | 12 | 0 | 13 | 1 | 13 | 0 |
| Pauri Garhwal | 8 | 0 | 12 | 4 | 12 | 0 | 12 | 0 | 13 | 1 | 13 | 0 |
| Nainital | 7 | 0 | 11 | 4 | 11 | 0 | 11 | 0 | 11 | 0 | 11 | 0 |
| Pithoragarh | 5 | 0 | 8 | 3 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| Rudraprayag | 3 | 0 | 4 | 1 | 4 | 0 | 4 | 0 | 4 | 0 | 4 | 0 |
| Tehri Garhwal | 7 | 0 | 13 | 6 | 14 | 1 | 14 | 0 | 14 | 0 | 14 | 0 |
| Uttarkashi | 4 | 0 | 6 | 2 | 6 | 0 | 6 | 0 | 6 | 0 | 6 | 0 |
| Sub-total | 60 | 0 | 92 | 32 | 93 | 1 | 93 | 0 | 96 | 3 | 96 | 0 |
| <i>Non-hilly</i> | | | | | | | | | | | | |
| Haridwar | 9 | 0 | 15 | 6 | 15 | 0 | 15 | 0 | 15 | 0 | 16 | 1 |
| US Nagar | 7 | 0 | 11 | 4 | 11 | 0 | 11 | 0 | 11 | 0 | 11 | 0 |
| Sub-total | 16 | 0 | 26 | 10 | 26 | 0 | 26 | 0 | 26 | 0 | 27 | 1 |
| All | 76 | 0 | 118 | 42 | 119 | 1 | 119 | 0 | 122 | 3 | 123 | 1 |

Note: Net requirement in a given year refers to the requirement for that year and does not include the expected shortage as the CHCs likely to be set up in the respective years cannot be projected.

Source: Calculated on the basis of projected population done by the government of Uttarakhand.

have significantly higher proportion of furniture items like chair, table, bench, cup-board etc. In the former case, proportion of SCs having toilets is just 33 per cent compared to 67 per cent in the latter case. The proportion of *pucca* structures is also considerably higher in case of owned buildings (75 per cent) compared to SCs in rented buildings (47 per cent).

International Institute of Population Sciences (IIPS), Mumbai carried out an all-India survey of facilities available in primary health care centres under the aegis of the Ministry of Health and Family Welfare, Government of India. The information was collected in 2002-03 about the available facilities related to infrastructure, supply of medicines, equipments and staff. The Survey covered 8 out of the total 13 districts of Uttarakhand. Infrastructure in selected variable is presented in Table 5.21.

In two out of eight districts, about half of the SCs are in government buildings, in the remaining six districts about 18 to 41 per cent SCs are in government buildings. The number of districts where SCs have at least well as source of water varies between 33.3 per cent to 78.3 per cent. In respect of supply of electricity, in three districts, the percentage of sub-centres having electricity is only 9.1, 33.3 and 36.8 per cent respectively. In the remaining districts the same is more than 50 per cent. In Champawat district not even a single SC is having electricity or any water supply. Interestingly, SCs are better placed in terms of toilet facility, the ratio being above two-thirds in all the districts. Proportion of SCs having staff quarters for health workers is less than one-third in all the districts and even less than 15 per cent in

4 out of 8 districts. This adversely affects the service delivery. In the NCAER (2005) study on functioning of sub-centres in India, it was observed that in cases where ANMs reside in the same village where the SC is located, service delivery is reported to be better and also villagers can readily seek help in case of an emergency. The proportion of ANMs using own moped for transportation is very negligible, it being less than 10 per cent in three districts and none in the remaining five districts. Availability of female health workers is almost total in all districts but of male health workers is less than 15 per cent at SCs in six out of eight districts. The part time female workers are also appointed in significant proportion in SCs but with considerable district level variations. The contractual health workers are appointed in relatively few SCs.

To recapitulate, the SCs in Uttarakhand are generally in rented buildings; water supply and electricity is not available in all SCs; staff quarters for ANM is rare; almost no ANM own moped for transportation, and male health workers are rarely appointed.

3.1.3. Facilities Available in Primary Health Care Centre

The Survey collected a variety of information on infrastructure and other facilities in PHCs. Table 5.22 shows that in eight districts where the survey was conducted the number of PHCs operating from own building constitutes 40 to 75 per cent. PHCs operating from *kuccha* buildings was reported from four districts. The same varying between 6.3 to 11.1 per cent regular

TABLE 5.21

Percentage Distribution of Sub-centres by Location and Facilities Available in Eight Selected Districts of Uttarakhand

| Indicators | Year 2002-03 | | | | | | | |
|-------------------------------------|--------------|-----------|----------|-------------|--------------|---------------|----------|------------|
| | Bageshwar | Champawat | Haridwar | Pithoragarh | Rudra prayag | Tehri Garhwal | US Nagar | Uttarkashi |
| Govt. buildings | 33.3 | 30.0 | 52.4 | 17.7 | 37.50 | 20.4 | 41.1 | 51.4 |
| Sources of water at least with well | 33.3 | 0.0 | 63.6 | 66.6 | 33.3 | 50.0 | 78.3 | 26.30 |
| Electricity | 33.3 | 0.0 | 9.1 | 50.0 | 50.0 | 50.0 | 69.6 | 36.8 |
| Toilet facility | 83.3 | 66.7 | 100.0 | 66.6 | 100.0 | 100.0 | 95.7 | 89.5 |
| Quarter for health worker | 27.8 | 20.0 | 2.4 | 11.8 | 12.50 | 8.2 | 30.4 | 29.7 |
| Mode of travel of ANM by own moped | 0.0 | 0.0 | 7.1 | 0.0 | 0.0 | 0.0 | 5.4 | 2.70. |
| Health worker male | 38.9 | 10.0 | 14.3 | 23.5 | 6.3 | 8.2 | 10.7 | 5.4 |
| Health worker female | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 98.0 | 100.0 | 94.60 |
| Part time worker male | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 |
| Part time worker female | 16.7 | 0.0 | 78.6 | 17.7 | 31.3 | 49.0 | 35.7 | 67.6 |
| Contractual health worker | 16.7 | 20.00 | 0.0 | 5.9 | 25.0 | 6.1 | 1.8 | 13.5 |

Source: Based on Facility Survey Data collected by IIPS, provided by Ministry of Health & Family Welfare, Govt. of India.

maintenance was reported from PHCs in five districts varying between 3.6 to 20 per cent. In the remaining three districts, no maintenance is reported being done. In only two districts, over 80 per cent PHCs have source of water (at least well). In two other districts, the proportion is less than half. In the remaining four districts, it varies between 50 to 75 per cent. Highest proportion of PHCs (75 per cent) with electricity facility is in Udham Singh Nagar at 75 per cent and lowest in Haridwar at 43 per cent. That means proportion of PHCs without electricity facility varies between 25 to 57 per cent. Operation theatre is available only in 43 to 63 per cent of PHCs. In district Tehri Garhwal 60 per cent of PHCs have Labour/IUD Room. The proportion varies between 0 to 33 per cent in other districts. In 6 out of 8 districts proportion of PHCs having separate ANC clinic room is well below 50 per cent. Ratio of PHCs having the facility of storeroom, dispensing room and room for a doctor is relatively high, in some districts even up to 100 per cent. The highest proportion of PHCs having laboratory and telephone facility is in district Champawat at 60 per cent in respect of both. In other districts, these proportions vary between 0 to 36 per cent. In five districts less than one-fourth PHCs have toilet facility. The proportion of PHCs having vehicle varies between 10 to 40 per cent and the range for

those having staff quarter of Medical Officer ranges between 43 to 67 per cent.

Availability of functional equipment is relatively high in PHCs (See Appendix Table A-5.8). All PHCs have vaccine carrier, most have infant weighing machine, adult weighing machine, deep freezers, BP instrument, MTP solution aspirator, labour room table, examination table and stream sterilise drum. Proportion of PHCs having autoclave varies between 50 per cent (Champawat district) and 86 per cent (Haridwar district). In Rudraprayag and Tehri Garhwal all PHCs, and Pithoragarh 86 per cent PHCs have refrigerator. In the remaining five districts, no PHC have reported having a refrigerator.

As regards the availability of concerned staff in PHCs the situation is rather disappointing. Non-availability of medical officers trained in sterilisation and MTP is reported by almost all PHCs (See Appendix Table A-5.9). Medical officers after RCH training (12 days duration) are posted in 30 to 76 per cent PHCs in different districts. Availability of paramedical staff is little better but certainly not satisfactory in all the districts (See Appendix Table A-5.10). Paramedical staff trained in IUD insertion is available in 30 per cent PHCs in Uttarkashi being the lowest and 96 per cent PHCs in Tehri Garhwal being the highest. Availability of paramedical staff trained in

TABLE 5.22
Percentage Distribution of Primary Health Centres (PHCs) by Location and Facilities Available in Eight Selected Districts of Uttarakhand

| Indicators | Year 2002-03 | | | | | | | |
|------------------------------------|--------------|-----------|----------|-------------|--------------|---------------|----------|------------|
| | Bageshwar | Champawat | Haridwar | Pithoragarh | Rudra prayag | Tehri Garhwal | US Nagar | Uttarkashi |
| Own buildings | 40.0 | 40.0 | 57.1 | 68.8 | 66.7 | 64.0 | 75.0 | 66.7 |
| Kuccha | 0.0 | 0.0 | 0.0 | 6.3 | 11.1 | 8.0 | 0.0 | 10.0 |
| Regular maintenance | 10.0 | 0.0 | 0.0 | 0.0 | 11.1 | 20.0 | 3.6 | 16.7 |
| Source of water at least with well | 60.0 | 60.0 | 90.5 | 75.0 | 55.6 | 40.0 | 82.1 | 43.3 |
| Electricity | 50.0 | 60.0 | 42.9 | 68.8 | 55.6 | 60.0 | 75.0 | 53.3 |
| Operation theatre | 50.0 | 60.0 | 42.9 | 62.5 | 55.6 | 56.0 | 60.7 | 50.0 |
| Labour room/IUD | 10.0 | 0.0 | 28.6 | 18.8 | 33.3 | 60.0 | 10.7 | 6.7 |
| Separate ANC clinic room | 30.0 | 20.0 | 57.1 | 43.8 | 33.3 | 60.0 | 14.3 | 16.7 |
| Dispensing room | 30.0 | 80.0 | 85.2 | 93.8 | 88.9 | 96.0 | 78.6 | 96.7 |
| Room for doctors | 80.0 | 100.0 | 100.0 | 87.5 | 88.9 | 100.0 | 96.4 | 83.3 |
| Laboratory | 0.0 | 60.0 | 4.8 | 18.8 | 0.0 | 36.0 | 14.3 | 10.0 |
| Telephone | 20.0 | 60.0 | 4.8 | 12.5 | 22.2 | 36.0 | 10.7 | 13.3 |
| Toilet facility | 0.0 | 0.0 | 71.4 | 6.3 | 44.4 | 24.0 | 14.3 | 56.7 |
| Facility of at least one bed | 90.0 | 100.0 | 90.5 | 100.0 | 88.9 | 100.0 | 92.9 | 96.7 |
| Vehicle | 20.0 | 20.0 | 9.5 | 37.5 | 22.2 | 40.0 | 10.7 | 16.7 |
| Staff quarter for MO | 50.0 | 60.0 | 42.9 | 62.5 | 66.7 | 48.0 | 67.9 | 53.3 |

Source: Based on Facility Survey Data collected by IIPS, provided by Ministry of Health & Family Welfare, Govt. of India.

checking blood pressure has been reported by 20 to 92 per cent of PHCs. Paramedical staff in Reproductive & Child health (RCH) issues has been reported by 33 to 88 per cent PHCs across districts. However, non-availability of female medical officer and public health nurse in almost all PHCs in different districts is most worrying. Presence of female health assistant is also low, highest being in 29 per cent PHCs in Udham Singh Nagar and lowest none in Bageshwar district. In 6 out of 8 districts, male health assistant is available in less than 40 per cent PHCs, lowest being 7 per cent in Uttarkashi. Relatively speaking, proportion of pharmacist/compounder, female multipurpose worker and at least one female health worker is higher in PHCs. But the highest proportion of posting of male multipurpose worker and laboratory technician is in 40 per cent and 28 per cent PHCs in Tehri Garhwal. In fact, in six districts laboratory technicians are posted in less than 15 per cent PHCs (See Appendix Table A-5.11).

Thus, a sizeable proportion of PHCs are without own buildings and some are even in *kuccha* buildings, and large

majority are without basic infrastructure facilities like electricity, water, toilet facility, labour/IUD room, operation theatre, separate ANC clinic room, laboratory, vehicle, staff quarter, telephone and refrigerator. Staff availability is unsatisfactory in each category but worse in case of medical officers trained in sterilisation, MTP, female health assistant, male health assistant, male multipurpose worker and laboratory technician. Non-availability of female medical officer and public health nurse in almost all PHCs in different districts is most worrying.

Table 5.23 and 5.24 provide summary information about facilities available at PHCs. Facilities analysed in the earlier Tables are grouped together and the Table gives the proportion of PHCs, in each district, which are adequately equipped in these groups of facilities. In case of infrastructure, staff, training, MTP and sterilisation, the proportion of adequately equipped PHCs, in all the districts, is below 50 per cent. In fact, in an important facility from the point of view of family planning like medical termination of pregnancy (MTP), no PHC in any

TABLE 5.23

Percentage Distribution of PHCs by Adequacy of Infrastructure, Staff, Medicines etc., and Districts, 2002-03

| Indicators | District | | | | | | | |
|--------------------|-----------|-----------|----------|-------------|-------------|---------------|----------|------------|
| | Bageshwar | Champawat | Haridwar | Pithoragarh | Rudraprayag | Tehri Garhwal | US Nagar | Uttarkashi |
| Infrastructure | 25.0 | 26.7 | 18.3 | 35.4 | 31.5 | 43.3 | 25.6 | 22.2 |
| Staff | 17.5 | 25.0 | 19.6 | 29.7 | | 49.5 | 16.1 | 25.8 |
| Supply of medicine | 51.7 | 56.7 | 51.6 | 59.4 | 53.7 | 65.3 | 44.1 | 48.3 |
| Equipment | 37.5 | 40.0 | 45.2 | 46.9 | 36.1 | 59.0 | 33.0 | 29.2 |
| Training | 16.7 | 20.0 | 33.3 | 10.4 | 14.8 | 16.0 | 19.1 | 14.4 |
| Delivery | 30.0 | 20.0 | 61.9 | 50.0 | 55.6 | 60.0 | 53.6 | 26.7 |
| MTP | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| IUD intersection | 30.0 | 20.0 | 61.9 | 75.0 | 55.6 | 96.0 | 32.1 | 30.0 |
| Sterilisation | 20.0 | 20.0 | 33.3 | 25.0 | 11.1 | 12.0 | 17.9 | 13.3 |

Source: Based on Facility Survey Data collected by IIPS, provided by Ministry of Health & Family Welfare, Govt. of India.

TABLE 5.24

Percentage Distribution of PHCs by Availability of All Critical Inputs and District, 2002-03

| All Critical Inputs by Per cent Points | District | | | | | | | |
|----------------------------------------|-----------|-----------|----------|-------------|-------------|---------------|----------|------------|
| | Bageshwar | Champawat | Haridwar | Pithoragarh | Rudraprayag | Tehri Garhwal | US Nagar | Uttarkashi |
| <20 per cent | 30.0 | 60.0 | 14.3 | 6.3 | 0.0 | 12.0 | 35.7 | 36.7 |
| 20-39.9 per cent | 50.0 | 0.0 | 66.7 | 62.5 | 66.7 | 28.0 | 46.4 | 46.7 |
| 40-59.9 per cent | 0.0 | 0.0 | 9.5 | 0.0 | 22.2 | 20.0 | 7.1 | 3.3 |
| 60-79.9 per cent | 10.0 | 20.0 | 4.8 | 25.0 | 11.1 | 28.0 | 7.1 | 10.0 |
| >80 per cent | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 12.0 | 0.0 | 0.0 |

Source: Based on Facility Survey Data collected by IIPS, provided by Ministry of Health & Family Welfare, Govt. of India.

of the districts is adequately equipped. Situation is also quite bad as far as existence of trained staff, in different operations, is concerned. In equipment, at least in one district, proportion of adequately equipped PHCs crosses the 50 per cent mark. In supply of medicines and delivery, in majority of the districts the proportion of adequately equipped PHCs is above 50 per cent. No PHC in any district is adequately equipped with these facilities. In IUD insertion, in only two districts, proportion of adequately equipped PHCs cross 75 per cent. In no other facility, proportion of adequately equipped PHCs is above 65 per cent in any of the districts. The above analysis shows that the overall situation of availability of health care facilities in PHCs in Uttarakhand is quite disturbing. Thus, there is a dire need, not only to increase the number of PHCs but also to equip properly the existing PHCs that are having grossly inadequate facilities.

3.2 Role of ISM&H Government Hospitals

In the initial years, allopathic system of medicine dominated the public health system in India. Our own age old *ayurvedic* system and other systems like homeopathy, *unani* system of medicines etc., were relegated to the background. Of late, there is a realisation to integrate different systems of medicines. Health and Population

Policy of Uttarakhand (2002) also emphasised the need to integrate services of different systems of medicine and to encourage research and development in the field of *Ayurveda*.

However, condition of facilities in existing government hospitals of Indian Systems of Medicines and Homeopathy (ISM&H) in these districts of Uttarakhand is not satisfactory (Table 5.25). Proportion of hospitals with own buildings is below 24 per cent in all the districts. In other words, the proportion of hospitals without own building varies between 76 to 100 per cent in these eight districts. Moreover, not all these buildings are in *pucca* structures. Proportion of hospitals with *pucca* buildings is as low as 38 per cent in district Champawat and highest 78 per cent in district Bageshwar. Very few hospitals ranging between 4.4 to 37.5 per cent have reported maintenance at least once in a year. Percentage of hospitals reporting source of water (at least from well) varies between the lowest in Rudraprayag at 4.4 per cent to the highest in US Nagar at 71.4 per cent. Highest proportion of hospitals with electricity facility was reported in Haridwar at 47 per cent and lowest in Rudraprayag at 9 per cent. It means that the proportion of hospitals without electricity facility varies between 53 to 91 per cent. Generator sets and telephone facilities are almost non-existent. Hospitals having toilet

BOX 5.1

Case Study No.1: Public Health Facilities System in Bageshwar is in a Mess

After the formation of the district in 2002, with a lot of fanfares, "Community Health Centre" of Bageshwar got the higher status of a "District Hospital". Funds were released, ambulances and the medical equipments were purchased, and new buildings were also constructed. However, the outcome of the enhanced status in the post-transformation stage is worth reviewing:

- Since the enhancement of the status from CHC to a district hospital, the chief medical officers posted there were in the verge of their retirement with just 2-3 years of remaining service. As a result they had shown little interest in the development of infrastructure and service efficiency of the hospital.
- The ambulances pressed into service were hardly been useful to the public in general as they mainly catered to the need of a handful and politicians and influential people in the district. The extent of misuse of these ambulances was much that four of these have become almost non-operational within 6 months of coming on the roads.
- Death due to negligence of project/hospital staff especially during the time of pregnancy/child delivery is not new in the region e.g., a death was reported of a pregnant woman at X Primary Health Centre in September 2005.
- Facilities provided under the different World Bank funded schemes like Elimination of Tuberculosis, Elimination of Leprosy, Elimination of Blindness etc., have remained on paper only. In many cases, the medicines supplied under these projects simply rot in the stores in absence of any arrangement made by the concerned authorities for proper management and distribution of these medicines.
- Several deficiencies and inadequacies in the provision of government run health facilities have resulted in the mushrooming of a number of private health services run by unqualified medical practitioners and quacks in the district. The situation reached to its climax when Dr.Y, Chief Medical Officer of Bageshwar, declined to own any responsibility for the miserable state of affairs in the district when questioned by the correspondents of a local evening daily newspaper, on October 21, 2005. Now the question is who should be made responsible and how can the issue be resolved for the situation getting bad to worse.

facility and sewage connected to municipal sewage varies between 17 and 41 per cent across districts, excepting Bageshwar where none of the hospitals reported having toilet or sewage connection. Only in Haridwar, all hospitals dispose of waste material by burying in a pit. In other districts, this proportion varies between 22 and 57 per cent. Hospitals having staff quarters are rare, highest proportion being 20 per cent reported in Uttarkashi. Facilities like X-ray machine, biochemical/pathological laboratory, vehicle and paid nursing facility are almost non-existent in all hospitals and across all districts. However, all hospitals in all districts have outdoor as well as indoor departments. Only in two districts, the maintenance of records is satisfactory in more than 60 per cent hospitals. In the remaining six districts, it was between 19 to 50 per cent. Beds as per norms reported available in 53 to 100 per cent hospitals in different districts. Proportion of hospitals having examination table varies between 33 to 80 per cent. In a state where the institutional deliveries are quite low, proportion of

hospitals without delivery table varying between 76 to 100 per cent is a matter of serious concern. Overall, the condition of hospitals in terms of basic infrastructure facilities in ISM&H is extremely poor.

The status in terms of staff in position and supply of medicines presents a mixed picture, but certainly not very encouraging (See Appendix Table A-5.12). Only in two districts, all hospitals have medical officer. In other districts, proportion of hospitals having medical officer varies between 61 and 86 per cent. Pharmacist is posted in all the hospitals in one district and, in over 50 per cent hospitals in three other districts. In Tehri Garhwal, only 3 per cent hospitals have pharmacist. Except for Haridwar district, where in few hospitals sister and nurse are posted, in other districts they are non-existent. Adequate supply of medicines for common ailments is reported to be available in 44 to 76 per cent hospitals in different districts. Specialised medicines of serious ailments are available in 40 per cent of the hospitals in Haridwar being the maximum and 14 per cent of hospitals in US Nagar being

TABLE 5.25
Percentage Distribution of ISM&H Hospitals by Availability of Infrastructure Facilities, 2002-03

| Indicators | District | | | | | | | |
|---------------------------------------------------------------|-----------|-----------|----------|-------------|-------------|---------------|----------|------------|
| | Bageshwar | Champawat | Haridwar | Pithoragarh | Rudraprayag | Tehri Garhwal | US Nagar | Uttarkashi |
| Own buildings | 0.0 | 0.0 | 11.8 | 11.8 | 8.7 | 19.4 | 14.3 | 23.9 |
| Pucca buildings | 77.8 | 37.5 | 76.5 | 51.0 | 43.5 | 72.2 | 78.6 | 69.6 |
| Maintenance at least once in a year | 11.1 | 37.5 | 29.4 | 11.8 | 4.4 | 13.9 | 14.3 | 17.4 |
| Sources of water, at least well | 11.1 | 25.0 | 64.7 | 43.1 | 4.4 | 19.4 | 71.4 | 19.6 |
| Electricity | 0.0 | 18.8 | 47.1 | 19.6 | 8.7 | 27.8 | 42.9 | 39.1 |
| Regulate electricity | 0.0 | 18.8 | 47.1 | 13.7 | 4.4 | 25.0 | 28.6 | 34.8 |
| Generator | 0.0 | 0.0 | 5.9 | 0.0 | 0.0 | 0.0 | 7.1 | 0.0 |
| Telephone | 0.0 | 0.0 | 5.9 | 2.0 | 0.0 | 0.0 | 0.0 | 2.2 |
| Toilet facility | 0.0 | 25.0 | 47.1 | 19.6 | 21.7 | 30.6 | 35.7 | 43.5 |
| Sewerage connected to municipal sewerage | 0.0 | 25.0 | 35.3 | 17.7 | 21.7 | 25.0 | 35.7 | 41.3 |
| Disposal of water material in a pit | 22.2 | 43.8 | 100.0 | 47.1 | 43.5 | 25.0 | 57.1 | 32.6 |
| Staff quarters | 0.0 | 0.0 | 5.9 | 9.8 | 13.0 | 5.6 | 7.1 | 19.6 |
| Vehicles in working condition | 0.0 | 0.0 | 11.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Having indoor departments | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Having outdoor departments | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Having medical record | 22.2 | 25.0 | 64.7 | 29.4 | 60.9 | 38.9 | 50.0 | 50.0 |
| Maintenance and availability of records is least satisfactory | 33.3 | 18.8 | 64.7 | 27.5 | 60.9 | 36.1 | 50.0 | 50.0 |
| Paid nursing facilities | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| X-Ray machine | 0.0 | 0.0 | 11.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Biological laboratory | 0.0 | 0.0 | 11.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Beds as per norms | 66.7 | 93.8 | 52.9 | 62.8 | 82.6 | 97.2 | 100.0 | 93.5 |
| Delivery tables | 11.1 | 0.0 | 23.5 | 3.9 | 0.0 | 11.1 | 14.3 | 4.4 |
| Examination table | 33.3 | 75.0 | 29.4 | 66.7 | 56.5 | 52.8 | 78.6 | 80.4 |

Source: Based on Facility Survey Data collected by IIPS, provided by Ministry of Health & Family Welfare, Govt. of India.

the minimum. In other districts, proportion of hospitals with supply of such medicines is zero or almost zero.

Thus, the condition of facilities in ISM&H government hospitals is even worse than PHCs. A very high proportion of ISM&H hospitals are without their own buildings and are in *kuccha* structures without regular maintenance, and a large majority are without basic infrastructure facilities like electricity, water, toilet facility, sewage, X-ray machine, biochemical/pathological laboratory, vehicle, delivery table, staff quarter and telephone. Staff availability is unsatisfactory in each category but supply of medicines, for common ailments, is adequate in substantial number of hospitals.

What emerges from the above analysis of facilities in public health care institutions is that there is an urgent need to ponder over the condition of all those SCs, PHCs and ISM&H hospitals without proper buildings, water, electricity, telephone, toilet, sewage connection, sufficient staff, equipments and other facilities. For improving service delivery, these serious deficiencies are required to be rectified.

4. Deficiencies and Difficulties in Health Care Services

4.1 Geographical Impediments in Accessing Health Facilities

There are certain other factors that too have an effect

on service delivery and access to health services. Three-fourth population in Uttarakhand lives in rural areas. Settlement pattern is small and scattered. Half of the villages have less than 200 and over four-fifths less than 500 population. Road connectivity is poor; half the villages without any road connection. One health worker is invariably serving 10 or more settlements. As reported by rural women, there is an acute shortage of women's health care centres and hospitals, lady doctors and female staff in hospitals, both in government and private sector. Also, lack of outreach and erratic supply are repeatedly cited by them as the major constraints influencing adversely their health seeking behaviour (USNPSS, 2005).

So the challenge in the state is multifaceted and requires a totally different approach and a comprehensive development strategy, keeping in mind the physical and social environment in the state. The Department of Medical Health and Family Welfare in Uttarakhand has to devise a health strategy that is innovative and cost effective. One way could be involving local people, with some minimum education, and training them in first aid and providing them with some immediately required simple medicines. Retired service personnel, living in villages, can be helpful in this regard.

4.2 Unqualified Practitioners

The private health sector consists of both qualified and unqualified practitioners. Unqualified medical

Constraints, Causes and Effects in the Accessibility of Health Facilities as Perceived by Rural Women is Presented Below:

| Constraints | Causes | Effects |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Geographical | Mountainous terrain prone to landslides, floods, earthquakes, snowfall | I. High cost of infrastructure development. II. Difficulties in reaching the people, pregnant and lactating women unattended. III. Erratic vaccination pattern. |
| 2. Social | Small villages, scattered population, lack of information and skills | I. Educated, trained doctors unwilling to serve in the hills. II. Different norms for service delivery in govt. system. III. Child delivery by <i>dais</i> (traditional birth attendants) IV. Dependency on local healers. |
| 3. Environmental | Thick forests, villages inaccessible during monsoon and snowfall | I. Isolated, marginalised population, patients remain unattended. II. Irregular vaccination. |
| 4. Economic | Poor population, high male migration, health system focusing more on quantitative than qualitative aspects | I. Women seek medical assistance when the men come home. II. Partially, practical gender needs are addressed, strategic gender interests remain intact. |
| 5. Planning and development to health | Lack of holistic approach to health (e.g., water, sanitation, health care, environment dealt separately by different departments). Lack of roads, communication facilities, little vehicular movement | I. Ailments and diseases persist. II. Problems continue to grow. III. Death on the way to the hospitals. |

Source: Based on open-ended discussions with members of rural women's groups at Almora (USNPSS, 2005).

practitioners usually practice in rural areas and urban slums. Insufficient and non-performing public health care system created space for these unqualified practitioners. Easy accessibility to these practitioners increases their acceptability in the community.

A study (Bharat, 2003) of Social Assessment of RCH in five Indian states, including Uttarakhand, noted that in contrast to private sector, public sector has bigger outreach network, and qualitatively better trained personnel, but has a poor image among the beneficiaries, that of an 'unfriendly', 'unsympathetic', and 'incompetent' sector that 'fails to deliver' because it does not respect the users' needs for dignified and respectful treatment.

As a result, large proportion of households (even from poor strata) in Uttarakhand, use private doctors for treatment when a family member is ill (NFHS-II). For poor households it is a compulsion to seek treatment from private sector, despite being costly, because it is towards the poor and the lower caste people that the attitude of the public health staff is more abusive and negative, always blaming them for their problems.

BOX 5.2

Case Study 2: Health Facilities at the Remote Areas is Still a Dream

Maya (name changed), a thirty-two year old lady of X Village of Tehri Garhwal, dreamt to be a mother. She was married at the age of 18 years. Within two years after marriage, she was blessed with a male child but he survived only for a month. Next year she gave birth to a girl child but that also could barely survive for a month. Now her only dream is to be a mother of a healthy child. But most probably her dream would never be a reality as she has been told by the doctors in Dehradun that the quack medication and inexperienced hands at the time of her delivery resulted in the shift of the position of her uterus. At village X there are others too like Maya who had met with similar fate for the same reason.

Ms. Radha (Name changed, Ms. Maya's mother) stated that all deliveries in the area mostly take place at home only under overall supervision of elderly women in the village. She also added that neither the child nor the mother is ever administered any drugs or injection. She also confirmed that her five grandchildren, between two to eight years old, were never given any injection till the date of interview. Another lady Ms. Paro (name changed) stated, "children here are born in God's name and in God's name they grow up and survive". But the question is why these ignorant and helpless women have to leave such critical health need of their children at the mercy of God and fate? A close look at the apathetic condition of existing infrastructure in the area would convince one that though in paper much have been achieved out of various government schemes but in reality the facts are different.

Source: NCAER Field Survey, 2006.

For providing quality service through public sector, existing structural constraints, both physical and human, need to be removed. On the basis of infrastructural facilities and topography, the state should be divided into certain parts (not necessarily contiguous) and each member of health staff ought to serve for a specified period in each type of area. It is also essential to evolve a system of incentives and disincentives to improve the quality of services. As envisaged by HPPU-2002, performance based rewards should be introduced at all levels to improve productivity and commitment level of health personnel. To evaluate the performance of public health institutions an outside agency need to be engaged. Periodic surveys need to be carried out and the institutions ranked as per the quality standards with particular emphasis on client satisfaction. Assessment should be based on objective criteria and rules must be framed in such a way that the role of discretion be minimised.

4.3 Quality of Public Sector Health Care

BOX 5.3

Case Study 3: Mina (name changed) Needs Medical Advice for Lecuria but Does Not Know Where To Go!

Mina, a resident of village X (name changed) of Ghat block in district Chamoli, is suffering from lecuria. According to her, the symptoms like irregularities in monthly cycle, severe pains in back and joints etc., started 8-9 years back. Her economic condition as well as inaccessibility to the government-run health facilities due to distance did not allow her to approach for medicines and medical consultation from a registered medical practitioner. During the period 1997-2005 the local quacks for her were God and she could seek medical advice and medicines only from them. She stated that she even did not know that she was suffering from lecuria, a serious disease, until the Mobile Health Clinic of Hindusthan Latex Family Planning Promotion Trust (HLFPPT) visited to her village in March 2005. She is thankful to God for sending HLPPT to their village where not a single recognised medical practitioner had visited in the last 10 years. During the visit of the Mobile Van, it was also detected that her two daughters [Asha and Disha (names changed), 19 years and 16 years old respectively] were also victims of the same disease. During the one-year tenure the Mobile Health Clinic had given medicines and medical advice to many other women of the area. HLPPT also has identified many women like Mina who were suffering from this severe disease, unaware and having no treatment. But since April 2006, the Mobile Health Clinic Project was discontinued as the tenure of the pilot project was completed. Now the women of this area are totally helpless and confused. They do not know from where to seek treatment. According to them they are once again at the mercy of the all Mighty.

Source: NCAER field survey, 2006.

5. State of National Health Programmes in Uttarakhand

Health has been considered as one of the key sector for development since the inception of the five-year plans. Accordingly, several schemes and programmes have been implemented. However, a close look at the outcome of these reveal several flaws and deficiencies in their implementation. The programmes, and in many cases the goals, are far from being achieved. In this context an in-depth analysis of the policy issues along with SWOT (Strength, Weakness, Opportunity & Threat) analysis has been done for the selected programmes.

Among several time-bound initiatives taken up by the government, some of the major ones include: Blindness Control Programme, Malaria Eradication Programme, Reproductive & Child Health Programme, HIV & AIDS Control Programme etc. In this section SWOT analysis has been carried out in respect of these four programmes and the key findings are summarised below.

5.1 Blindness Control Programme

Project Objective: To reduce the prevalence of blindness from around 1 per cent to 0.3 per cent.

Findings:

- (1) The platform is provided where the government as well as non-government organisations can jointly work. As a result key non-government organisations, hospitals, associations like Rotary Clubs, Red Cross Society etc., have started playing major roles in blindness control (Project Report of the concerned projects).
- (2) The programme addressed the need for modernisation of clinical laboratories. As a result, laboratory facilities at 10 district hospitals, 2 sub-centres and 3 base hospitals have been improved (Annual Report of the Directorate of Health, Uttarakhand State, 2003-04).
- (3) Preventive measures also have been taken in this programme by arranging regular eye check-up of the school children through camps and health fairs (Annual Report of the Directorate of Health, Uttarakhand State, 2003-04).
- (4) Shortage of manpower. Though the vacant positions have been filled up by ad hoc appointments, a large number of positions for ophthalmic assistants are still lying vacant today.
- (5) Serious attempts have been given to modernise the laboratories and the equipments but still till date all

the base hospitals could not be converted in to microscopic centres, from the technical angle (Annual Report of the Directorate of Health, Uttarakhand State, 2003-04).

- (6) Transportation is a severe bottleneck in Uttarakhand. Therefore, to ensure the access of Blindness Control Programme to the remotest area, the best strategy would be to introduce the concept of Mobile Van/Mobile Operation Theatre facility. However till date no such attempt has been taken to introduce this concept in policy framing (Annual Report of Directorate of Health, 2004-05).
- (7) The policy guideline accepted that, 'prevention is better than cure'. But in the absence of clear guidelines for implementation, not much could be visible in this regard, except for organising a few school camps or eye *melas* at a haphazard manner in the name of, 'Information, Education & Communication' (IEC). The annual reports of the State Directorate for different years do project definite numbers but their implementation guidelines clearly indicate that no concrete method has been developed and adopted to monitor and evaluate the IEC related programmes.
- (8) The project document talked of different achievements but nothing has been said about monitoring and evaluation strategy/methodology which has been followed to monitor the programme.
- (9) The eye surgeons have been given training from time to time but a sizeable number of their assistants still do not know how to handle the latest scientific tools in the laboratories having an impact on improper and ineffective utilisation of scientific equipment's which has become a serious concern.(Health & Policy Workshop held in Mussorie during 9-10 May 2002).

5.2 Malaria Eradication Programme

Project Objective: To eradicate malaria.

Findings:

- (1) It has rightly been identified that malaria is the major health problem in two districts namely, Haridwar and Udham Singh Nagar but still the blood samples could not be collected systematically from these districts (finding of a workshop organised at the state level by Government of Uttarakhand in 2003).
- (2) Transfer of multipurpose workers from Health to *Panchayat* department without replacement created

serious problem of inadequate manpower in the Health department. This resulted in slow progress of the scheme (Health & Policy Workshop held in Mussourie during 9-10 May 2002).

- (3) Out of 13 districts, full-fledged malaria eradication officers have been posted only in 3 districts. In rest of the 10 districts, the fate of the project is under the designated incharge as malaria eradication officers who are holding this as an additional charge (Annual Report of Directorate of Health, Government of Uttarakhand, 2004-05). The same holds true in case of other positions of the department even in Haridwar and US Nagar districts also.
- (4) Untimely procurement and supply of drugs.
- (5) Migrated population from Nepal and Uttar Pradesh causes serious concern and a sizeable section of them carry the disease to Uttarakhand causing serious concern for the Health dept.

5.3 Reproductive and Child Health Programme

Project Objective

- (1) To control population growth.
- (2) To improve health status of the pregnant women and children.

Findings:

- (1) This programme has been conceptualised from the programme on family planning i.e., from the district hospitals to the door steps through Auxiliary Nurses and Midwives (ANMs).
- (2) Contract staff has been appointed to provide round the clock delivery service in the project.
- (3) Reproductive tract infection (RTI) and sexually transmitted infection (STI) centres have been set up by posting medical officers (skin and venereal disease).
- (4) To fill up the vacant positions contractual appointments have been made (concerned project document).
- (5) Already, 900 out of 3540 Trained Birth Attendants (TBAs) have received training in 10 districts (finding of a workshop organised at the state level by Govt. of Uttarakhand in 2003).
- (6) Still the state has higher proportion of high-risk pregnancies due to problems of inaccessibility of health services (finding of a workshop organised at the state level by Govt. of Uttarakhand in 2003).

- (7) A large number of women reported some type of reproductive health problem, including abnormal vaginal discharge, symptoms of urinary tract infection and pain or bleeding associated with intercourse. Of these, majority did not seek any advice or treatment and only a small percentage went to a government service provider (workshop findings on Health & Policy Related Issues organised by the state government in May 2002).
- (8) Shortage of manpower, specially lady medical officers, anaesthetists, staff nurse and laboratory technicians causes serious concern in the access of health facilities in the state. (Annual Report of the Directorate of Health, Uttarakhand Government, 2004). Moreover, during the field visit, it was clearly observed that the lady doctors are not available at the remote areas.
- (9) Accessibility in the hilly region is a serious concern for the speedy execution of health services. (Outcome of the informal discussions with the concerned officials at the district level).
- (10) One of the key indicators for efficient operation of a programme is having an effective feedback and monitoring mechanism. Actually this programme is lagging behind due to the absence of such essential network.

5.4. AIDS Control Programme

Project Objective: To control AIDS.

Findings:

- (1) The State AIDS Control Organisation was established in 2001 i.e., immediately after formation of the state.
- (2) The state has HIV testing and detection at RTI/STI units. There are 2 zonal blood testing centres, 10 district HIV testing centres, 2 voluntary counselling, and testing centres and 16 licenced blood banks, of which 10 are government owned and are operative to control the spread of the disease at its initial stages itself (outcome of the informal discussions with the concerned officials at the district level and findings of a workshop organised at the state level by Government of Uttarakhand in 2003).
- (3) The counselling centres have been opened and the figures on the achievements made so far suggests that the state has done a lot in it. (Table 5.26).
- (4) Realising the importance of IEC, the project has extensively used the modes namely radio

programmes, audiocassettes, CDs, posters, hoardings, magic shows etc. Moreover, to make the system more effective, the programmes like school education programmes, informal/formal meetings at the grass root level are also organised. (Annual Report of the Department of Health, Uttarakhand State, 2005).

TABLE 5.26
Counselling Given for AIDS Control

| Years | Counselling given to | | |
|-----------|----------------------|--------|-------|
| | Male | Female | Total |
| 2002-03 | 925 | 738 | 1663 |
| 2003-04 | 4234 | 3622 | 7856 |
| 2004-05 | 1343 | 1038 | 2381 |
| Till 2005 | 6502 | 5398 | 11900 |

Source: Annual Report of Directorate of Health, 2004-05.

- (5) Hospital facilities have been made free to the AIDS patients who have been affected by the diseases like tuberculosis, skin infection etc.
- (6) Finance is not a major constraint for this programme (Table 5.27).

TABLE 5.27
Financial Support

| Year | Amount Sanctioned the Central Government | Amount Released State Government | Amount Released by the State Government to the Departments |
|---------|------------------------------------------|----------------------------------|------------------------------------------------------------|
| 2002-03 | 200 Lakhs | 200 Lakhs | 200 Lakhs |
| 2003-04 | 176 Lakhs | 176 Lakhs | 176 Lakhs |

Source: Annual Report of Directorate of Health, 2004-05.

6. Emerging Issues and Recommendations

6.1 Resource Mobilisation

The Health and Population Policy of Uttarakhand-2002 envisages that the state health sector spending to be increased to 7 per cent of the total budget by 2005 and further to 8 per cent by 2010. However, budgets of the last four years since 2001-02 to 2004-05 do not show any progress in this direction. Expenditure on health in Uttarakhand is hovering around 4 per cent. In fact, at all India level 85 per cent of expenditure on health goes for staff salaries leaving little for medicines, supplies, maintenance, repair or transport (Antia *et al.*, 2000). Uttarakhand may not be different from other states in this respect. Analysis of facilities in the preceding paragraphs

BOX 5.4

Case Study No.4: Anti TB Drug Resistant

This is the sad tale of Bhola Singh (name changed) of village Z (name changed) of Pokhri block in Chamoli district. Fifty-five years old Bhola Singh is suffering from tuberculosis for the last 10-11 years. He visited the primary health centre several times but did not get a single dose of medicine from there. His fate was in the hands of the local quacks. There is a T.B. Hospital at Z but that is too expensive for him to afford. Bhola Singh, owns 2 bighas of land and also engages himself in wage employment and does not have that much to purchase medicines from Z T.B. Hospital. In this situation the local quacks are his God. But the most dangerous thing has occurred is that the medicines supplied by the quacks have made Bhola Singh resistant to T.B. drug. In Uttarakhand with lots of fanfare, "Eradication of Tuberculosis" programme is going on with the financial support from the Central government but the question is why people like Bhola Singh are not getting the benefits, at least the drugs from this programme. Moreover, many others like Bhola Singh in the same village are having similar stories to tell. Now it seems that their fate is left in the hands of God only.

Source: Primary Survey, NCAER-URDRT Team, 2006.

brings out a dismal picture of health infrastructure of public health care institutions in the state indicate that resources are insufficient and there is an urgent need to substantially increase allocation of funds to rectify these deficiencies. For an instance, as per Report of CAG (March 2004), a hospital built with the cost of INR 3.4 crores in July 2004 mandated to appoint required 97 staff did not do so till March 2005 (i.e., for almost 9 months).

The following measures should be taken regarding resource mobilisation:

- Given the economic conditions of large section of the population, purely profit based health organisations should be discouraged.
- Also, certain innovative methods of mobilising resources ought to be discovered. Social, religious, voluntary/charitable organisations and big corporate houses need to be persuaded to adopt specific areas to provide minimum free primary health care to the people.
- The norms for setting up sub-centres and PHCs need be revised.
- New PHCs need be opened immediately as per the suggested norms.
- The vacant posts of the doctors and pharmacists need be filled immediately.

- The posts of medical specialists at the hospitals need be filled without any delay.
- A well defined transfer and posting policy need to be framed immediately so that the vacancies even at the centres of the remote areas can be filled up.
- It should be made mandatory for the doctors at all levels to spend minimum 5-7 years of their service in the rural areas.

6.2 Cost Recovery and User Fees

In India there is a great pressure on public health systems to introduce or enhance user fees, especially from international donors because they believe this will enhance responsibility of the public health system and make it more efficient and induce accountability (Peters *et al.*, 2002, quoted in Duggal, 2002). Already such a policy has been adopted in many states in India and immediately adverse impacts are seen, the most prominent being decline in utilisation of public services by the poorest (Duggal, 2002).

A study (Bharat, 2003) based on information collected from five states, including Uttarakhand, noted that beneficiaries found it difficult to accept the notion of ‘user fee’ without the provision of medicines. A common viewpoint expressed was that users were willing to pay but only if medicines were also supplied by the government centres. For the poor there was no ‘value addition’ in seeking government health care if medicines were not made available. Women beneficiaries in Uttarakhand said “he (one local RMP) examines and supplies medicines also and all for INR 40/.... going to the government hospital costs a lot and incase medicines are not provided then that is another problem.”

It is the duty of the state to provide (or arrange for its provision through some agency) preventive and public health—which has abundant external economies—free of cost to every citizen. There are no two opinions about it. Provision of primary health care, especially treatment of minor ailments, which do not require any elaborate tests, should also be provided free of cost. In other words, primary care treatments that require certain tests using costly equipments and materials, nominal user fees should be charged. Given the external economy factor, these services should also be subsidised and cost recovery should be only partial not full. After charging user fee, medicines should be provided to the patients. Only genuinely identified BPL families should be provided free service in all cases.

Secondary and tertiary health care involve sophisticated and costly equipment and materials. These equipments

are required to be replaced on regular basis. So there is need to charge user fee that covers the cost of materials used and pay for the replacement of equipment.

6.3 Health Insurance

Except for organised sector workers forming less than 10 per cent of the total workforce that are invariably covered under some sort of social security schemes against illness or accidental death and few others who purchase some health insurance policy, vast majority of Indians are not covered under any such schemes. The poor usually spend higher proportion of their income on health care than better off and hospitalisation of a member in a poor family always leads to indebtedness and/or sale of meagre assets. Even seeking health care for minor illness is a big strain on their resources. Despite a significant reliance on public health facilities, the poor households tend to spend nearly one-fifth of their income on treatment (Gumber and Kulkarni, 2003). This heavy burden of out-of-pocket expenditure on them while seeking health care reflects the need of health insurance for a vast majority of poor people working in informal sector.

An important factor in low prevalence of health insurance is lack of sufficient information about the schemes. Annual premiums are also high in comparison to the income levels of households. Another hurdle is complicated procedures involved and documents required, to claim insurance, which are beyond the capacity and ability of large number of poor illiterate or semi-literate people in India. Delays in settling claims and bribes involved also increase the cost and thus, discourage people.

To deal with these problems, first of all, the state government can subsidise BPL families and other disadvantaged groups like SC/ST. Secondly, instead of individual, community-based group insurance should be encouraged. Thirdly, involvement of some NGO may substantially cut down the processing costs and reduce malpractice. SEWA experience in this case is relevant.

SEWA Insurance (Vimo SEWA) has worked out innovative methods for the insurance of poor women, their spouses and children. Started in 1992 with 7000 women members from Ahmedabad, membership of SEWA Insurance has increased to around 130 thousand in 2005.⁵ Currently they have tied up with ‘ICICI Lombard General Insurance Company Ltd’ for its non-life products and ‘AVIVA Life Insurance Company’ for its life products. Vimo SEWA offers two different integrated insurance packages, which include coverage for death, sickness and loss of assets. The annual premiums are INR 100 and INR 225 and corresponding sums are insured. Members can also deposit a fixed amount (INR 2100 and 5000

respectively for the two schemes) in their own name in SEWA Bank. The interest accrued from the deposit goes towards payment of premium, thereby ensuring continuous and long term insurance coverage.

An important aspect of SEWA Insurance is settlement of claims. Insurance companies have authorised SEWA Insurance to process and settle the claims. There is a claims committee to evaluate claims for hospitalisation and asset loss, which meets three times in a week. The eight-member claim committee comprises six local women leaders or *aagewans* of different trades and one or two Vimo managers, depending on the volume of claims. Claims are normally processed and disbursed within 15-20 days of submission. Claimants are much more comfortable with these committee members, which are part of their social milieu, than the staff of insurance companies.

6.4 Public-Private Partnership

Public and private sector is dependent on each other in several ways. The production of doctors for the private sector through state financing, production of bulk drugs to supply at subsidised rates to private formulation units (Duggal, 2002), loans and tax concessions through reduced import duty for importing high technology medical equipment, and sometimes also land at concessional rates to set up hospitals. Private practice by the doctors of public health institutions is a common phenomenon observed in almost every part of India. This is informal and also illegal, because in many states doctors are paid non-practising allowance—way of privatisation of health services. In fact, these doctors are consulted privately by the patient paying stipulated fee, in the hospital itself or at the residence of the doctor, and the patients are invariably treated (and even operated upon) in the hospital using the public health facilities for private practice. This is accomplished with the help of lower staff and generally each senior doctor operates through one of his trusted intermediary in the staff.

As per NFHS-II data, three-quarters of households in Uttarakhand use private doctors for treatment when a family member is ill. Only 23 per cent usually go to public medical system. In fact, HPPU-2002 reveals that in India, nearly 85 per cent of health expenditure is out of pocket expenses, and Uttarakhand is no exception to this. The poor spend a higher proportion of their household income on health than the rich do. However, it is mainly the public sector that caters to the needs of population related to family welfare. More than three-fourth (77 per cent) of women, using modern contraceptives are provided by public health institutions, only 10 per cent obtained those from private medical sector along with shops. Private

sector plays larger role in urban areas, where it is the source of modern method for 21 per cent of users. In rural areas private sector is a source, only for 6 per cent users (NFHS-II).

Public health institutions in urban centres also mainly provide curative services at primary, secondary and tertiary level. Apart from emphasis on curative care there is also a rural urban disparity in the distribution of services. Since private sector is also concentrated in urban areas and developed regions it aggravates the imbalance. The overemphasis on curative care tends to project a technological solution rather than an integrated approach based on an epidemiological understanding of health problems (Baru, 1998). On the contrary, thrust of rural health institutions is primitive and preventive health. Immunisation against communicable diseases and family planning programmes are the priority concerns. Curative care in rural health institutions is the weakest component in spite of a very high demand as demonstrated by the excessive health expenditure incurred by rural households on the private sector (Antia *et al.*, 2000; NCAER, 2005).

Unable to generate enough resources to finance the health care for all, and taking in to account inefficiencies in the service delivery in the public health institutions, governments in different states and at the Centre are exploring the possibilities of involvement and co-operation of private sector and voluntary agencies for providing quality services to consumers at affordable prices. In fact, the AP government has been seeking the involvement and cooperation of both private and voluntary agencies for family welfare programmes since the late sixties by offering material and monetary incentives (Baru, 1998). More recently help from private and voluntary sectors is taken for immunisation programmes. A similar trend has been observed in Maharashtra and Tamil Nadu as well (*ibid*).

However, unregulated private sector may harm more than help in providing health care at affordable prices. It is contended (Duggal, 2002) that medical practice, especially private, suffers from a complete absence of ethics. The medical associations have yet not paid heed to this issue at all and over the years malpractices within medical practice have gone from bad to worse.

Whenever government tried to regulate the private sector, it has met tremendous resistance. Some governments laid down the condition that all private hospitals importing (duty free) medical equipment have to treat a certain percentage of patients free of cost. But there is no mechanism to check whether they are being fulfilled (Baru, 1998). A survey of large private hospitals in Delhi revealed that they had been established with a variety of state subsidies. Most of them got land at

confessional rates from DDA. It was agreed that at least 25 per cent of the total beds would be reserved for treatment of patients from the weaker sections and other 25 per cent subsidised for poor. None of them were abiding by stipulated conditions (Raina, 1992).

Another aspect of regulation of private health care is keeping the record of all the private health institutions and medical practitioners. This is an extremely important concern because all the data quoted about the private sector is an under-estimate (Duggal, 2002).

Therefore, it is necessary that before engaging private sector in partnership a strong regulatory mechanism must be put in place. Preferably primary care should be the complete responsibility of the state or non-profit based social/religious/charitable organisations might be involved. User fees must be kept to the minimum level so that every citizen is able to get the services. The government should not run away from its responsibility of providing free primary care to people simply because public sector health institutions are inefficient. Efforts have to be made to improve the quality of service delivery in these institutions. Private sector may be encouraged to set up hospitals in secondary and tertiary care sectors. Private participation in peripheral services in public hospitals or in diagnostic services ought to be under strict quality and price controls. Consumers of the services, the public, through their representatives, should play a deciding role in selecting and controlling these private players. Regular feedback from the consumers will be a check on private players to maintain quality.

6.5 Disease Surveillance System

HPPU-2002 recognises that effective disease surveillance system is essential to control seasonal outbreak of diseases, to predict and prevent epidemics, and to control communicable diseases. Re-emergence of plague in Uttarakhand, few years back, further emphasises the need. More than half of the disease burden is caused by communicable, maternal and nutritional disorders—most of that are preventable. There is need to adopt an integrated approach based on an epidemiological understanding of health problems. The data about the causative factors of diseases, information about areas prone to particular diseases, population effected etc., are most important in taking informed decisions, and deploying available resources to counter it.

An important obstacle in the way of collection of data is lack of cooperation by the private health sector. While public sector, despite its limitations, provide data on disease patterns, no such data is supplied by the private health care providers. The private sector does not meet its obligations to supply data on notified, mostly communicable diseases, which is mandated by law. This

adversely affects the epidemiological database for those diseases and hence affects public health practice and monitoring drastically (Duggal, 2002). In fact, the data about private health care institutions and medical practitioners itself is inadequate. Health and Population Policy (Uttarakhand)–2002 document also admits that no information is available on the number of private practitioners, private clinics, and hospitals. So there is an urgent need to create a comprehensive database on private sector, persuade them through their associations and professional bodies, to provide necessary data about notified communicable diseases.

In health care, maximum emphasis is given to curative health. Private health care system exclusively deals with curative health care. But the best and cheapest way to provide health care to the people is to emphasise preventive and promotive care. Provision of healthy environment, sanitation, safe drinking water and prevention and control of epidemics can reduce morbidity and mortality to a great extent and simultaneously save huge resources which otherwise people would have to spend in dealing with diseases.

6.6 Health Education

Health education plays an important role in preventing as well as curing diseases. In our earlier discussion it came to light that some basic information required to tackle common diseases like diarrhoea is not available to the people and there is dire need to provide such knowledge to them. HPPU-2002 reports that due to the absence of family life education (FLE), particularly for adolescent girls, there are no opportunities to learn about reproductive health issues at an appropriate time.

School enrolment in Uttarakhand is quite high and inching towards achieving almost 100 per cent enrolment up to upper-primary level. The best way to spread health awareness is through schools. There should be two way interactions between schools and health staff. Health staff should visit schools on pre-announced dates and village people should be persuaded to attend those meetings. Special target should be young girls and village women. There is a need to educate them about the reproductive health issues. However, lack of female teachers in large number of schools and almost complete absence of female doctors in PHCs is a major constraint, which needs to be addressed.

6.7 Decentralisation

It is contended (Antia *et al.*, 2000) that 95 per cent of all health care up to the level of the broad based specialist can be most effectively carried out within the 100,000

population at block/*taluka* level. HPPU-2002 also agrees that it is essential to have decentralised systems and to realise its full benefits capacity building of elected representatives is necessary. These representatives, starting from village *panchayat* level, need to be involved in health care planning and implementation to improve access to and quality of services at all level.

For effective implementation of programmes, health committees should be formed at each level. Dissemination of information about existing services and the health rights of the people and to coordinate between health workers and the population for efficient delivery of services should be a part of its tasks. These committees should meet regularly and have control over stock and distribution of medicines. Wherever possible the community should mobilise matching grants for purchase of medicines. This will also enhance their active participation in managing community health. There should be a continuous interaction between health staff and community representatives to get feed back about the health needs of people.

Involvement of local representatives may not automatically lead to improvement in service delivery. Unchecked by the people these representatives may develop their own vested interests. Given the existing power relations, sustained efforts are required, to make the decentralisation work in the interest of the community. There is need to increase the social consciousness of the people about their health rights. Once people realise that health is their fundamental right and actively ask for information about their health entitlements and demand those services, delivery will improve.

6.8 Governance Issues

Health staff in public sector is well trained but inefficient. The major challenges are:

- (a) Lack of manpower even after adopting the appointment in ad hoc policy.
- (b) Lack of institutional and other facilities also play a major role in not achieving the desired results.
- (c) Logistic management needs to be improved so that the projects can deliver the desired give output.
- (d) IEC is an important component but in most of the projects much could not be achieved because the programmes were not designed properly, the monitoring and evaluation network for the IEC activities were not designed or if designed, then these were not implemented properly.
- (e) Report of Comptroller and Auditor General of India of the year 2004 states that the officials of the department of health have proved them as inefficient managers in handling finance and implementing the framed policies.

To improve the efficiency of health delivery system there is a need to develop a transparent system of incentives/disincentives. Criteria of total delivery should be developed for each institution, branch and individual functionaries and their performance need to be judged on that basis. Surveys should be conducted to evaluate the client satisfaction. Accountability should be fixed for failures, and the efficient ones should be honoured and given public recognition.

Medical officers engaged in management of hospitals should be held accountable for the overall performance of the institution. Management is becoming a specialised service and for better management and motivation of the staff, doctors with some sort of management degrees are appointed on managerial posts. Existing staff on managerial posts be trained in management techniques through short courses by rotation.

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APPENDIX

TABLE A-5.1
Birth Rates (per 1000) in Uttarakhand, Uttar Pradesh, Himachal Pradesh, Kerala and India, 1999 to 2002

| State | 1999 | | | 2000 | | | 2001 | | | 2002 | | |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | Total | Rural | Urban | Total | Rural | Urban | Total | Rural | Urban | Total | Rural | Urban |
| Uttarakhand | 19.6 | 24.5 | 16.1 | 20.2 | 24.6 | 17.1 | 18.5 | 21.1 | 16.6 | 17.0 | 18.1 | 16.2 |
| Uttar Pradesh | 32.8 | 33.9 | 27.5 | 32.8 | 34.0 | 27.2 | 32.1 | 33.2 | 27.0 | 31.6 | 32.6 | 26.8 |
| Himachal Pradesh | 23.8 | 24.3 | 16.8 | 22.1 | 22.5 | 16.9 | 21.2 | 21.5 | 17.1 | 20.7 | 21.1 | 16.5 |
| Kerala | 18.0 | 18.1 | 17.7 | 17.9 | 18.0 | 17.5 | 17.3 | 17.4 | 16.7 | 16.8 | 17.0 | 16.3 |
| India | 26.0 | 27.6 | 20.8 | 25.8 | 27.6 | 20.7 | 25.4 | 27.1 | 20.3 | 25.0 | 26.6 | 19.9 |

Source: Sample Registration System Bulletin 37(2).

TABLE A-5.2
Death Rates (per 1000) in Uttarakhand, Uttar Pradesh, Himachal Pradesh, Kerala and India, 1999 to 2002

| State | 1999 | | | 2000 | | | 2001 | | | 2002 | | |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | Total | Rural | Urban | Total | Rural | Urban | Total | Rural | Urban | Total | Rural | Urban |
| Uttarakhand | 6.5 | 10.5 | 3.5 | 6.9 | 10.3 | 4.5 | 7.8 | 10.0 | 6.1 | 6.4 | 9.0 | 4.4 |
| Uttar Pradesh | 10.5 | 11.1 | 8.1 | 10.3 | 10.8 | 8.0 | 10.1 | 10.6 | 7.8 | 9.7 | 10.2 | 7.3 |
| Himachal Pradesh | 7.3 | 7.5 | 5.2 | 7.2 | 7.3 | 5.5 | 7.1 | 7.2 | 5.3 | 7.5 | 7.7 | 5.1 |
| Kerala | 6.4 | 6.5 | 6.3 | 6.4 | 6.5 | 6.2 | 6.6 | 6.8 | 6.2 | 6.4 | 6.4 | 6.2 |
| India | 8.7 | 9.4 | 6.3 | 8.5 | 9.3 | 6.3 | 8.4 | 9.1 | 6.3 | 8.1 | 8.7 | 6.1 |

Source: Sample Registration System Bulletin 37(2).

TABLE A-5.3
Percentage Distribution of Women with Reproductive Health Problem by Source of Advice or Treatment Sought and Residence, 1998-99

| Provider | Urban | Rural | Total |
|-----------------------------|-------|-------|-------|
| Public medical sector | 21.8 | 9.4 | 11.8 |
| Government doctor | 20.7 | 8.7 | 11.0 |
| Public health nurse | 0 | 0.5 | 0.4 |
| ANM/LHV | 1.1 | 0.5 | 0.6 |
| Other public medical sector | 1.1 | 0 | 0.2 |
| Private medical sector | 24.3 | 20.8 | 21.4 |
| Private doctor | 24.3 | 19.7 | 20.6 |
| Private nurse | 0 | 1.5 | 1.2 |
| Dai (TBA) | 0 | 0.4 | 0.4 |
| Traditional healer | 0 | 0.2 | 0.2 |
| Other | 0 | 0.2 | 0.2 |
| None | 55.0 | 72.0 | 68.7 |
| Number of women | 83 | 347 | 431 |

Source: IIPS (2002): National Family Health Survey (NFHS-II).

TABLE A-5.4

Percentage Distribution of Currently Married Women by Knowledge & Use of Contraceptive Methods, 2002

| Contraceptive Method | Percentage who Know Method | Percentage who Ever Used Method | Percentage Currently Using Method |
|------------------------|----------------------------|---------------------------------|-----------------------------------|
| | | | |
| For urban | | | |
| Any method | 100.00 | 71.10 | 56.50 |
| Any modern method | 100.00 | 67.50 | 51.60 |
| Pill | 98.00 | 8.50 | 2.80 |
| IUD | 93.90 | 16.50 | 4.90 |
| Condom | 99.20 | 34.00 | 18.20 |
| Female sterilisation | 99.20 | 21.30 | 21.30 |
| Male sterilisation | 97.50 | 4.40 | 4.40 |
| Any traditional method | 88.20 | 11.20 | 4.40 |
| Rhythm/safe period | 75.80 | 4.80 | 1.20 |
| Withdrawal | 72.00 | 8.80 | 3.20 |
| Other method | 1.60 | 0.80 | 0.40 |
| Number of women | 228 | 228 | 228 |
| For rural | | | |
| Any method | 97.40 | 46.40 | 39.30 |
| Any modern method | 97.40 | 43.30 | 37.20 |
| Pill | 70.40 | 5.70 | 1.00 |
| IUD | 60.90 | 3.00 | 0.70 |
| Condom | 71.90 | 7.90 | 2.80 |
| Female sterilisation | 95.80 | 29.10 | 29.10 |
| Male sterilisation | 89.90 | 3.70 | 3.70 |
| Any traditional method | 46.70 | 6.90 | 1.90 |
| Rhythm/safe period | 31.80 | 3.80 | 0.60 |
| Withdrawal | 33.30 | 5.00 | 1.30 |
| Other method | 1.60 | 0.20 | 0.20 |
| Number of women | 799 | 799 | 799 |
| For All | | | |
| Any method | 98.00 | 51.90 | 43.10 |
| Any modern method | 98.00 | 48.70 | 40.40 |
| Pill | 76.60 | 6.40 | 1.40 |
| IUD | 68.20 | 6.00 | 1.60 |
| Condom | 78.00 | 13.70 | 6.20 |
| Female sterilisation | 96.50 | 27.30 | 27.30 |
| Male sterilisation | 91.60 | 3.80 | 3.80 |
| Any traditional method | 55.90 | 7.80 | 2.40 |
| Rhythm/safe period | 41.50 | 4.00 | 0.70 |
| Withdrawal | 41.90 | 5.90 | 1.70 |
| Other method | 1.60 | 0.30 | 0.20 |
| Number of women | 1027 | 1027 | 1027 |

Source: IIPS (2002); National Family Health Survey (NFHS-II).

TABLE A-5.5

Percentage Distribution of Currently Married Women by Unmet Need for Family Planning Services, 1998-99

| Background Characteristics | Unmet Need for Family Planning (per cent) | | |
|---------------------------------|-------------------------------------------|--------------|-------|
| | For Spacing | For Limiting | Total |
| Residence | | | |
| Urban | 7.7 | 9.7 | 17.4 |
| Rural | 11.3 | 10.7 | 22.0 |
| Mother's education | | | |
| Illiterate | 9.3 | 12.6 | 21.8 |
| Literate, < middle school | 6.8 | 8.2 | 15.0 |
| Middle school complete | 11.2 | 13.0 | 24.2 |
| High school complete and above | 14.9 | 6.4 | 21.3 |
| Standard of living index | | | |
| Low | 12.0 | 16.2 | 28.3 |
| Medium | 9.7 | 9.8 | 19.5 |
| High | 10.5 | 8.0 | 18.5 |
| Number of children | | | |
| 0 | 20.3 | 0 | 20.3 |
| 1 | 26.9 | 5.5 | 32.5 |
| 2 | 9.3 | 11.0 | 20.3 |
| 3 | 5.5 | 10.9 | 16.4 |
| 4 | 2.9 | 14.7 | 17.6 |
| 5 | 5.0 | 22.0 | 27.0 |
| 6 | 1.7 | 13.8 | 15.6 |
| Total | 10.5 | 10.5 | 21.0 |

Source: IIPS (2002); National Health and Family Survey (NFHS-II).

TABLE A-5.6

Number and Percentage Distribution of Sub-centres by Type of Ownership in Uttarakhand, Uttar Pradesh, Himachal Pradesh, Kerala and All-India, 2004

| States | Building Condition of Sub-centres | | | |
|------------------|-----------------------------------|---------------------|------------------------|-----------------|
| | In Government Buildings | In Rented Buildings | In Rent Free Buildings | All Buildings |
| Uttarakhand | 437 (28.65) | 1081 (70.88) | 7 (0.46) | 1525 (100) |
| Uttar Pradesh | 6489 (34.93) | 12088 (65.06) | 0 (-) | 18577 (100) |
| Himachal Pradesh | 1184 (57.28) | 50 (2.42) | 833 (40.30) | 2067 (100) |
| Kerala | 2986 (58.62) | 1098 (21.55) | 1010 (19.83) | 5094 (100) |
| India | 63800 (44.72) | 4303 (30.17) | 35821 (25.11) | 142655 (100) |

Note: Figures in the bracket indicates as percentage to the corresponding total.

Source: Ministry of Health and Family Welfare, Government of India, New Delhi.

TABLE A-5.7
Number and Percentage Distribution of Sub-centres,
PHCs and CHCs by Type of Ownership in Uttarakhand, 2004

| Heal | Government Buildings | Rented Buildings | Rent Free Buildings | All Units |
|-------------|----------------------|------------------|---------------------|-------------|
| Sub-Centres | 437 (28.7) | 1081 (70.88) | 7 (0.46) | 1525 (100) |
| PHCs | 164 (71.6) | 65 (28.4) | 0 (-) | 229 (100.0) |
| CHCs | 36 (100.0) | 0 (-) | 0 (-) | 36 (100.0) |

Note: Figures in the bracket indicates as percentage to the corresponding total.

Source: Ministry of Health and Family Welfare, Govt. of India, New Delhi.

TABLE A-5.8
Percentage Distribution of Primary Health Centres (PHCs) by Availability of Functional
Equipment and Districts, 2002-03

| Indicators | Bageshwar | Champawat | Haridwar | Pithoragarh | Rudra prayag | Tehri Garhwal | US Nagar | Uttarkashi |
|-------------------------|-----------|-----------|----------|-------------|--------------|---------------|----------|------------|
| Infant weighing machine | 100.0 | 100.0 | 100.0 | 92.3 | 100.0 | 94.7 | 75.0 | 100.0 |
| Adult weighing machine | 80.0 | 100.0 | 89.5 | 91.7 | 88.9 | 95.9 | 87.0 | 84.0 |
| Deep freezers | 75.0 | 100.0 | 100.0 | 88.9 | 100.0 | 93.8 | 100.0 | 80.0 |
| Vaccine carrier | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| BP instrument | 90.0 | 100.0 | 70.0 | 93.8 | 100.0 | 92.0 | 88.5 | 70.0 |
| Autoclave MTP solution | 55.6 | 50.0 | 85.7 | 75.0 | 50.0 | 82.4 | 62.6 | 80.0 |
| Labour room table | 100.0 | 0.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 87.5 |
| Stream sterilise drum | 77.8 | 80.0 | 100.0 | 92.9 | 85.7 | 95.0 | 90.5 | 100.0 |
| Refrigerator | 0.0 | 0.0 | 0.0 | 85.7 | 100.0 | 100.0 | 0.0 | 0.0 |
| Examination table | 90.0 | 100.0 | 100.0 | 100.0 | 100.0 | 95.5 | 88.9 | 96.3 |

Source: Based on Facility Survey Data collected by IIPS, provided by Ministry of Health & Family Welfare, Govt. of India.

TABLE A-5.9
Percentage Distribution of PHCs by Availability of Trained Medical Officers (at least one) and Districts, 2002-03

| Medical Officers : Trained in | Districts | | | | | | | |
|-----------------------------------------|-----------|-----------|----------|-------------|--------------|---------------|----------|------------|
| | Bageshwar | Champawat | Haridwar | Pithoragarh | Rudra prayag | Tehri Garhwal | US Nagar | Uttarkashi |
| Sterilisation | 20.0 | 0.0 | 9.5 | 6.3 | 0.0 | 4.0 | 0.0 | 0.0 |
| MTP | 0.0 | 0.0 | 14.3 | 0.0 | 0.0 | 8.0 | 0.0 | 6.7 |
| Reproductive & child health training | 30.0 | 60.0 | 76.2 | 25.0 | 44.4 | 36.0 | 57.1 | 36.7 |

Source: Based on Facility Survey Data collected by IIPS, provided by Ministry of Health & Family Welfare, Govt. of India.

TABLE A-5.10

Percentage Distribution of PHCs by Availability of Trained Para-medical Staff (at least one) and Districts, 2002-03

| Medical Officers: Trained in | Districts | | | | | | | |
|----------------------------------------------|-----------|-----------|----------|-------------|-----------------|------------------|-------------|------------|
| | Bageshwar | Champawat | Haridwar | Pithoragarh | Rudra prayag | Tehri Garhwal | US Nagar | Uttarkashi |
| IUD insertion | 80.0 | 60.0 | 76.2 | 50.0 | 55.6 | 96.0 | 67.9 | 30.0 |
| Blood pressure checking machine operation | 70.0 | 20.0 | 85.7 | 68.8 | 55.6 | 92.0 | 50.0 | 30.0 |
| Reproductive & child health issues | 70.0 | 80.0 | 85.7 | 75.0 | 77.8 | 88.0 | 78.6 | 33.3 |

Source: Based on Facility Survey Data collected by IIPS, provided by Ministry of Health & Family Welfare, Govt. of India.

TABLE A-5.11

Percentage Distribution of PHCs by Medical and Para-medical Staff in Position, 2002-03

| Staff | Districts | | | | | | | |
|-----------------------------------|-----------|-----------|----------|-------------|-----------------|------------------|-------------|------------|
| | Bageshwar | Champawat | Haridwar | Pithoragarh | Rudra prayag | Tehri Garhwal | US Nagar | Uttarkashi |
| Medical officer male | 100.0 | 80.0 | 85.7 | 81.3 | 100.0 | 92.0 | 78.6 | 46.7 |
| Medical officer female | 0.0 | 0.0 | 0.0 | 6.3 | 11.1 | 8.0 | 0.0 | 0.0 |
| Health assistant male | 30.0 | 40.0 | 57.1 | 31.3 | 22.2 | 60.0 | 25.0 | 6.7 |
| Health assistant female | 0.0 | 20.0 | 23.8 | 18.8 | 0.0 | 20.0 | 28.6 | 6.7 |
| Public health nurse | 0.0 | 0.0 | 0.0 | 12.5 | 11.1 | 8.0 | 0.0 | 0.0 |
| Multipurpose worker male | 30.0 | 20.0 | 38.1 | 25.0 | 22.2 | 40.0 | 25.0 | 20.0 |
| Multipurpose worker female | 70.0 | 80.0 | 76.2 | 75.0 | 66.7 | 92.0 | 71.4 | 30.0 |
| Pharmacist/compounder | 100.0 | 100.0 | 100.0 | 87.5 | 77.8 | 100.0 | 100.0 | 93.3 |
| Technician | 0.0 | 20.0 | 4.8 | 12.5 | 11.1 | 28.0 | 7.1 | 6.7 |
| At least one female health worker | 70.0 | 80.0 | 85.7 | 81.3 | 11.1 | 96.0 | 75.0 | 30.0 |

Source: Based on Facility Survey Data collected by IIPS, provided by Ministry of Health & Family Welfare, Govt. of India.

TABLE A-5.12

Percentage Distribution of ISM&H Hospitals by Availability of Medical, Paramedical Staff, Adequate Medicines and Districts, 2002-03

| Indicators | Districts | | | | | | | |
|--------------------|-----------|-----------|----------|-------------|-----------------|------------------|-------------|------------|
| | Bageshwar | Champawat | Haridwar | Pithoragarh | Rudra prayag | Tehri Garhwal | US Nagar | Uttarkashi |
| Medical Officer | 77.8 | 68.8 | 100.0 | 60.8 | 73.9 | 86.1 | 100.0 | 73.9 |
| Sister | 0.0 | 0.0 | 11.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Nurse | 0.0 | 0.0 | 29.4 | 0.0 | 0.0 | 2.8 | 0.0 | 0.0 |
| Pharmacist | 22.2 | 37.5 | 76.5 | 47.1 | 100.0 | 2.8 | 57.1 | 56.5 |
| Adequate medicines | 55.6 | 75.0 | 52.9 | 74.5 | 69.6 | 44.4 | 57.1 | 76.1 |

Source: Based on Facility Survey Data collected by IIPS, provided by Ministry of Health & Family Welfare, Govt. of India.



Chapter 6

Education

1. Introduction

Education expands the social opportunities available to people. It is argued (Dreze and Sen, 1996) that literacy is a basic tool of self-defence in a society where social interaction often involves the written media. An illiterate person is much less equipped to participate successfully in the modern economy and society. Numeric and other skills acquired in the process of basic education are also important in the same way. Analysing Karen's development achievements, Ramachandran (1997) contends that education and social change are closely linked. On one hand spread of education helps to overcome the traditional inequalities of caste, class and gender, and on the other, reduction of these inequalities contributes to the spread of education.

This fact has been duly recognised in the Directive Principles of the State Policy of the Constitution of India, wherein basic education has been made obligatory for all

up to the age of 14. Though education is in the concurrent list of the Constitution, the State government plays a very major role in the development of education particularly in the primary and secondary education, sectors. India is a signatory to Dakar (2000) declaration (Box 6.1) and is actively participating in the worldwide movement for 'Education for All' since its first conference in Jomiten, 1990.

The Directive Principles set out a time limit of 10 years for fulfilling the commitment of achieving the target, but it could not make much headway during the 1960s or in the 1970s. Observing huge gap in policy proclamation and achievements in reaching to the target group, the National Policy on Education (NPE), was announced in 1986 with a vision to improve and expand education in all sectors, reiterating the intention to eliminate disparities in access to education and laying greater stress on the quality and relevance of education at all levels, including technical and professional education.

BOX 6.1

The Dakar Goals

1. Expanding and improving comprehensive early childhood care and education, especially for the most vulnerable and disadvantaged children.
2. Ensuring that by 2015, all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to and complete free and compulsory education of good quality.
3. Ensuring that learning needs of all young people and adults are met through equitable access to appropriate learning and life skills programmes.
4. Achieving a 50 per cent improvement in adult literacy by 2015, especially for women, and equitable access to basic and continuing education for all adults.
5. Eliminating gender disparities in primary and secondary education by 2005, and achieving gender equality in education by 2015, with a focus on ensuring girls' full and equal access to and achievement in basic education of good quality.
6. Improving every aspect of the quality of education and ensuring excellence so that recognised and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills.

The NPE, as modified in 1992 specifically emphasised three aspects in relation to Elementary Education, *viz.*,

- Universal access and enrolment,
- Universal retention of children up to 14 years of age, and
- Substantial improvement in the quality of education to enable all children to achieve self employment goals.

The Policy envisioned a positive and interventionist role of education in correcting social and regional imbalance, empowerment of women and in securing a rightful place for the disadvantaged and the minorities. The priority areas are being free and compulsory elementary education, covering children with special needs, eradication of illiteracy, education for women's equality and special focus on the education of the SCs/STs and minorities.

In order to achieve these goals several schemes were introduced and implemented over the years *viz.*, National Literacy Mission in 1988; Scheme for Teacher Education in 1987-88; Mahila Samakhya Programme in 1989; Education For All under the banner of District Primary Education Programme (DPEP) in 1994; National Programme of Nutritional Support to Primary Education Programmes (Mid-day Meal Scheme) in 1995; Sarva Shiksha Abhiyan (SSA) in 2001-02 and Kasturba Gandhi Balika Vidyalaya (KGBV) in 2004.

The stages of school education in India comprises: (a) The primary stage-classes I-V, i.e., of five years duration, (b) The middle stage of education comprises classes VI-VIII; (c) The secondary stage consists of classes IX-X and (d) The higher secondary/senior secondary stage of school comprising classes XI-XII (10+2 pattern) is available in all the states/UTs though in some states/UTs these classes are attached to universities/colleges.

Uttarakhand government is also implementing several programmes for ensuring the universalisation of elementary education including the programmes that attempt to achieve gender and social equality in education and development (see Appendix A-6.1).

The present chapter is divided into the following sections:

(2) Overview of state of education in Uttarakhand; (3) Accessibility to schools; (4) Infrastructure facilities; (5) Enrolment; (6) Higher education; (7) Quality of education; (8) Brand equity; and (9) Policy recommendations.

2. Overview of State of Education in Uttarakhand

2.1. Literacy Rates above All-India Average

During the last five decades (1951-2001) since Independence, dramatic progress has been made in the literacy front in India. Literacy rate has increased from 18 per cent in 1951 to around 65 per cent in 2001 (Table 6.1). The increase is relatively higher, 12.6 percentage points, during 1991-2001. Regarding Uttarakhand, the literacy rate was higher than the all-India level during the period 1951 to 2001. But in case of females, the literacy rate was lower in Uttarakhand in 1951 at 4.78 per cent as against 8.86 per cent in case of India. But since 1991, female literacy rate in Uttarakhand surpassed the all-India level. Not only this, the gender gap in the level of literacy has come down remarkably in the state. In 1951, male literacy was 32.15 per cent and female literacy was only 4.78 per cent. The same has been reported in 2001 as 84.01 per cent and 60.26 per cent.

Between 1991 and 2001, female literacy in the state increased almost by 20 per cent points, from about 41 to 60 per cent, respectively.

Prior to 1991 despite increase in the literacy rate, absolute number of illiterates in India was increasing due to continuous rise in population. For the first time, number of illiterates came down from 328 million in 1991 to 304 million in 2001. But still, India has the largest number of illiterates in the world.

TABLE 6.1
Literacy Rate in Uttarakhand and India, 1951-2001 (Per cent)

| Year | Male | | Female | | Total | |
|------|-------------|-------|-------------|-------|-------------|-------|
| | Uttarakhand | India | Uttarakhand | India | Uttarakhand | India |
| 1951 | 32 | 27 | 4 | 9 | 19 | 18 |
| 1961 | 28 | 40 | 7 | 15 | 18 | 28 |
| 1971 | 47 | 46 | 19 | 22 | 33 | 34 |
| 1981 | 62 | 56 | 25 | 30 | 46 | 44 |
| 1991 | 73 | 64 | 41 | 39 | 58 | 52 |
| 2001 | 84 | 75 | 60 | 54 | 72 | 65 |

Source: Census of India, 1991 and 2001.

The comparison across the selected states reveals that literacy rate in the state is lower than in Kerala, with highest literacy by about 19 per cent points. But the same is higher than in Uttar Pradesh by about 15 per cent

points and from all-India by about 7 per cent points (Table 6.2).

However, the district-wise figures of literacy rates reveal some interesting features (Table 6.3). The overall literacy rate (2001) in the state varies from the highest in 79.6 in Nainital district to the lowest in Haridwar district at about 65. Regarding male literacy, in four districts *viz.*, Almora, Pauri Garhwal, Pithoragarh and Rudraprayag it is more than 90 which is almost at the level of male literacy rate in Kerala being 94.2.

2.2. Gender Gap higher than All-India Average

In Uttarakhand, the difference between the male and female literacy rate is by 23.75 per cent points. This suggests that sustained efforts should be made to reduce this gender gap which is still considerably at a higher level.

TABLE 6.2

Comparison of Literacy Rates—Uttarakhand *vis-à-vis* Uttar Pradesh, Himachal Pradesh, Kerala and all-India

| Indicators | Uttarakhand | Uttar Pradesh | Himachal Pradesh | Kerala | India |
|------------|-------------|---------------|------------------|--------|-------|
| Male | 84 | 70 | 86 | 94 | 76 |
| Female | 60 | 43 | 68 | 88 | 54 |
| Total | 72 | 57 | 77 | 91 | 65 |
| Difference | 23 | 27 | 18 | 6 | 22 |

Source: Census of India, 2001.

TABLE 6.3

District-wise Literacy Rate, 1991 and 2001 and Average Annual Exponential Growth Rates

| District/ State | 1991 | | | 2001 | | | Average Annual Exponential Growth Rate | | |
|--------------------|------|----|----|------|----|----|----------------------------------------|---|---|
| | M | F | T | M | F | T | M | F | T |
| Almora | 80 | 41 | 60 | 90 | 61 | 75 | 1 | 4 | 2 |
| Bageshwar | 77 | 34 | 55 | 89 | 57 | 72 | 1 | 5 | 3 |
| Chamoli | 81 | 40 | 60 | 90 | 63 | 76 | 1 | 5 | 2 |
| Champawat | 77 | 33 | 56 | 88 | 55 | 71 | 1 | 5 | 2 |
| Dehradun | 78 | 59 | 70 | 86 | 71 | 79 | 1 | 2 | 1 |
| Pauri Garhwal | 83 | 50 | 65 | 91 | 66 | 78 | 1 | 3 | 2 |
| Haridwar | 59 | 34 | 48 | 75 | 53 | 65 | 2 | 4 | 3 |
| Nainital | 80 | 55 | 68 | 87 | 71 | 80 | 1 | 3 | 2 |
| Pithoragarh | 80 | 42 | 61 | 91 | 63 | 76 | 1 | 4 | 2 |
| Rudraprayag | 80 | 37 | 57 | 91 | 60 | 74 | 1 | 5 | 3 |
| Tehri Garhwal | 72 | 26 | 48 | 86 | 50 | 67 | 2 | 7 | 3 |
| US Nagar | 60 | 36 | 49 | 76 | 54 | 66 | 2 | 4 | 3 |
| Uttarkashi | 69 | 24 | 47 | 85 | 47 | 67 | 2 | 7 | 3 |
| Uttarakhand | 73 | 42 | 58 | 84 | 60 | 72 | 1 | 4 | 2 |

Note: M= Male, F= Female, T= Total.

Source: Selected Educational Statistics, Ministry of Human Resource Development, GoI, 2001.

2.3. Performance of Religious Groups in Gender Gap and Literacy Rate

Comparison of literacy rates and gender difference there of by religion (2001) is presented in Table 6.4. Among the religious groups Jains top the list (96.33) followed by Christians (87.94), Buddhists (76.31), Hindus (74.15), Sikhs (73) and Muslims at the bottom (51.11). Regarding gender difference, it is surprising that the highest are the Hindus owing to low literacy rate for females (62) being 24.78 followed by 20.12 among the Muslims (due to lowest literacy rates for both male (60) and female (40) population). It is again the lowest among the Jains being only 3.82, followed by Christians at 5.27. Among the Buddhists, it is 14.79.

TABLE 6.4

Comparison of Literacy Rates and Gender Difference by Religion, 2001

| Religion | Male | Rank | Female | Rank | All | Rank | Gender Difference (M-F) | Rank |
|-----------|------|------|--------|------|-----|------|-------------------------|------|
| Hindu | 86 | 3 | 62 | 5 | 74 | 4 | 25 | 1 |
| Muslim | 60 | 6 | 40 | 6 | 51 | 6 | 20 | 2 |
| Christian | 91 | 2 | 85 | 2 | 88 | 2 | 5 | 5 |
| Sikhs | 81 | 5 | 64 | 4 | 73 | 5 | 17 | 3 |
| Buddhists | 83 | 4 | 68 | 3 | 76 | 3 | 15 | 4 |
| Jains | 98 | 1 | 94 | 1 | 96 | 1 | 4 | 6 |

Source: Selected Educational Statistics, 2002-03.

2.4. Performance of Different Castes in Literacy Rate and Gender Gap

Comparison of literacy rates across selected states by castes is presented in Table 6.5 reveals that SC/STs lag

TABLE 6.5

Comparison of Literacy Rates and Gender Difference by Caste, 2001

| Caste | Sex | Uttarakhand | Uttar Pradesh | Himachal Pradesh | India |
|-----------------|-------------------|-------------|---------------|------------------|-------|
| All | Male | 84 | 70 | 86 | 76 |
| | Female | 60 | 43 | 68 | 54 |
| | Total | 72 | 57 | 77 | 65 |
| | Gender Difference | 24 | 27 | 18 | 22 |
| Scheduled Caste | Male | 77 | 60 | 80 | 67 |
| | Female | 49 | 31 | 60 | 42 |
| | Total | 63 | 46 | 70 | 55 |
| Scheduled Tribe | Male | 76 | 48 | 78 | 59 |
| | Female | 49 | 21 | 53 | 35 |
| | Total | 63 | 35 | 66 | 47 |
| | Gender Difference | 27 | 28 | 24 | 24 |

Source: Census of India, 2001.

behind other castes. However, these groups in Uttarakhand are able to achieve higher levels than UP and India but trail behind HP. Regarding gender difference in literacy rates, it is found that the same is much higher among the SCs and STs being about 28 and 27 per cent respectively as compared to about 24 in all of the castes taken together. The gender difference among SCs and STs in Uttarakhand is almost similar as compared to Uttar Pradesh. But it is more than the difference in Himachal Pradesh and all-India.

2.5. Better Literate Districts Demonstrate Adverse Literacy Gap between Rural and Urban Sector

The rural-urban literacy rates by gender and districts is presented in Table 6.6, which provides some insight into some deeper aspects at the disgregate levels. It may be observed that lower the literacy rate in a district in the overall, higher is the rural-urban difference. The maximum rural-urban difference in the same is observed in districts Uttarkashi followed by Tehri Garhwal being 22.46 and 21.84, respectively. The literacy rates in these districts are also lower than other districts. Similarly, districts with highest literacy levels being Nainital followed by Rudraprayag at the same time have much less rural-urban difference being only 4.38 and 7.53

respectively. As regards the rural-urban difference in male literacy rates, the important aspect that could be highlighted is that in almost all districts, the rural-urban literacy are quite close to each other in almost all districts. On the other hand in respect of females the rural-urban difference is quite large. The highest and lowest urban male literacy varies between 95.52 in Pithoragarh and 79.47 in Udham Singh Nagar. At the same time highest and lowest rural male literacy rate varies between 91.25 in Garhwal and 70.56 in Haridwar. But in case of females the rural-urban difference in literacy rate is much higher. The highest and lowest urban female literacy varies between 88.68 in Almora and 62.5 in US Nagar. But the highest and lowest rural female literacy varies between 67.61 in Nainital and 44 in Haridwar.

3. Accessibility of Schools

In Uttarakhand, 12 years of schooling is provided in four stages. These are primary, upper primary, secondary and higher secondary. The initial schooling up to class VIII is generally called the elementary stage.

There are 19,200 schools, out of which over 72 per cent are primary schools, 9.5 per cent are high and higher secondary together and remaining 18 per cent are upper primary schools (Table 6.7).

TABLE 6.6
Comparison of Rural-Urban Literacy Rates, 2001

| District/State | Male | | | Female | | | Total | | | Rural-Urban Difference (col 8-col.7) |
|-------------------|------|----|----|--------|----|----|-------|----|----|--------------------------------------|
| | R | U | A | R | U | A | R | U | A | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| Almora | 9 | 95 | 90 | 59 | 89 | 61 | 73 | 93 | 75 | 20 |
| Bageshwar | 88 | 91 | 89 | 57 | 82 | 57 | 71 | 87 | 72 | 15 |
| Chamoli | 89 | 94 | 90 | 61 | 82 | 63 | 74 | 89 | 76 | 15 |
| Champawat | 88 | 87 | 88 | 52 | 73 | 55 | 69 | 81 | 71 | 11 |
| Dehradun | 80 | 90 | 86 | 62 | 80 | 71 | 71 | 85 | 79 | 14 |
| Pauri Garhwal | 91 | 93 | 91 | 64 | 83 | 66 | 76 | 88 | 78 | 12 |
| Haridwar | 71 | 84 | 75 | 44 | 71 | 53 | 58 | 78 | 65 | 20 |
| Nainital | 88 | 87 | 87 | 68 | 77 | 71 | 78 | 82 | 80 | 4 |
| Pithoragarh | 90 | 96 | 91 | 60 | 84 | 63 | 75 | 90 | 76 | 16 |
| Rudraprayag | 91 | 82 | 91 | 60 | 81 | 60 | 74 | 82 | 74 | 8 |
| Tehri Garhwal | 85 | 91 | 86 | 47 | 80 | 50 | 65 | 87 | 67 | 22 |
| Udham Singh Nagar | 75 | 79 | 76 | 50 | 63 | 54 | 63 | 72 | 66 | 9 |
| Uttarkashi | 84 | 94 | 85 | 45 | 78 | 47 | 65 | 87 | 67 | 22 |
| Uttarakhand | 83 | 88 | 84 | 56 | 75 | 60 | 69 | 82 | 72 | 13 |

Note: R=Rural, U=Urban, A=All.

Source: Census of India, 2001.

TABLE 6.7

Number of Schools by Level of Education, 2002

| Indicators | Primary Schools | Upper Primary Schools | High Schools | Higher Secondary Schools | Total |
|-------------------------------|-----------------|-----------------------|--------------|--------------------------|-------|
| Number | 13902 | 3471 | 759 | 1068 | 19200 |
| Number as percentage to total | 72 | 18 | 4 | 6 | 100 |

Source: Selected Educational Statistics, 2002-03.

On an average there is one primary school for a population of 611 and one higher secondary school for a population of 8000 (Table 6.8). As compared to the adjacent hilly state of Himachal Pradesh, in Uttarakhand population covered per school is higher in all categories except in case of upper primary schools.

TABLE 6.8

Population Covered by Schools at Different Levels of Education in Uttarakhand and Himachal Pradesh, 2002-03

| Type of Schools | Uttarakhand | Himachal Pradesh |
|--------------------------|-------------|------------------|
| Primary schools | 611 | 559 |
| Upper primary schools | 2446 | 2894 |
| Secondary schools | 11185 | 4604 |
| Higher secondary schools | 7949 | 7531 |

Source: Seventh All India School Survey, NCERT, 2003.

3.1 Sixty Per cent of the Villages without Primary School

Table 6.9 presents the number and percentage distribution of villages by distance to primary schools in districts for the year 2002-03. In Uttarakhand, a hilly state with widely scattered population, villages are relatively smaller and it is found that percentage of villages having a primary school within the village constitute about 44 per cent. This is despite the fact that there is a primary school for every 611 persons. In case of another 40 per cent villages in the state, schools are within the distance of one kilometre of the village. But in hilly terrain even one kilometre is not a small distance for primary school kids. In the remaining 4013 villages, constituting around 16 per cent of all the villages, primary schools are located beyond one kilometre.

Across the districts the percentage of villages having primary school within the village varies between the highest in Haridwar (86.36 per cent) followed by

Uttarkashi (60.96 per cent) and US Nagar (60.13 per cent) and the lowest in Pithoragarh (31.91 per cent) followed by Champawat (34.74 per cent), Bageshwar (38) and Almora (40.37 per cent). In other words, it is found that in 6 out of 13 districts in Uttarakhand, the percentage of villages having a primary school within the village is less than the state average. In each of these 6 districts more than 60 per cent of the villages are not having a primary school within the village. This in fact reveals the extent of accessibility of the primary schools for the children living in villages.

It is therefore required that more primary schools be opened in the village so that the children from the 4013 villages need not travel beyond one kilometre to attend primary school.

TABLE 6.9

Percentage of Villages with Primary Schools in by Distance: District-wise 2002-03

| Districts | Schools within the Village | Schools within the Distance of 1 Kilometre of the Village | Schools beyond 1 Kilometre Distance of the Village | Total Number of Villages |
|---------------|----------------------------|-----------------------------------------------------------|----------------------------------------------------|--------------------------|
| Almora | 40 | 46 | 14 | 3369 |
| Bageshwar | 38 | 47 | 15 | 1451 |
| Chamoli | 44 | 39 | 16 | 2032 |
| Champawat | 35 | 40 | 25 | 1308 |
| Dehradun | 54 | 29 | 17 | 1391 |
| Pauri Garhwal | 41 | 44 | 14 | 3802 |
| Haridwar | 86 | 8 | 5 | 572 |
| Nainital | 45 | 40 | 15 | 1883 |
| Pithoragarh | 32 | 49 | 20 | 3359 |
| Rudraprayag | 42 | 44 | 13 | 1180 |
| Tehri Garhwal | 47 | 36 | 17 | 2704 |
| US Nagar | 60 | 29 | 11 | 1056 |
| Uttarkashi | 61 | 23 | 16 | 1099 |
| All | 44 | 40 | 16 | 25206 |

Source: Seventh All India School Survey, NCERT, 2003.

3.2. Eighty-six Per cent Villages without Upper Primary School

Table 6.10 presents the number and percentage of villages by distance to the upper primary schools in districts, 2002-03. Only 14 per cent villages in the state have upper primary schools within the village. However, the proportion is comparatively higher in the plain districts of Haridwar and Udham Singh Nagar. In about 71 per cent of the villages, the same is located within 3 kilometres distance. In hilly areas, covering about three kilometre distance mostly on foot for reaching an upper primary school is very difficult and tiring for the children.

Therefore, more and more upper primary schools should be opened specially in the hilly districts. In around 15 per cent (3695) of the villages, upper primary schools are located at a distance of more than three kilometres. There is an urgent need to open more upper primary schools in hilly districts so that children can easily access them.

In case of the distribution of technical and professional educational facilities, the situation is very unsatisfactory. The nearest industrial training institute is at Joshimath, which is more than 65 kilometres away from these villages. So in this case too, it is not possible for the

TABLE 6.10

Percentage of Village by Distance of Upper Primary Schools and Districts, 2002-03

| Districts | Schools within the Village | Schools within the Distance of 3 Kilometre of the Village | Schools beyond 3 Kilometre of the Village | Total Number of Villages |
|---------------|----------------------------|-----------------------------------------------------------|-------------------------------------------|--------------------------|
| Almora | 11 | 76 | 14 | 3369 |
| Bageshwar | 10 | 74 | 17 | 1451 |
| Chamoli | 13 | 72 | 15 | 2032 |
| Champawat | 10 | 64 | 27 | 1308 |
| Dehradun | 20 | 60 | 21 | 1391 |
| Pauri Garhwal | 17 | 74 | 11 | 3802 |
| Haridwar | 24 | 53 | 24 | 572 |
| Nainital | 17 | 73 | 9 | 1883 |
| Pithoragarh | 9 | 74 | 17 | 3359 |
| Rudraprayag | 16 | 75 | 9 | 1180 |
| Tehri Garhwal | 17 | 71 | 12 | 2704 |
| US Nagar | 23 | 67 | 10 | 1056 |
| Uttarkashi | 21 | 61 | 18 | 1099 |
| All | 14 | 71 | 15 | 25206 |

Source: Seventh All India School Survey, NCERT, 2003.

TABLE 6.11

Distribution of Villages by Location of Basic Educational Facilities (in 7 Villages Visited)

| Facility | Within the Village | Distance from the Village (Kms) | |
|-----------------------------|--------------------|---------------------------------|----------------------------------------------------------|
| | | 1-3 | 9-14 (Trekking, Partially Communicable and Communicated) |
| 1. Anganwadi Centres | 7 | ... | ... |
| 2. Primary School | 7 | ... | ... |
| 3. Upper Primary Schools | 3 | 4 | ... |
| 4. High Schools | 1 | 6 | ... |
| 5. Higher Secondary Schools | ... | ... | 8 |

Source: Author's Compilation (see Box 6.2).

students to pursue studies from village but to stay somewhere close to the facility. Even for taking conveyance for Joshimath, the students have to cover more than 10 kilometres on foot through the hilly roads. The same type of observations is clearly visible for the education facilities at degree and postgraduate level. For four villages in the case study, the location of the nearest facility for higher education is as follows:

4. Infrastructure Facilities in Schools

One of the objectives of the scheme, 'Operation Blackboard', initiated in 1987-88, is to provide essential infrastructure facilities to all primary schools. These include: (i) a building comprising of at least two reasonably large all-weather rooms with verandah and

BOX 6.2

Case Study: Physical Infrastructure and Access Facilities: Miles to Go

Physical infrastructure and access to facilities is considered as one of the key issues in the expansion of quality primary education in the state. The programmes like District Primary Education Programme (DPEP), Sarva Shiksha Abhiyan (SSA), etc., have taken into account this issue and a sizeable amount of resource has been spent on construction of new schools and renovation of the existing schools' physical infrastructure. Out of the total 7 villages visited, all except one, have government primary schools which shows that access to the government primary schools is not a major problem in the area. In respect of upper primary schools, 3 villages have it within the village and for the remaining ones, the distance varies between 1-3 kms. Out of 8 villages, 1 reported having a high school and for the remaining 7, the distance varies between 1-3 kms. The problem of accessibility in fact is more pronounced in respect of higher secondary schools. In the words of the village *pradhan* of Bherani "sarkar to siksha ke bikhas ke nam se bahut thapli bajaaraha hai; lekin eye kabhi socha ki das kalas ke baad hamare bacche kaha parne jayega; eiya ap hi sochie ki sayan bitiya ko das kilometre dur parne bheja jasakta hai; eiya sab sahi karne ke liya sarkar to salo sal lag jayaega." For attending schools at higher secondary level the students have to cover a minimum distance of 6-7 kilometres including 3-4 kilometres trekking through the hilly roads and then to cover a minimum distance of 5-6 kilometres where one or two jeeps operate only twice daily, morning and evening. So for those who want to study, there is no other alternative but to stay close to the facility.

TABLE 6.12
Location of the Nearest Facility for Higher Education

| Institutions | Nearest Place | Trekking | Partially Communi- cable | Well- Communi- cable | Total Distance to Cover |
|----------------------------|---------------|----------|--------------------------|----------------------|-------------------------|
| 1. ITI | Joshimath | 6-8 | 5-6 | 65 | 77-79 |
| 2. Polytechnics | Gopeshwar | 1-5 | 5-6 | 20 | 26-31 |
| 3. Degree college | Gopeshwar | 1-5 | 5-6 | 20 | 26-31 |
| 4. Postgraduate college | Gopeshwar | 1-5 | 5-6 | 20 | 26-31 |
| 5. Professional institutes | Gopeshwar | 1-5 | 5-6 | 20 | 26-31 |

Source: NCAER Field Survey, 2005.

separate toilets for boys and girls, (ii) at least two teachers in every primary school, as far as possible one of them a woman, and (iii) essential teaching learning equipment including blackboards, maps, charts, toys and equipment for work experience. Still there are schools in Uttarakhand that do not fulfil these requirements.

4.1. Inadequate School Buildings: Up to 20 Per cent of Schools are in the Open Space across Districts

Over 97 per cent of primary school buildings in Uttarakhand are in *pucca* or partly *pucca* structures (Table

6.13). The proportion of the latter being very small, just 3 per cent. The proportion of primary schools in *kuccha* buildings is below one per cent and little less than two per cent are in open space (only 8 out of these 238 schools in open space are in tents). Proportion of primary schools in the open is over 5 per cent in Pithoragarh district.

Upper primary schools are in no better position with over 4 per cent schools running in the open, around one per cent in *kuccha* buildings and a close to 3 per cent in partly *pucca* structures (Table 6.14). Tehri Garhwal has the highest proportion of more than 20 per cent schools operating in open space.

More than 2 per cent secondary schools are in the open, around 1 per cent in *kuccha* and over 4 per cent are in partly *pucca* buildings (Table 6.15). In Dehradun district, 6.7 per cent schools are in open space.

It is only in the case of higher secondary schools that almost all buildings (84.2 per cent) are in *pucca* or partly *pucca* structures (Table 6.16). But here too, partly *pucca* structures constitute over 15 per cent of all school buildings.

To sum up, around 3 per cent primary schools, over 5 per cent upper primary schools and nearly 3 per cent

TABLE 6.13
Percentage Distribution of Primary Schools by Condition of the School Building and Districts, 2002-03

| Districts | Pucca Building | Partly Pucca | Pucca and Partly Pucca | Kuccha | Tent | Open Space | Tent and Open Space Together | All Schools |
|----------------|----------------|--------------|------------------------|--------|------|------------|------------------------------|-------------|
| Almora | 98.2 | 0.8 | 98.9 | 0.2 | 0.0 | 0.9 | 0.9 | 1466 |
| Bageshwar | 98.3 | 1.5 | 99.8 | 0.2 | 0.0 | 0.0 | 0.0 | 600 |
| Chamoli | 95.0 | 3.7 | 98.6 | 0.9 | 0.2 | 0.3 | 0.5 | 1013 |
| Champawat | 94.6 | 0.6 | 95.2 | 2.2 | 0.4 | 2.2 | 2.6 | 497 |
| Dehradun | 91.3 | 4.8 | 96.1 | 1.2 | 0.1 | 2.7 | 2.7 | 1396 |
| Pauri Garhwal | 92.5 | 6.3 | 98.8 | 0.5 | 0.0 | 0.7 | 0.7 | 1792 |
| Haridwar | 96.4 | 2.8 | 99.2 | 0.6 | 0.0 | 0.2 | 0.2 | 1031 |
| Nainital | 98.1 | 0.9 | 99.0 | 0.6 | 0.0 | 0.2 | 0.2 | 1031 |
| Pithoragarh | 91.3 | 1.9 | 93.2 | 1.4 | 0.1 | 5.3 | 5.4 | 1197 |
| Rudraprayag | 91.7 | 5.3 | 97.0 | 2.3 | 0.0 | 0.7 | 0.7 | 565 |
| Tehri Garhwal | 92.8 | 2.9 | 95.6 | 1.0 | 0.1 | 3.2 | 3.3 | 1468 |
| Udham S. Nagar | 95.7 | 3.2 | 98.9 | 0.4 | 0.0 | 0.7 | 0.7 | 985 |
| Uttarkashi | 92.7 | 2.8 | 95.5 | 0.8 | 0.0 | 3.7 | 3.7 | 776 |
| All | 94.4 | 3.1 | 97.5 | 0.8 | 0.1 | 1.7 | 1.7 | 13902 |

Source: Seventh All India School Survey, NCERT, 2003.

TABLE 6.14

Percentage Distribution of Upper Primary Schools by Condition of the School Building, and Districts, 2002-03

| Districts | Pucca Building | Partly Pucca | Pucca and Partly Pucca Together | Kuccha | Tent | Open Space | Tent and Open Space Together | All Schools |
|-------------------|----------------|--------------|---------------------------------|--------|------|------------|------------------------------|-------------|
| Almora | 96.5 | 2.2 | 98.7 | 0.0 | 0.0 | 1.3 | 1.3 | 227 |
| Bageshwar | 96.9 | 2.1 | 99.0 | 0.0 | 0.0 | 1.0 | 1.0 | 97 |
| Chamoli | 91.0 | 4.3 | 95.3 | 3.0 | 0.0 | 1.7 | 1.7 | 234 |
| Champawat | 89.3 | 1.8 | 91.1 | 0.9 | 0.0 | 8.0 | 8.0 | 112 |
| Dehradun | 90.6 | 2.7 | 93.3 | 0.5 | 0.0 | 6.3 | 6.3 | 447 |
| Pauri Garhwal | 95.6 | 3.4 | 99.0 | 0.4 | 0.0 | 0.6 | 0.6 | 478 |
| Haridwar | 95.6 | 3.6 | 99.2 | 0.4 | 0.0 | 0.4 | 0.4 | 252 |
| Nainital | 98.3 | 1.5 | 99.7 | 0.0 | 0.0 | 0.3 | 0.3 | 342 |
| Pithoragarh | 96.7 | 1.6 | 98.4 | 0.4 | 0.0 | 1.2 | 1.2 | 244 |
| Rudraprayag | 86.9 | 6.9 | 93.8 | 4.8 | 0.0 | 1.4 | 1.4 | 145 |
| Tehri Garhwal | 74.1 | 3.3 | 77.4 | 1.8 | 0.5 | 20.3 | 20.8 | 394 |
| Udham Singh Nagar | 98.3 | 1.7 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 291 |
| Uttarkashi | 90.4 | 1.0 | 91.4 | 0.5 | 0.0 | 8.2 | 8.2 | 208 |
| All | 92.0 | 2.7 | 94.7 | 0.8 | 0.1 | 4.4 | 4.4 | 3471 |

Source: Seventh All India School Survey, NCERT, 2003.

TABLE 6.15

Percentage Distribution of Secondary Schools by Condition of the School Building, and Districts, 2002-03

| Districts | Pucca Building | Partly Pucca | Pucca and Partly Pucca Together | Kuccha | Tent | Open Space | Tent and Open Space Together | All Schools |
|-------------------|----------------|--------------|---------------------------------|--------|------|------------|------------------------------|-------------|
| Almora | 93 | 4 | 97 | 2 | 0 | 1 | 1 | 85 |
| Bageshwar | 92 | 0 | 92 | 0 | 0 | 8 | 8 | 26 |
| Chamoli | 88 | 12 | 100 | 0 | 0 | 0 | 0 | 75 |
| Champawat | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 28 |
| Dehradun | 93 | 0 | 93 | 0 | 0 | 7 | 7 | 76 |
| Pauri Garhwal | 92 | 4 | 96 | 1 | 0 | 3 | 3 | 95 |
| Haridwar | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nainital | 98 | 0 | 98 | 0 | 0 | 2 | 2 | 62 |
| Pithoragarh | 97 | 3 | 100 | 0 | 0 | 0 | 0 | 61 |
| Rudraprayag | 95 | 3 | 97 | 3 | 0 | 0 | 0 | 38 |
| Tehri Garhwal | 85 | 12 | 97 | 1 | 0 | 1 | 1 | 68 |
| Udham Singh Nagar | 91 | 5 | 95 | 2 | 0 | 3 | 3 | 66 |
| Uttarkashi | 95 | 5 | 100 | 0 | 0 | 0 | 0 | 39 |
| All | 93 | 4 | 97 | 1 | 0 | 2 | 2 | 759 |

Source: Seventh All India School Survey, NCERT, 2003.

secondary schools need to be equipped with *pucca* structures. 3 to 6 per cent schools with partly *pucca* structures also needs to be strengthened with *pucca* structures.

Regarding percentage of schools with single classrooms, the same varies between 0.8 to 5.10 per cent across districts, and about 5 per cent in the districts of

Dehradun, Nainital, Pithoragarh, Pauri Garhwal and Rudraprayag. In upper primary schools, the proportion of single classroom schools varies between 0.50 to 2.50 per cent in 7 out of 13 districts. From the remaining 6 districts no such schools have been reported. So, these 3 per cent primary and one per cent upper primary and

TABLE 6.16

Percentage Distribution of Higher Secondary Schools by Condition of the School Building and Districts, 2002-03

| Districts | Pucca Building | Partly Pucca | Pucca and Partly Pucca Together | Kuccha | Tent | Open Space | Tent and Open Space Together | All Schools |
|----------------|----------------|--------------|---------------------------------|--------|------|------------|------------------------------|-------------|
| Almora | 97 | 3 | 100 | 0 | 0 | 0 | 0 | 115 |
| Bageshwar | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 38 |
| Chamoli | 91 | 9 | 100 | 0 | 0 | 0 | 0 | 55 |
| Champawat | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 27 |
| Dehradun | 99 | 1 | 100 | 0 | 0 | 0 | 0 | 165 |
| Pauri Garhwal | 89 | 11 | 100 | 0 | 0 | 0 | 0 | 172 |
| Haridwar | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 66 |
| Nainital | 98 | 1 | 99 | 1 | 0 | 0 | 0 | 86 |
| Pithoragarh | 97 | 3 | 100 | 0 | 0 | 0 | 0 | 73 |
| Rudraprayag | 84 | 16 | 100 | 0 | 0 | 0 | 0 | 50 |
| Tehri Garhwal | 85 | 15 | 100 | 0 | 0 | 0 | 0 | 117 |
| Udham S. Nagar | 95 | 5 | 100 | 0 | 0 | 0 | 0 | 66 |
| Uttarkashi | 84 | 16 | 100 | 0 | 0 | 0 | 0 | 38 |
| All | 93.63 | 6.27 | 99.99 | 0.1 | 0 | 0 | 0 | 1068 |

Note: Figures in the bracket indicates percentage to the corresponding total.

Source: Seventh All India School Survey, NCERT, 2003.

elementary single class-room schools needs to be upgraded to two rooms with a verandah, as per the objectives of the 'Operation Blackboard' scheme.

Lack of proper buildings and sufficient classrooms in some schools leads to overcrowding of children. In nearly 7 per cent primary schools, the number of students in

each classroom is above 60 (Table 6.18). In other categories of schools, the proportion varies between 2 to 3 per cent with students above 60. The condition is more serious in educationally backward districts of Haridwar and Udham Singh Nagar where 28 per cent primary schools have above 60 student-class room ratio (SCR).

TABLE 6.17

Percentage of Schools with Single Class Rooms in Different Levels of Education and Districts, 2003-04

| Districts | Percentage of Single Class Room Schools | | | | |
|-------------------|-----------------------------------------|----------------------------|---------------------------------------------------------|--------------------|-----------------------------------------------|
| | Primary Only | Primary with Upper Primary | Primary with Upper Primary & Secondary/Higher Secondary | Upper Primary Only | Upper Primary with Secondary/Higher Secondary |
| Almora | 1.80 | 0 | 0 | 0 | 0 |
| Bageshwar | 1.20 | 0 | 0 | 0 | 0 |
| Chamoli | 2.60 | 0 | 0 | 0.50 | 0 |
| Champawat | 1.90 | 0 | 0 | 0 | 0 |
| Dehradun | 5.10 | 0 | 0 | 1.60 | 0 |
| Pauri Garhwal | 4.80 | 0 | 0 | 0.60 | 0 |
| Haridwar | 0.80 | 0 | 0 | 1.70 | 0 |
| Nainital | 5.50 | 0 | 0 | 1.20 | 0 |
| Pithoragarh | 4.90 | 2.20 | 0 | 0 | 0 |
| Rudraprayag | 5.50 | 0 | 0 | 2.50 | 0 |
| Tehri Garhwal | 0.50 | 0 | 0 | 0.60 | 0 |
| Udham Singh Nagar | 0.70 | 0 | 0 | 0 | 0 |
| Uttarkashi | 2.40 | 4.30 | 0 | 0 | 0 |
| All | 2.90 | 0.40 | 0 | 0.60 | 0 |

Source: Mehta, Arun (2005). *Elementary Education in India—Where do we stand*. NIEPA.

Proportion of upper primary schools in these two districts with above 60 SCR is 26 and 11 per cent respectively. In other type of schools also, more schools have higher SCR in these two districts. Proportion of schools with above 60 SCR is also higher in Tehri Garhwal in case of Class I to VIII and Class I to XII schools. It is therefore urgently required to construct more rooms in these schools, especially in the districts of Haridwar, Udham Singh Nagar and Tehri Garhwal, so as to bring down the SCR at reasonable limits.

4.2. Inadequate Availability of Teachers

Pupil-Teacher Ratio (PTR) in Uttarakhand is not very different from all-India average but it is generally better than the adjacent state of UP (Table 6.19). This ratio in

2001-02 was 35 in primary schools but lower in other types of schools. However, in 2002-03 it deteriorated in all types of schools except primary schools where it has improved to 29 from 35. The recent report of 2004-05 on Selected Educational Statistics by MHRD shows further deterioration in the ratio for all-India figures.

Percentage of primary schools with single teacher is as quite high at 23 per cent (Table 6.20). The highest number of primary schools with single teacher is found in Champawat 39.5 per cent followed by Almora 36 per cent, Pauri Garhwal 33.70 per cent and Bageshwar 31.3 per cent. In the rest of the category of schools the percentage of schools with single teacher varies between 0.5 per cent to 2.70 per cent. And a very few districts have reported the same. Plain districts of Haridwar and Uddham Singh Nagar

TABLE 6.18
Percentage of School with Student-Classroom Ratio (SCR)>60 at Different Levels of School Education and Districts, 2003-04

| Districts | Percentage of Schools | | | | |
|-------------------|-----------------------|----------------------------|---------------------------------------------------------|--------------------|-----------------------------------------------|
| | Primary Only | Primary with Upper Primary | Primary with Upper Primary & Secondary/Higher Secondary | Upper Primary Only | Upper Primary with Secondary/Higher Secondary |
| Almora | 2.9 | 6.3 | 0 | 2.3 | 1.1 |
| Bageshwar | 0.8 | 0 | 0 | 3.8 | 1.7 |
| Chamoli | 1.0 | 0 | 16.7 | 1.5 | 0 |
| Champawat | 1.7 | 0 | 0 | 1.0 | 0 |
| Dehradun | 8.9 | 0 | 0 | 0 | 0 |
| Pauri Garhwal | 0.9 | 0 | 0 | 0.3 | 1.9 |
| Haridwar | 28.3 | 8.6 | 7.7 | 25.6 | 9.1 |
| Nainital | 3.1 | 0 | 0 | 1.2 | 2.6 |
| Pithoragarh | 1.0 | 2.2 | 12.5 | 0.5 | 2.2 |
| Rudraprayag | 3.3 | 0 | 0 | 0.80 | 3.1 |
| Tehri Garhwal | 5.0 | 8.0 | 16.7 | 0 | 0.7 |
| Udham Singh Nagar | 28.1 | 12.0 | 0 | 10.70 | 9.1 |
| Uttarkashi | 1.5 | 0 | 0 | 0 | 0 |
| All | 6.7 | 3.1 | 2.7 | 2.9 | 1.9 |

Note: SCR= Student-Classroom Ratio.

Source: Mehta, Arun (2005). *Elementary Education in India—Where do we stand*. NIEPA.

TABLE 6.19
Pupil-Teacher Ratio at Different Levels of Education in Uttarakhand, Uttar Pradesh and India, 2002-03 and 2004-05

| Level of Education | 2001-02 | | | 2002-03 | | | 2004-05 | | |
|----------------------------|-------------|---------------|-------|-------------|---------------|-------|-------------|---------------|-------|
| | Uttarakhand | Uttar Pradesh | India | Uttarakhand | Uttar Pradesh | India | Uttarakhand | Uttar Pradesh | India |
| Higher education | 35 | 38 | 21 | 38 | 41 | 22 | 38 | 48 | 25 |
| Higher secondary education | 20 | 43 | 36 | 29 | 50 | 35 | 29 | 45 | 33 |
| High school | 19 | 43 | 33 | 22 | 40 | 30 | 18 | 61 | 32 |
| Junior basic school | 34 | 30 | 34 | 44 | 24 | 34 | 25* | 58* | 46* |
| Primary school | 35 | 44 | 43 | 29 | 55 | 42 | - | - | - |

Note: (*) Asterisk refers to figures given as junior basic/primary schools in 2004-05 report on Selected Education Statistics.

Source: *Selected Educational Statistics*, MHRD, and GoI.

are in a better position having proportion of single teacher primary schools below 7 per cent. Interestingly, these two districts lag behind other districts in literacy rates. Despite having relatively better infrastructure facilities there may be some other social factors that affect literacy rates in these districts. In fact, culturally these districts are more akin to relatively educationally backward state of UP. Literacy rate in UP is 15 percentage points lower than Uttarakhand.

TABLE 6.20

Percentage of Schools with Single Teacher by Level of Education in Districts, 2003-04

| Districts | Category of School | | | | |
|---------------|--------------------|----------------------------|--------------------------------------------------|--------------------|-------------------------------------------------|
| | Primary Only | Primary with Upper Primary | Primary with Upper Primary & Secondary Education | Upper Primary Only | Upper Primary with Secondary & Higher Secondary |
| Almora | 36.2 | 0 | 0 | 0 | 0 |
| Bageshwar | 31.3 | 0 | 0 | 0 | 0 |
| Chamoli | 17.0 | 0 | 0 | 0.5 | 1.0 |
| Champawat | 39.5 | 0 | 0 | 0 | 0 |
| Dehradun | 15.1 | 0 | 0 | 4.0 | 0 |
| Pauri Garhwal | 33.7 | 5.0 | 9.1 | 2.3 | 1.9 |
| Haridwar | 6.7 | 0 | 0 | 1.7 | 0 |
| Nainital | 30.7 | 3.3 | 0 | 0.6 | 0 |
| Pithoragarh | 28.6 | 4.4 | 12.5 | 7.8 | 0 |
| Rudraprayag | 20.2 | 0 | 0 | 1.7 | 0 |
| Tehri Garhwal | 18.3 | 0 | 0 | 3.2 | 0.7 |
| US Nagar | 4.3 | 2.0 | 6.3 | 1.2 | 0 |
| Uttarkashi | 19.1 | 4.3 | 0 | 2.0 | 2.7 |
| All | 23.1 | 1.2 | 2.7 | 2.3 | 0.5 |

Source: Mehta, Arun (2005). *Elementary Education In India—Where do we stand*. NIEPA.

4.3. Inadequate Representation of Female Teachers in Most Schools

Another requirement under 'Operation Blackboard' programme is that at least one female teacher be appointed in each school. The absence of female teachers may act as a serious constraint in the expansion of girls' education. It is argued (Dreze and Gazdar, 1997: 69) that parents often have greater confidence in sending their daughters to schools having female teachers. The presence of female teachers is also important for socialisation during the process of formal learning.

In 21 per cent primary schools, there are no female teachers (Table 6.21). Proportion of such schools is even higher, 29 and 35 per cent respectively, in educationally backward districts of Haridwar and Udham Singh Nagar. In case of schools with classes I to VIII and I to XII, the

proportion of schools without female teachers is 24 per cent and in the districts of Pauri Garhwal, Pithoragarh, Rudraprayag and Tehri Garhwal, proportion is a great deal higher and varies between 50 to 100 per cent schools with classes VI to VIII and VI to XII, where girls are generally in their teens, presence of female teachers is regarded as a must. But in these two categories of schools the proportion of schools without female teachers in the state is as high as 67 and 72 per cent respectively. Thus, there is an urgent need to appoint female teachers in these large number of schools exclusively with male schools.

TABLE 6.21

Percentage of Schools without Female Teacher by Level of Education and Districts, 2003-04

| Districts | Type of School | | | | |
|---------------|----------------|----------------------------|--------------------------------------------------|--------------------|-------------------------------------------------|
| | Primary Only | Primary with Upper Primary | Primary with Upper Primary & Secondary Education | Upper Primary Only | Upper Primary with Secondary & Higher Secondary |
| Almora | 24 | 38 | 20 | 60 | 41.60 |
| Bageshwar | 25 | 14 | 0 | 72 | 84.70 |
| Chamoli | 18 | 9 | 0 | 82 | 84.80 |
| Champawat | 22 | 50 | 33 | 78 | 89.30 |
| Dehradun | 7 | 1 | 9 | 59 | 56.90 |
| Pauri Garhwal | 15 | 65 | 73 | 68 | 82.70 |
| Haridwar | 29 | 7 | 0 | 45 | 72.70 |
| Nainital | 9 | 0 | 50 | 67 | 44.70 |
| Pithoragarh | 22 | 76 | 63 | 69 | 71.10 |
| Rudraprayag | 22 | 60 | 100 | 75 | 87.50 |
| Tehri Garhwal | 27 | 76 | 50 | 69 | 92.00 |
| US Nagar | 35 | 32 | 6 | 51 | 52.70 |
| Uttarkashi | 20 | 26 | 33 | 79 | 45.90 |
| All | 21 | 24 | 24 | 67 | 72.30 |

Source: Mehta, Arun (2005). *Elementary Education In India—Where do we stand*. NIEPA

4.4 Inadequate Teaching Equipment—Blackboards

Despite the launching of Operation Blackboard nearly two decades back, still there are schools in Uttarakhand that do not have the very basic teaching equipment like blackboards. Interestingly, the proportion of such schools is the highest being 6.3 per cent, in secondary/higher secondary schools (Table 6.22). In the remaining category of schools also, nearly two per cent schools are without blackboards. It is an immediate need that such basic teaching aids like blackboards which costs very little, needs to be equipped in the class, as its absence causes great hardship for both, the teacher as well as the students.

TABLE 6.22

Percentage of Schools without Blackboards at Different Levels of Education and Districts, 2003-04

| Districts | Type of School | | | | |
|---------------|----------------|----------------------------|---------------------------------------------------------|--------------------|-----------------------------------------------|
| | Primary Only | Primary with Upper Primary | Primary with Upper Primary & Secondary/Higher Secondary | Upper Primary Only | Upper Primary with Secondary/Higher Secondary |
| Almora | 2.8 | 0 | 20.0 | 7.6 | 2.2 |
| Bageshwar | 1.8 | 0 | 0 | 0 | 0 |
| Chamoli | 1.2 | 0 | 0 | 1.0 | 1.9 |
| Champawat | 2.1 | 0 | 0 | 1.9 | 3.6 |
| Dehradun | 1.2 | 0.7 | 5.9 | 3.6 | 3.9 |
| Pauri Garhwal | 1.6 | 5.0 | 9.1 | 2.6 | 9.6 |
| Haridwar | 1.4 | 1.7 | 0 | 1.7 | 0 |
| Nainital | 2.3 | 3.3 | 10.0 | 3.6 | 21.1 |
| Pithoragarh | 4.6 | 0 | 0 | 5.9 | 2.2 |
| Rudraprayag | 3.4 | 13.3 | 10.0 | 4.2 | 9.4 |
| Tehri Garhwal | 2.1 | 12.0 | 10.1 | 5.6 | 1.5 |
| US Nagar | 1.5 | 2.0 | 18.8 | 0.8 | 7.3 |
| Uttarkashi | 4.6 | 0 | 16.7 | 0.7 | 5.4 |
| All | 1.8 | 2.2 | 6.3 | 1.4 | 2.1 |

Source: Mehta, Arun (2005). *Elementary Education In India—Where do we stand*, NIEPA.

4.5 Inadequate Girls Toilet in most Schools

Only 30 per cent of primary schools are having separate toilets for girls (Table 6.23). In fact, in 7 out of 13 districts, number of primary schools with separate girls toilet is less than 13 per cent. But this proportion is much higher, in the plain districts of Haridwar and Udham Singh Nagar being more than 74 per cent. Even in the case of upper primary schools only 40 per cent have separate girls toilet. In schools with upper primary with secondary and higher secondary (VI to XII) 58 per cent have separate girls toilet. In schools with primary and upper primary (I to VIII) the same is relatively higher at 66 per cent and in primary with upper primary and secondary/higher secondary (I to XII) the same is the highest at 76 per cent. Thus, separate toilets for girls are required to be built in large numbers of primary and upper primary schools and in significant proportions in other categories of schools.

4.6. Inadequate Facility for Drinking Water

Drinking water facility is available in 70 per cent primary schools, 65 per cent upper primary schools and 82 to 87 per cent in the case of other schools (Table 6.24). So, the remaining 13 to 35 per cent schools need to be provided with drinking water facilities. In Haridwar and

Udham Singh Nagar proportion of the schools with drinking water facility varies between 86 to 100 per cent.

TABLE 6.23

Percentage of Schools having Girls Toilet at Different Levels of Education and Districts, 2003-04

| Districts | Percentage of Schools with Girls Toilet | | | | |
|---------------|-----------------------------------------|----------------------------|---------------------------------------------------------|--------------------|-----------------------------------------------|
| | Primary Only | Primary with Upper Primary | Primary with Upper Primary & Secondary/Higher Secondary | Upper Primary Only | Upper Primary with Secondary/Higher Secondary |
| Almora | 11 | 56 | 80 | 45 | 80.90 |
| Bageshwar | 17 | 71 | 0 | 21 | 52.50 |
| Chamoli | 13 | 49 | 67 | 18 | 40.00 |
| Champawat | 8 | 88 | 33 | 57 | 67.90 |
| Dehradun | 29 | 84 | 91 | 42 | 74.50 |
| Pauri Garhwal | 56 | 40 | 64 | 55 | 51.90 |
| Haridwar | 75 | 88 | 100 | 73 | 81.80 |
| Nainital | 60 | 73 | 60 | 68 | 42.10 |
| Pithoragarh | 10 | 33 | 25 | 18 | 47.80 |
| Rudraprayag | 6 | 13 | 0 | 10 | 45.30 |
| Tehri Garhwal | 10 | 60 | 67 | 14 | 67.90 |
| US Nagar | 78 | 76 | 81 | 80 | 74.50 |
| Uttarkashi | 11 | 44 | 83 | 15 | 37.80 |
| All | 30 | 67 | 76 | 40 | 58.40 |

Source: Mehta, Arun (2005). *Elementary Education in India—Where do we stand*. NIEPA.

4.7 Inadequate Early Childhood Care and Education Centres (ECCE)

As per the 86th Constitutional Amendment Act 2002, the state has “to provide early childhood care and education to all children until they complete the age of six years”. The Early Childhood Care and Education (ECCE) centres are considered as an important component of human resource development, as a feeder and support programme to primary education. Setting up of ECCE centres for the 3-6 year olds also provide support services for working women. Because of ours being a patriarchal society, many girls are made to withdraw from school, in order to look after their younger siblings. So the purpose of these centres is also to target these out-of-school girls of age 6-14 to help them attend school along with their younger siblings. However, only around 11 per cent of the primary schools, 37 per cent of the upper primary schools (I to VIII) and 32 per cent of higher secondary schools (I to XII) have pre-primary section (Mehta, 2005: 24). Opening up of more such ECCE centres will help in the holistic development of the children along with helping in

TABLE 6.24
Percentage of Schools with Drinking Water Facility at Different Levels of Education and Districts, 2003-04

| Districts | Type of School | | | | |
|---------------|----------------|----------------------------|---------------------------------------------------------|--------------------|-----------------------------------------------|
| | Primary Only | Primary with Upper Primary | Primary with Upper Primary & Secondary/Higher Secondary | Upper Primary Only | Upper Primary with Secondary/Higher Secondary |
| Almora | 56 | 63 | 80 | 50 | 79.80 |
| Bageshwar | 54 | 100 | 100 | 59 | 84.70 |
| Chamoli | 80 | 91 | 100 | 72 | 87.60 |
| Champawat | 68 | 88 | 100 | 55 | 71.40 |
| Dehradun | 79 | 98 | 94 | 80 | 98.00 |
| Pauri Garhwal | 64 | 50 | 64 | 58 | 69.20 |
| Haridwar | 93 | 97 | 100 | 86 | 100.00 |
| Nainital | 73 | 80 | 80 | 70 | 68.40 |
| Pithoragarh | 58 | 71 | 63 | 59 | 76.70 |
| Rudraprayag | 60 | 60 | 0 | 45 | 81.20 |
| Tehri Garhwal | 62 | 68 | 50 | 53 | 79.60 |
| US Nagar | 95 | 86 | 88 | 96 | 96.20 |
| Uttarkashi | 76 | 78 | 100 | 54 | 86.50 |
| Uttarakhand | 70 | 86 | 87 | 65 | 82.60 |

Source: Mehta Arun (2005). *Elementary Education In India-Where do we stand*, NIEPA.

further reducing the gender disparities in education in the state.

5. Enrolment

Table 6.25 presents the enrolment of children in various categories of schools by selected indicators in Uttarakhand. Around 13 per cent children are enrolled in single teacher primary schools. In other schools with upper and higher level classes, proportion of such students is one per cent or less. Percentage of students enrolled in schools without buildings varies between two to eight per cent and those without blackboards between 1.4 to 6.3 per cent in different categories of schools.

5.1 High Gross Enrolment Rate: A Myth or Reality?

Gross enrolment ratio in primary classes is quite high in the state, around 106 per cent, which is higher than UP and India but lower than HP (Tables 6.26 A and B). However, one should be cautious to the fact that at primary level, where students generally will not fail till fourth standard and fee in government-aided schools is very meagre, sometimes high enrolment records are shown by the teachers. In the context of UP, it is observed that to

avoid transfer, teachers ensure that enrolment rates do not fall below the official norm. By paying school fees which is very nominal in the names of children who have already dropped out (or have never been enrolled), teachers are able to maintain inflated registers (Dreze and Gazdar, 1997: 70-71). Nevertheless, performance in elementary education in hill regions of north and north-east India, including Uttarakhand, is much better than UP and rest of the north and east India (Probe Report, 1999).

TABLE 6.25
Enrolment of Children in Various Categories of Schools by Selected Indicators, 2003-04

| Percentage Enrolled in | Primary Only | Primary with Upper Primary | Primary with Upper Primary & Secondary/Higher Secondary | Upper Primary Only | Upper Primary with Secondary/Higher Secondary |
|----------------------------|--------------|----------------------------|---------------------------------------------------------|--------------------|-----------------------------------------------|
| Single teacher schools | 13 | 1 | 1 | 1 | 0 |
| Schools without blackboard | 2 | 2 | 6 | 1 | 2 |
| Schools without buildings | 3 | 4 | 8 | 8 | 2 |

Source: Mehta, Arun (2005). *Elementary Education In India—Where do we stand*, NIEPA.

At upper primary level (classes VI-VIII) gross enrolment ratio is around 79 per cent; higher than UP (47 per cent) and India (61 per cent) but lower than HP (104 per cent). At this stage, girls lag behind boys by 5.5 percentage points. This is despite the fact that at primary level, girls enrolment is higher than boys by about two percentage points. Hesitation of the parents to send girls to the schools located outside the village and without female teachers may partly be responsible for this boys-girls gap in enrolment ratios. Another reason may be less weight given to female education (data on higher education that follows, also brings out this fact). However, discrimination against women in Uttarakhand, it seems, is relatively less compared to most other northern states and they are active partners in economic and social spheres (USNPSS, 2005). In 2001, eight hill districts of Uttarakhand registered favourable sex ratio, quite contrary to states of UP, Haryana and Punjab. That is why gender gap in enrolment in VI-VIII classes in Uttarakhand is lower than in UP and India; 10 and 9 percentage respectively, in latter two cases (Tables 6.26 A and B).

In the total enrolment at different levels of school education, a relatively high proportion, 77 per cent of children in the state are in government schools (Table

6.27) except in I to VIII and I to XII class where the enrolment in government schools was 21 and 35 per cent respectively. In other categories of schools (Class I to V; VI to VIII; and VI to XII) percentage was above 75. The proportion is little lower in plains and more in urbanised districts of Haridwar, Udham Singh Nagar, Dehradun and Nainital.

6. Higher Education

6.1. Inadequate Institutes of Higher Education

In absolute terms, the facilities for higher education (university level) in India are substantial. As per the UGC Annual Report 2002-03, the country has 290 university level institutions, nearly 13,150 colleges, 88 lakh students

TABLE 6.26A

Gross Enrolment Ratio in Class I to VIII in Uttarakhand, Uttar Pradesh, Himachal Pradesh and India, 2002-03

| | CLASS I-V | | | CLASS VI-VII | | | CLASS I-VIII | | |
|------------------|-----------|-------|-------|--------------|-------|-------|--------------|-------|-------|
| | Boys | Girls | Total | Boys | Girls | Total | Boys | Girls | Total |
| Uttarakhand | 107 | 109 | 108 | 82 | 76 | 79 | 97 | 96 | 97 |
| Uttar Pradesh | 93 | 89 | 91 | 52 | 41 | 47 | 78 | 72 | 75 |
| Himachal Pradesh | 117 | 116 | 116 | 107 | 101 | 104 | 113 | 110 | 111 |
| India | 98 | 93 | 95 | 65 | 56 | 61 | 85 | 79 | 83 |

Source: Abstract of Selected Educational Statistics, 2002-03, Ministry of Human Resource Development, Government of India, 2002-03.

TABLE 6.26B

Gross Enrolment Ratio in class I to VIII in Uttarakhand, Uttar Pradesh, Himachal Pradesh and India, 2004-05

| | CLASS I-V | | | CLASS VI-VII | | | CLASS I-VIII | | |
|------------------|-----------|-------|-------|--------------|-------|-------|--------------|-------|-------|
| | Boys | Girls | Total | Boys | Girls | Total | Boys | Girls | Total |
| Uttarakhand | 117 | 118 | 117 | 88 | 87 | 88 | 106 | 106 | 106 |
| Uttar Pradesh | 110 | 104 | 107 | 57 | 46 | 52 | 90 | 82 | 87 |
| Himachal Pradesh | 109 | 108 | 108 | 109 | 107 | 108 | 109 | 107 | 108 |
| India | 110 | 104 | 107 | 74 | 65 | 69 | 96 | 89 | 93 |

Source: Abstract of Selected Educational Statistics, 2004-05, Ministry of Human Resource Development, Government of India, 2004-05.

TABLE 6.27

Percentage of Students Enrolled in Government Schools to Total Enrolment at Different Levels of Education in Districts, 2003-04

| Districts | Type of Schools | | | | | |
|-------------------|-----------------|----------------------------|---------------------------------------------------------|--------------------|-----------------------------------------------|------------|
| | Primary Only | Primary with Upper Primary | Primary with Upper Primary & Secondary/Higher Secondary | Upper Primary Only | Upper Primary with Secondary/Higher Secondary | All School |
| Almora | 91 | 46 | 79 | 87 | 78 | 85 |
| Bageshwar | 89 | 11 | 0 | 82 | 69 | 79 |
| Chamoli | 88 | 10 | 0 | 91 | 94 | 78 |
| Champawat | 87 | 13 | 87 | 86 | 77 | 81 |
| Dehradun | 75 | 11 | 35 | 80 | 64 | 43 |
| Pauri Garhwal | 98 | 78 | 78 | 99 | 85 | 98 |
| Haridwar | 76 | 71 | 18 | 56 | 13 | 42 |
| Nainital | 79 | 24 | 46 | 87 | 86 | 72 |
| Pithoragarh | 87 | 30 | 19 | 89 | 91 | 81 |
| Rudraprayag | 88 | 19 | 0 | 70 | 85 | 78 |
| Tehri Garhwal | 84 | 41 | 18 | 82 | 89 | 78 |
| Udham Singh Nagar | 73 | 44 | 31 | 67 | 56 | 59 |
| Uttarkashi | 85 | 23 | 79 | 95 | 90 | 83 |
| All | 83 | 21 | 35 | 80 | 76 | 77 |

Source: Mehta, Arun (2005). *Elementary Education In India—Where do we Stand*, NIEPA. New Delhi.

and 4.27 lakh teachers. However, only 8 per cent of the specified age group avail themselves of higher education (Sahni and Kale, 2004). In the year 2000, there were 1200 engineering colleges and 720 management institutes in India (ibid).

Regional distribution of institutions of higher education is quite uneven across the states. The four southern states and Maharashtra account for 32 per cent of India's population, but in terms of institutions of higher learning 46 per cent of total colleges in general education and almost 60 per cent of the professional institutions are in these five states (ibid). The states of UP, MP and Bihar (including Jharkhand), account for 34 per cent of population but only 14 per cent of professional colleges.¹ Opening up of higher education in private sectors in southern region which began in the late 1980s, is one of the main reasons for the uneven concentration of institutions within regions (Sahni and Kale, 2004). Moreover, the composition of these institutions is tilted towards engineering colleges and management institutes.

Table 6.28 presents the percentage share of institutes of higher education in Uttarakhand, Uttar Pradesh and Himachal Pradesh to all-India and ratio of percentage share of the state in the total institutions in India to percentage share of institutes to total population of the respective states in 2001.

The ratio of the percentage share of institutions in Uttarakhand to the percentage share of institutes in the state to its population means proportionately more institutions in the state if it is more than one and vice versa. In case of total number of institutes of higher education the ratio is 0.75 per cent which means it has only 75 per cent of its proportionate share of institutions. This is higher than the ratio in Uttar Pradesh being 0.57 and lower than Himachal Pradesh at 1.33. In case of medical colleges the ratio is just 0.38 showing the relative shortage of the same in the state. The ratio is also lower in case of arts, science and commerce colleges but higher in polytechnic, engineering, technical and archaeology colleges and universities. The students are concentrated in general courses, share of professional courses being less than 5 per cent. Thus, there is an urgent need to open more institutions of higher learning especially in medicine. Given the abundance of forest resources and knowledge base in conventional medicines, the scope for opening more colleges in Indian system of medicines could be expedited along with opening of allopathic medical colleges. The state's comparative advantage in herbal plants also needs to be exploited.

6.2 General Stream Dominates Higher Education Enrolment

The enrolment pattern presented in Table 6.29 shows

TABLE 6.28

Percentage Share of Institutes of Higher Education in Uttarakhand, Uttar Pradesh and Himachal Pradesh to All-India and Ratio of Percentage Share of the State in the Total Institutions in India to Percentage Share of Institutes to Total Population of the Respective States, 2001

| Type of institutions | States' Share in Total Institutes in India (Per cent) | | | Ratio of Percentage Share of the State in the Total Institutes to Percentage Share of Institutes to State's Own Population | | |
|------------------------------------------------|-------------------------------------------------------|---------------|------------------|----------------------------------------------------------------------------------------------------------------------------|---------------|------------------|
| | Uttarakhand | Uttar Pradesh | Himachal Pradesh | Uttarakhand | Uttar Pradesh | Himachal Pradesh |
| University | 2.0 | 9.1 | 1.4 | 2.5 | 0.6 | 2.3 |
| Arts, science and commerce college | 0.5 | 8.7 | 0.7 | 0.6 | 0.5 | 1.2 |
| Engineering, technical and archaeology college | 1.0 | 4.1 | 0.2 | 1.3 | 0.3 | 0.3 |
| Medical college | 0.3 | 4.7 | 1.0 | 0.4 | 0.3 | 1.7 |
| Teacher training college | 1.2 | 14.3 | 0.2 | 1.5 | 0.9 | 0.3 |
| Total higher education | 0.6 | 9.3 | 0.8 | 0.8 | 0.6 | 1.3 |
| Polytechnic institute | 1.6 | 7.0 | 0.5 | 2.0 | 0.4 | 0.8 |
| Percentage of population | 0.8 | 16.2 | 0.6 | N.A. | N.A. | N.A. |

Note: N.A. = Not Applicable.

Source: Selected Educational Statistics, MHRD, GoI, New Delhi.

1. Other than arts, science and commerce colleges.

that out of the total enrolment of students in higher education 80 per cent are studying at the degree level (arts, science and commerce), 15.66 per cent in master's degree (arts, science and commerce); doctorate and post-doctorate only 0.21 per cent. In respect of specialised fields, in engineering and other related subjects 1.67 per cent, medical 0.64 per cent and in teachers' training 1.8 per cent. What is more important is with regard to enrolment of females in various courses in higher education, which in a way reveals extent of female participation in various streams of higher education. In respect of the share of female enrolment in higher education in all streams taken together, the same is 40 per cent which is very significant. The shares in enrolment in various streams vary between 24.86 in medical to 47.43 per cent in teachers' training. It is a matter of great surprise to find that female's enrolment in engineering is as high as 45.5 per cent which is a highly positive trend. The enrolment in master's degree and degree level is about 44 and 39 per cent respectively.

6.3. Encouraging Share of Girls Enrolment in Engineering but Low in Medical and Commerce

National Policy on Education, 1986, envisages use of education "as an agent of basic change in the status of women." Elimination of gender disparities and achieving gender equality in education is also reflected in Dakar goals (see Box 6.1). However, as analysed earlier, there is a large gap of about 24 percentage points between male and female literacy in Uttarakhand. Favourable conditions are also not being created which is reflected through lack of separate toilets for girls in large number of schools, and

also numerous schools without a single female teacher. Girls are lagging behind boys in enrolment at upper primary level by 5.5 percentage points. This fact is also reflected in Gender Parity Index (GPI) in primary education in the state. The GPI in primary enrolment for Uttarakhand is 0.94, that is, 94 girls enrolled for every 100 boys (Table 6.30) is higher than that of UP (0.86), India (0.88) and even the relatively progressive state of HP (0.91).

So for the enrolment in higher education is concerned (Table 6.29) the gender gap is not that high. In certain streams, like engineering and related subjects, the female enrolment is about 45 per cent, which is a very positive sign. The ratio of boys to girls in higher education is 60:40. However, the girls are a great deal behind boys in medical and commerce (both at undergraduate and postgraduate level) lower than one-fourth of total enrolled. In science, at undergraduate level, the girls' share is just one-third (Table 6.29). Gap between boys and girls enrolment is less in arts (graduate and master's degree), engineering, teachers' training and science (master degree). Girls' share in total enrolment in other professional courses (other than degree courses) like polytechnic, industrial training institutes, art and craft schools, junior basic training colleges etc., is just one-third (Selected Educational Statistics, MHRD).

6.4 Share in Enrolment of SC/ST Lack in Higher Education

In the total population of Uttarakhand nearly 18 per cent are scheduled castes (SC) and 3 per cent are from scheduled tribes (ST). However, their share in enrolment

TABLE 6.29
Percentage Distribution of Boys and Girls Enrolled in Higher Education Stream-wise, 2001-02

| Stream | Name of the Course/ Degree | Boys | Girls | Total | Distribution by Stream |
|----------------------------------------|-------------------------------------------------|------|-------|--------|---------------------------|
| Medical | Bachelor of Medicine and Bachelor of Surgery | 75 | 25 | 696 | 0.64 |
| Engineering and other related subjects | B.E./B.Sc.(Engg.)/B.Arch. | 55 | 45 | 1826 | 1.67 |
| Doctorate and post doctorate | Ph.D./D.Sc./D.Phil. | 67 | 33 | 231 | 0.21 |
| Teachers' training | B.Ed./B.T. | 53 | 47 | 1963 | 1.80 |
| Master's degree (general) | Arts | 54 | 46 | 11507 | |
| | Science | 52 | 48 | 3556 | |
| | Commerce | 77 | 23 | 1952 | |
| | Total | 56 | 44 | 17015 | 15.66 |
| Degree level (general) | Arts | 56 | 44 | 59064 | |
| | Science | 67 | 33 | 19219 | |
| | Commerce | 82 | 18 | 8530 | |
| | Total | 61 | 39 | 86813 | 80.02 |
| Grand total | | 60 | 40 | 108544 | 100.00 |

Source: Selected Educational Statistics, MHRD, GoI.

in higher education is much lower (Table 6.31). The ratio of their share in enrolment to their share in state's population gives an idea about the skewed distribution of students among different social groups. In case of SCs, the overall ratio of their enrolment in higher education is 0.72, means that they get only 72 per cent of their due share. In engineering courses the ratio is more than one, which means they get higher share than their proportion in population. In no other course, the ratio is one or above. In MBBS course it is just 0.12. Position of STs is even worse (Table 6.31). The ratio being 0.11 means they get only 11 per cent of their due share in enrolment in higher education. It is as low as zero per cent in doctorate degrees, 5 per cent in bachelor of education and 7-8 per cent in science courses. In literacy rates also SC/STs lag behind other castes. Thus, there is an urgent need to promote the social equity in higher education.

TABLE 6.30
Gender Parity Index at Various Levels of School Education in Uttarakhand, Uttar Pradesh and Himachal Pradesh and All-India, 2002-03

| | Uttarakhand | Uttar Pradesh | Himachal Pradesh | India |
|---------|-------------|---------------|------------------|-------|
| I-V | 0.94 | 0.86 | 0.91 | 0.88 |
| VI-VIII | 0.87 | 0.78 | 0.90 | 0.78 |
| IX-X | 0.72 | 0.78 | 0.91 | 0.83 |

Source: Seventh All India School Survey, 2002-03.

7. Quality of Education

One of the Dakar goals was to “improve every aspect of the quality of education, and ensuring excellence so that recognised and measurable learning outcomes are achieved by all, especially in literacy, numerically and essential life skills”. The National Policy on Education (NPE), 1986 and the revised NPE of 1992, also emphasise the need to address the quality concerns in school education on priority basis.

To achieve this, the Indian National Plan of Action for Education For All (EFA) (see GoI, 2004: 33) stipulated a five-fold strategy, consisting of:

- improvement in provision of infrastructure and human resource for primary education;
- provision of improved curriculum and teaching learning material;
- improving the quality of teaching-learning process through the introduction of child-centered pedagogy;
- attention to teacher capacity building; and
- increased focus on specifications and measurement of learner achievement levels.

The state government is implementing a variety of programmes to improve the quality and achieve gender

TABLE 6.31
Share of SC and ST in Total Enrolment in Higher Education and Ratio of Share in Enrolment to Share in Population, 2001-02

| Name of the Course/Degree | Share of SC and ST in Total Enrolment in Higher Education (Number and Per cent) | | | Ratio of Share in Enrolment to Share in Population | |
|----------------------------------------------|---------------------------------------------------------------------------------|-------|-------|----------------------------------------------------|------|
| | Total | SC | ST | SC | ST |
| Bachelor of Medicine and Bachelor of Surgery | 696 | 2.16 | 0.72 | 0.12 | 0.24 |
| B.E./B.Sc.(Engg.)/B.Arch. | 1826 | 24.42 | 1.20 | 1.36 | 0.40 |
| Ph. D./D.Sc./D.Phil. | 231 | 1.73 | 0 (-) | 0.09 | 0 |
| B.Ed./B.T. | 1963 | 7.13 | 0.15 | 0.40 | 0.05 |
| Master degree (General) | | | | | |
| Arts | 11507 | 16.60 | 0.49 | 0.93 | 0.16 |
| Science | 3556 | 8.86 | 0.28 | 0.49 | 0.09 |
| Commerce | 1952 | 8.50 | 0.22 | 0.47 | 0.07 |
| Total | 17015 | 14.05 | 0.43 | 0.78 | 0.14 |
| Bachelor degree (General) | | | | | |
| Arts | 59064 | 13.48 | 0.33 | 0.75 | 0.11 |
| Science | 19269 | 13.04 | 0.23 | 0.73 | 0.08 |
| Commerce | 8530 | 9.19 | 0.49 | 0.51 | 0.16 |
| Total | 86863 | 12.96 | 0.33 | 0.72 | 0.11 |

Source: Selected Educational Statistics, MHRD, GoI.

and social equity in education (see Appendix). Physical and human infrastructure facilities are expanded and upgraded to achieve the objectives. Progress made in this direction can be summarised as follows:

- As per the 22nd Joint Review Mission of DPEP III the large recruitment of teachers has improved the PTR tremendously.
- State was piloting a system of continuous and comprehensive evaluation system, which was subjected to a third party evaluation during 2004-2005. The results of the pilot were positive in terms of enhancing students' achievement levels.
- School grading system developed by the state is conceived as a tool for supportive supervision and monitoring. The grading maps developed by the state have been used to ease location of performing and non-performing districts/blocks/schools based on the grading which is carried out thrice a year. This has helped to identify that the three districts namely Chamoli, Dehradun and Almora as the districts of concern in terms of primary education in the state because the different efforts like application of child-centred method of teaching, attempts to follow activity based learning etc., could not yield expected results. Also, it has helped to identify the districts namely Bageshwar, Uttarkashi, Tehri Garhwal and Pithoragarh where the situation has deteriorated during the last one year. Measures have been taken and special programmes have been designed for these districts for the financial year 2006-07.
- Serious attempts have been made to induct different aspects of quality in primary education in terms of physical environment, classroom environment etc., in primary and upper primary education (Table 6.32).
- Especially for the quality aspect, Block Resource Centres (BRCs) and Nyaya Panchayat Resource Centres (NPRCs) etc., have been set up. The prime goal of BRCs & NPRCs is to create an activity based learning environment at the schools.
- Moreover, the training of the teachers also has become an integral component in the different programmes.

On service training has also become a major component in the different education programmes like DPEP, SSA etc (Table 6.33).

However, the discussions in the previous sections as well as the Table 6.34 reveal that even with these serious efforts, today the elementary education in Uttarakhand is

in a bad shape. Accessibility to schools is not universal, deficiencies in infrastructure facilities remain and persisting gender and social disparities are some of the problems impinging upon the teaching learning process, thus affecting the quality of education. A sizeable number of the children are still out of school. Nearly one-fourth of primary schools in Uttarakhand are single teacher schools in which a teacher when present manages five classes simultaneously. In fact, managing more than one class at a time affects the quality of teaching even if the teacher is sufficiently motivated. Lack of female teachers in schools in large proportion is also a deterrent in the expansion of female education. Almost all state governments engage teachers in number of non-teaching activities too, like helping in family planning programmes, which keep them away from classroom. Politicisation of appointments, transfers and promotions are other factors affecting the quality of education. Above all, a more serious problem in improving the quality of teaching-learning process is lack of motivation and accountability. As a fall-out effect, a sizeable number of students drop out from studies in between. (Table 6.34). A study (Dreze and Gazdar, 1997) based on the information collected through visits to some primary schools in UP, discussions with local residents, teachers, officials and activists reported that teacher absenteeism is rampant, most teachers come late and leave early and impart very little teaching when they were present, high level of child absenteeism and indifference among the teachers for motivating and encouraging

TABLE 6.32

Percentage of Schools Opened and Infrastructure Developed under Sarva Shiksha Abhiyan (SSA)/(DPEP) during 2002-03 to 2005-06

| Interventions | Years | | | | Total |
|-----------------------------------------|---------|---------|---------|---------|-------|
| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | |
| Number of schools opened under SSA/DPEP | | | | | |
| Primary schools | 14 | 35 | 11 | 40 | 561 |
| Upper primary schools | 30 | 43 | 13 | 14 | 527 |
| EGS centres opened | 13 | 30 | 40 | 17 | 870 |
| AIE centres opened | 12 | 6 | 20 | 62 | 177 |
| Constructions under SSA/DPEP | | | | | |
| New building | 18 | 28 | 15 | 38 | 520 |
| Repair | 3 | 0 | 12 | 84 | 16089 |
| Reconstruction | 19 | 14 | 19 | 48 | 938 |
| Boundary wall | 5 | 13 | 26 | 56 | 2780 |
| Toilet | 15 | 13 | 31 | 41 | 3889 |
| Drinking water | 10 | 20 | 10 | 59 | 3717 |

Source: AWP & B of Sarva Shiksha Abhiyan, Uttarakhand, 2006-07.

students for school attendance. In contrast, in private schools where the teachers are generally less qualified and without proper training are at the same time very active and hard working as the service conditions in these schools are very strict and stringent. The management of the private schools remains accountable to the parents, who pay high fees and expect tangible results in return. The situation in many other parts of India, including Uttarakhand, may not be as bad as in UP but the problem of motivation and accountability in government schools in varied degrees exist almost everywhere.

TABLE 6.33

Number of Teachers Trained on Service during 2002-03 to 2005-06

| Indicator | Years | | | |
|--------------------------------------------------------------|---------|---------|---------|---------|
| | 2002-03 | 2003-04 | 2004-05 | 2005-06 |
| In service training of teachers (Number of teachers trained) | 17102 | 20374 | 41489 | 39619 |

Note: It gives cumulative figure till the period.

Source: AWP & B of Sarva Shiksha Abhiyan, Uttarakhand, 2006-07.

TABLE 6.34

Number of Children in 6-14 Years Age Group and Out of School Children in Uttarakhand

| Agency | Year of Reference | Total Number of Children in the Age Group of 6-14 Years in 8 DPEP Districts | Out of School Children | (4) as Percentage of (3) |
|--------|-------------------|-----------------------------------------------------------------------------|------------------------|--------------------------|
| 1 | 2 | 3 | 4 | 5 |
| IMRB | July-October 2005 | 1562659 | 116690 | 7.5 |

Source: AWP & B of Sarva Shiksha Abhiyan, Uttarakhand, 2006-07.

8. Branded Schools

In Uttarakhand as well as in other parts of India, in school education, a dual system is prevailing. A relatively small section of the population having the affordability get quality education for their wards in good English medium private schools and the majority of the people put their wards in government schools where Hindi is the medium of teaching.

One of the important factors responsible for poor performance of government schools is the increasing social distance between teachers and children (Ramachandran, 2005). The government schools generally have the children from poor and socially disadvantaged families. Social attitudes and community prejudices play

an important role in determining the ability and willingness of teachers to empathise with children. However, Ramachandran observes that wherever teachers worked hard, they received tremendous community support.

Uttarakhand has attained a prominent place in imparting quality education at school level in India and to some extent in the SAARC region through its branded schools. Students from Nepal, Bhutan and China come here in large numbers for school education. Uttarakhand could harness substantial benefits by promoting branded schools, which ultimately could lead to develop the region in to a major education hub. Such schools provide employment to the educated persons in the state, while students coming from outside the state contribute in the state's GDP by increasing consumption expenditure.

The demand for branded schools is on the increase due to the increasing number of working women and growth of nuclear families. For parents of these affluent families, upbringing and educating the children is a big issue.

Uttarakhand has good climate throughout the year. Free from pollution and with several opportunities for sports and adventures like river rafting, mountaineering etc., the state provides an added advantage because it offers double opportunity for busy parents to avail holidays as well as meet their children studying here. It can also attract non-resident Indians (NRI) to invest as well as send their children for education.

Districts Dehradun and Nainital have assumed special importance due to the existence of some of the most reputed and sought after schools in India. The schools like Doon School, Sherwood College and Welham Boys' School are well known, for many of the prominent and famous personalities from various walks of life were students of these schools. Some of them are: Field Marshal Manekshaw; Ex-Prime Minister, Mr. Rajiv Gandhi; eminent politicians like late Sanjay Gandhi and Mr. Mani Shankar Aiyar; actors like Mr. Amitabh Bachchan and Mr. Kabir Bedi; Padma Bhushan F.C. Bhadwar and Virendra Dayal and many others do not hail from Uttarakhand state. There is indeed no doubt that specific value attached to these schools is due to their attaining the brand equity. For developing brand equity, consumers (prospective students and their families) must be persuaded that there are important differences in the way education is provided in these branded schools.

It is also evident that after 1950 at both the places i.e., Dehradun and Nainital, the Indian business community joined the fray and many schools came up with the

modern environment mainly under Central Board of Secondary Education (CBSE) whereas most of the missionary schools established before 1950 are under Indian Certificate of School Education. Most of these schools are regular as well as residential (Table 6.35).

TABLE 6.35

Distribution of Private Schools by Types (Only Residential and both Residential and Day Scholars). Sample size: 25

| Sl. No. | Type of School | Percentage of School |
|---------|-----------------------------------|----------------------|
| 1 | Only residential | 8 |
| 2 | Both residential and day scholars | 92 |

Source: Primary Survey, NCAER, 2005.

In order to study and analyse some of the important features in terms of some of the parameters, a survey was conducted and information/data was collected from 21 selected schools of Nainital and Dehradun through a semi structured questionnaire. Moreover, for developing a better understanding, informal/formal group discussions were also conducted.

The findings can be summarised as follows:

- 1) For admission, the students are short listed on the basis of the following four criteria fixed in most of these schools:

Step-I: Admission test; Step-II: Interview of the students; Step-III: Interview of the parents; Step-IV: Final selection.

In few schools, preferences are given to the wards of the VVIPs/alumni of the school. Though none of the school management admitted that they accept donations, the parents however, reported that a few schools do ask for donations in the form of school development fund etc. The school-wise information on the ratio of number of applicants to the number of admissions indicates that the most popular schools of first preference in Uttarakhand is Doon School followed by Sherwood College and Birla Vidya Mandir.

- 1) When the wards don't get selected through the usual procedure the parents offer donation and get their wards admitted. From the data given below it is clear that the admission test is merely a formality in 20 per cent of these schools (Table 6.36).
- 2) A sizeable number of parents particularly from 2-3 eastern and northern states prefer to pay mainly because of two reasons viz., (i) they feel that the environment and quality of education even in the

less popular schools of Dehradun are better than the schools of their native state; (ii) sending a child to a boarding school in Dehradun enhances the social status and at the same time the child studies in English medium and learns manners and gets accustomed to western culture and etiquettes.

TABLE 6.36

Ratio of Number of Applicants to Intake in Private Schools (Sample Size 21)

| Sl. No. | Ratio of Number of Applicants to Number of Intakes | Percentage Distribution |
|---------|----------------------------------------------------|-------------------------|
| 1 | 1 | 20 |
| 2 | 10 | 15 |
| 3 | 25-50 | 20 |
| 4 | >100 | 45 |

- 3) It can be observed that, out of 22 schools surveyed, except for 3 schools, 40-80 per cent of the students who join these schools are from Bihar, Uttar Pradesh and Nepal.
- 4) The economic and family background of the students also reveals that more than 50 per cent of the students have rural background with agriculture as their main source of family. However, this does not hold true for the schools like Doon School of Dehradun and Long View School, All Saints School and five other schools of Nainital.

It can be observed that in a sizeable number of schools of Nainital, 70-90 per cent of students are from the non-farming families belonging to urban areas. As opined by some of the parents, the people of Uttarakhand consider Nainital as a better place for education than Dehradun, particularly the service class people prefer to send their wards to boarding schools of Nainital.

- 5) The student-teacher ratio vary between 15-30 per cent which is lower than the recommended norm of DPEP i.e., at least 1 teacher for 35 students
- 6) Distribution of teachers in private schools by qualification is presented. Survey indicates that in almost all the schools the teachers are well qualified and a 58.2 per cent among them are postgraduates.
- 7) During the field visits it was clearly visible that the pedagogy followed here is activity-based and child-centred method of teaching. Almost all the schools have got facilities required for creating an ideal

academic environment. The guardians of some of the schools also reported that project works are assigned frequently but without a proper guidance/feed back from the teachers and as a result projects submitted are not upto the mark and the students do not learn much out of it. However, during the field survey it was observed that the schools like Sherwood College conduct workshop in social sciences which provide ample opportunities to the students to develop their outlook to critically analyse and learn things.

- 8) It is found that even though the fees are quite high in the branded schools of Nainital and Dehradun, these are well equipped for all-round development of a child. Apart from these, other activities pursued in these schools include: (1) publication of news letters and wall magazines at a regular interval; (2) quiz, debate, drawing and cultural at regular intervals.
- 9) In spite of the provision of these facilities, a sizeable section of the parents alleged that some of the branded schools of Dehradun and Nainital do not have enough qualified teachers for pursuing these activities. May be these teachers are good for class room teaching but may not be that capable in respect of activity-based learning. All these comments are directed towards schools which have come up after 1970. However, the guardians have no doubt on the capability of the teachers of the schools like Doon School, Sherwood College, St. Mary's School, Welham Girls' School, Welham Boys' School etc. Unlike the government schools, computer education is an important component in the learning process in these schools and all the children get access to it in theory as well as in practice from Class III onwards. After certain stage, access to Internet also becomes an integral part of the curriculum in these schools.

9. Recommendations

Both male and female literacy rate is higher in the state than in Uttar Pradesh as well as the all-India average. But still, it is 19 per cent points lower than in the leading state Kerala. Also the gender gap is quite high to the extent of 23.75 per cent points. The rural-urban gap is to the tune of 13 percentage points. Literacy rates of SC and ST population is lower by about 9 per cent.

There are enough programmes to enhance enrolment and retention but matching infrastructure, both physical

and human, is lacking. Over 4000 (15.92 per cent) villages have primary schools beyond one kilometre and around 3695 (14.66 per cent) villages have upper primary school beyond 3 kilometres. Still there are schools without *pucca* structures, at least two classrooms, blackboards and significant proportion of schools with SCR over 60. A very high proportion of schools is without any female teacher. Separate toilets for boys and girls and drinking water facility is lacking. Nearly one-fourth of the primary schools is single teacher schools. Uttarakhand is not in a sound position with regard to spread of higher education, especially in medical. Students are mostly concentrated in general courses and share of professional courses is just 5 per cent.

Gender and social gap in education persists. At the elementary level, gender gap is declining but in higher education gap is higher and does not show any declining trend. The proportion of SC/ST students lags much behind general students.

To increase enrolment and improve the quality of education, there is need to fill the major infrastructure gaps existing in the state. Also, it is required that distribution of existing resources to be rationalised, especially appointment of female teachers in all the schools—to counter the tendency towards lopsided distribution of teachers in rural and urban areas. Special emphasis should be put on rural areas and backward districts.

More para-teachers (teachers appointed on fixed or consolidated salary) may be appointed in remote/inaccessible areas from within the local population who will be less interested in getting transferred to urban or semi-urban areas. Given the increasing importance of Information Technology (IT) in every walk of life, there is a need to impart IT education in schools and provide the relevant materials and accessories including computers.

There are enough programmes that emphasise gender and social equality. These programmes need be strengthened and implemented sincerely. For improving the quality of education, objective criteria need to be developed and accountability be fixed.

Above all, an evaluation of different educational programmes accompanied by self assessment should be done by the government and review the following issues:

- Need special programme for SCs and STs: Special programmes need to be introduced in order to improve the literacy status of SC/STs.
- More schools need to be constructed: Number of schools (primary and upper primary) is not adequate especially in the districts like Champawat,

Haridwar, Dehradun and Uttarkashi. So, more schools should be opened in these districts.

- Minimum two teachers need to be appointed at all primary schools: In a number of primary schools there is only one teacher who runs the school. So, more teachers should be engaged in these schools. With the appointment of new teachers, the transfer and posting policy of the primary school teachers also need to be revisited.
- More female teachers to be appointed at primary schools: The number of primary schools without female teachers is too high in the hilly districts and less acute in case of the districts in the plains. So, measures like appointment of more female teachers and inclusion of clause like compulsory service of minimum five years at the remote hilly areas during the service period for government school teachers should be implemented.
- Clarity in policy issues are required in development projects: Clear-cut policies provide sustainable benefits whereas ambiguous policy does not yield desired results. Sarva Shiksha Abhiyan (SSA) envisages habitation as a unit of planning but it does not specify if the education officer should be there or not at the habitation level.
- Infrastructure development before introducing computer education to rural areas: Many state policy/project documents have talked about and incorporated computer education even at the remote areas, without taking into consideration the availability of electricity, computer literate teachers and instructors at the village level.
- BRCs & NPRCs need to be made operational: BRCs & NPRCs have opened but most of these are not operational. So, immediate steps should be taken to make these operational. The successful implementation of these could be a model and thereby a source of inspiration for quality education at the elementary level.
- Need to follow time management in project implementation: Ambitious projects are designed but due to lack of time management and pre-project activities like environment building, training of staff at the grassroot level etc., are not carried out properly in many programmes like District Primary Education Programme, Sarva Shiksha Abhiyan etc. So, immediate steps should be taken to implement the programmes in such time frame so that all the stages could be implemented in practice.
- Allocated funds need to be utilised fully: Availability of fund is not always the constraint but the implementing machinery should be competent enough to use it in a proper manner. It is found that in case of District Primary Education Programme and Technical Education Quality Improvement programme, a sizeable portion of the funds remained unutilised.
- Evaluation teams need to be formed as per the given guideline: On principle an evaluation team should not have any member from among those who participated in the implementation process. But the three-member evaluation team of District Primary Education team in Uttarakhand had a member who was one of the key decision-makers in the process of implementation. There is no doubt that it has obviously affected the findings on the impact of the project.
- Gender gap among the students above upper primary level need to be brought down: Gender gap among the students above upper primary level is too high. The gender gap in case of medical education is too wide. Special programmes need to be designed and implemented immediately for reducing this gap.
- Inbuilt mechanism: There should be an in-built mechanism in the system to evaluate the magnitude of improvement in achievements level in different subjects like mathematics, language etc.
- Development of block resource centres and cluster resource centres : There should be proper linkage between block resource centres and cluster resource centres through DIETs to discuss issues related teachers' training. Moreover, there should be frequent workshops or programmes where teachers and other staff could share their experiences with other DIETs members.
- Proper training of PRIs: The objective of such training schedules should aim at better understanding of their role(s)/responsibility(ies) in management of school education.
- Role of village education committees: The role of VECs in the structure needs to be strengthened and encouraged to take up educational activities more sincerely. The system that VECs undertake the following educational activities themselves, needs to be institutionalised:
 - Conducting annual field survey;
 - Conducting regular monthly meetings;

- Checking;
- 100 percent enrolment of children and no drop out in schools;
- Adequate teachers in schools;
- No absenteeism of teachers;
- All teachers are trained;
- Regular supply of educational material like books, uniform, mid day meals in schools;
- Proper buildings for schools including ancillary facilities;
- Taking actions on the shortcomings etc.

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APPENDIX A-6.1

Status of Programmes Implemented

To achieve the objective of 'education for all,' the programmes implemented in the state are:

1. Cooked Mid Day Meal Programme: The purpose is to provide nutritious food, in addition to education facility to children in primary schools. The cooked mid day meal programme was launched in one block in 2001 and covered all primary schools in 2004-05.
2. District Primary Education Project (DPEP): This is a World Bank funded programme being implemented in six districts of Uttarakhand (Haridwar, Bageshwar, Tehri, Uttarkashi, Pithoragarh, Champawat). The programme commenced in 2000 with the objective of ensuring primary education facilities at the primary level. The programme comes to an end in September 2005, after which support to primary education system will continue under Sarva Shiksha Abhiyan.
3. Sarva Shiksha Abhiyan (SSA): This is a centrally sponsored elementary education (class I-VIII) programme began in the year 2002 and was implemented statewide.

Within SSA and DPEP there are several sub-programmes like:

- (a) Education Guarantee Scheme (EGS): Under this scheme, new primary/upper primary schools are opened in habitations where there is demand for such schools but do not fulfill the desired norms.
- (b) Alternative and Innovative Education (AIE): It is

an intervention for organising schools in flexi-space concept.

Girls Education:

- National Programme of Education for Girls at Elementary Level (NPEGEL): It is a special focused programme formulated for education of under privileged/disadvantaged girls from class I to VIII.
- Kasturba Gandhi Balika Vidyalaya (KGBV): In order to provide elementary education facility to the school dropout girls of rural areas, especially from SC/ST girls in 6-14 years age group.
- Innovative Programme for Girls: Girls belonging to class VI to VIII are being provided vocational training or skill-based training in order to generate interest within the class and to retain it outside the class.
- Early Childhood Care Education (ECCE): To provide pre-school support to the children in 3-6 years age group, ECCE centres are running in the primary schools in convergence with Integrated Child Development Services (ICDS) programme. The programme targets, out-of-school girls in 6-14 years age group who look after their younger siblings and help them to attend school.

Innovative Programme for SC and ST Children:

The programme involves focused strategies and provision of additional support to out-of-school children, school dropouts, retention of enrolled children, improving the achievement levels, recognise outstanding children and so on.



Chapter 7

An Assessment of Growth Opportunities in Uttarakhand Agriculture

1. Background

The state has a geographical area of 53.5 thousand sq km, which is equivalent to 1.7 per cent of the country's geographical area. Most part of the state (88 per cent) lies in the hilly terrain. The state is endowed with rich natural resources that is, water and forests. Forests comprise about 63 per cent of the geographical area.

Agriculture is practiced only on 14 per cent of the area in the state. Agriculture and allied activities contribute 31 per cent to the gross domestic product and provide livelihood to more than 70 per cent of the total 8.5 million population. They are an important source of employment, engaging over 65 per cent of the workforce. Nearly three-fourths of the population lives in rural areas. Evidence show that growth in agriculture reduces more poverty than growth in other economic sectors (Ravallion and Datt, 1996), and thus rapid growth in agriculture and allied activities is thus a major policy concern of the state.

In order to foster rapid growth in agriculture, the state needs to develop its own strategies to benefit the rural poor and effectively conserve and harvest natural resources. This calls for characterising the production and socioeconomic environment, which will provide foundation for identifying growth opportunities. This chapter is an attempt in this direction. The specific objectives of the study are to: (i) characterise the agricultural production environment; (ii) identify opportunities for higher and accelerated growth in Uttarakhand; and (iii) propose strategies for harnessing future growth opportunities in the state.

Uttarakhand has 13 districts. Based on topography, these can be grouped into two distinct regions that is, hills and plains. Except Haridwar and Udham Singh Nagar

other districts fall in the hill region. Some areas of Nainital and Dehradun also fall in the plain region. In this paper we have classified Haridwar and Udham Singh Nagar (US Nagar) as plain districts and others as hill districts.

The study uses data from published and unpublished sources. Time-series data on area, production and yield of major crops at the state level was compiled from CMIE (2006). This was supplemented with district level information compiled from the Directorate of Agriculture (area, production and yield of cereals, pulses and oilseeds) and the Directorate of Horticulture and Food Processing (fruits, vegetables, spices and floriculture).¹

2. Characterisation of the Production Environment

To diagnose strengths and weaknesses of the agricultural sector, it is necessary to characterise the production and socio-economic environment. Such an analysis will provide basis for devising appropriate prescriptions to accelerate agricultural growth. This section briefly documents special features of the state to glean and craft opportunities for higher agricultural growth.

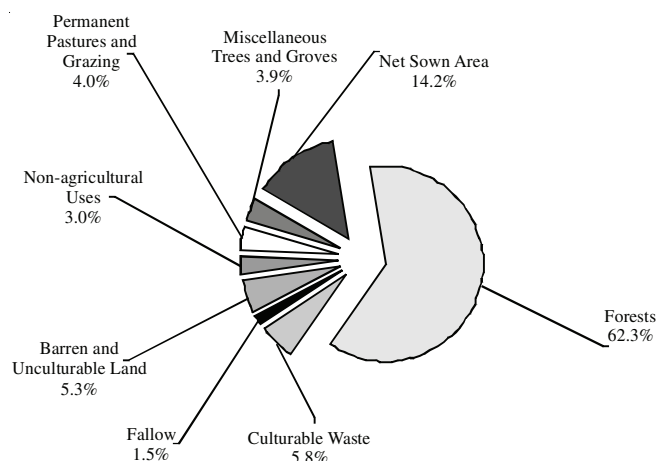
2.1 Land Use Pattern

A large part of the reported area of the state is covered with forests (Figure 7.1). Forests however, are confined to hills occupying 69 per cent of the geographical area, compared to 2.6 per cent in the plains. Forests contain a large wealth of diverse medicinal and aromatic plants. Permanent pastures and grazing lands occupy about 4 per cent of the geographical area. But almost entire land under pastures is in hills.

1. There is discrepancy in data on potato and onion from the Directorate of Agriculture and the Directorate of Horticulture. In this chapter we have used data of these commodities from the Directorate of Horticulture.

FIGURE 7.1

Land Use Pattern in Uttarakhand, 2001-02



Source: <http://www.ua.nic.in>

Agriculture is practised only on 14 per cent of the area (Figure 7.1). Approximately 34 per cent of the net sown area is concentrated in plain districts of Haridwar and Udham Singh Nagar while their share in geographical area is only 10 per cent. Here about 52 per cent of the area is used for cultivation. The climate in the plains is hot and humid (tropical) and supports cultivation of crops like wheat, paddy, sugarcane and vegetables. In hills, cultivation is confined to only 11 per cent of the area with wheat, finger millet (*ragi*) and small millets as major cereals. The cool climate of the hills also supports cultivation of a variety of fruits like apple, citrus, peach, pears, plum and vegetables like peas, potato, French bean and capsicum. Though area under agriculture in hills is meagre, agriculture is the main source of livelihood for majority population in the hills. The hill agriculture however is confined in a subsistence syndrome but ensures household food security to the farming community.

2.2 Cropping Pattern

Agriculture in the state is food-based. A large chunk of the cropland is allocated to food grain crops. In TE 2003/2004 food grain crops occupied as high as 69 per cent of the gross cropped area (Table 7.1). Their share however declined marginally during the last decade. Cereals dominate food grain crops. But their share in gross cropped area has come down from 72 per cent in TE 1991/92 to 67 per cent in TE 2003/04. Wheat and rice are the most important crops in the state sharing 28 and 20 per cent in the gross cropped area respectively. Their share in gross cropped area however has increased over the last two

decades. Other cereals occupy about 19 per cent of the area. Finger millet and maize are important coarse cereals being cultivated on 10 and 2.7 per cent of the gross cropped area respectively. Amongst non-food grain crops fruits occupy nearly 14 per cent of the gross cropped area, followed by sugarcane (9 per cent), vegetables (5.5 per cent) and oilseeds (2.4 per cent). Share of non-food grain crops except oilseeds has been rising gradually. Between TE 1991/92 and TE 2003/04 share of fruits and vegetables increased from 16 to 19 per cent.

TABLE 7.1
Area ('000 ha) under Different Commodity Groups in Uttarakhand

| | TE 1982/83 | TE 1991/1992 | TE 2003/04 |
|--------------------|----------------|----------------|---------------|
| Cereals | 1139 (71.0) | 1128 (71.5) | 967 (66.8) |
| Rice | 267 (16.6) | 288 (18.3) | 292 (20.2) |
| Wheat | 374 (23.3) | 415 (26.3) | 396 (27.5) |
| Others | 498 (31.0) | 425 (27.0) | 279 (19.2) |
| Pulses | 38 (2.4) | 39 (2.4) | 34 (2.4) |
| Oilseeds | 97 (6.1) | 35 (2.2) | 34 (2.4) |
| Vegetable | 76 (4.7) | 89 (5.6) | 80 (5.5) |
| Fruits | 143 (8.9) | 158 (10.0) | 201 (13.9) |
| Sugarcane | 108 (6.7) | 117 (7.4) | 129 (9.0) |
| Gross cropped area | 1604 | 1577 | 1445 |

Note: Figures in parentheses are the per cent of gross cropped area.
Source: CMIE (2006); Area under fruits and vegetables from GoI (various years).

Food grain crops are more pronounced in the hills than in the plains (Table 7.2). These occupy 72 per cent of the gross cropped area of the hill districts compared to 64 per cent of the plain districts. Most of the hill districts allocate relatively a higher proportion of the area to food grain crops (Appendix Table A-7.2.). Wheat, rice and finger millet are important staples there. Horticultural crops are also widely cultivated in the hills, occupying 23 per cent of the area compared to 6.5 per cent in the plains. Sugarcane is an important crop in the plains being cultivated on over one-fourth of the area. This clearly shows that in the hill region although household food security is the main concern, farmers also undertake cultivation of cash crops like fruits and vegetables.

TABLE 7.2
Cropping Pattern in Hill and Plain Regions, 2003/04
(Per cent of Gross Cropped Area)

| Crop | Hills | Plains |
|---------------|-------|--------|
| Rice | 15.8 | 29.1 |
| Wheat | 24.5 | 33.4 |
| Maize | 4.6 | 0.2 |
| Finger millet | 12.8 | 0.0 |
| Cereals | 68.9 | 62.7 |
| Pulses | 3.3 | 1.7 |
| Oilseeds | 2.4 | 2.8 |
| Sugarcane | 1.8 | 26.1 |
| Fruits | 17.0 | 2.4 |
| Vegetables | 6.0 | 4.1 |
| Spices | 0.56 | 0.04 |
| Floriculture | 0.02 | 0.02 |

Source: CMIE (2004). Information on fruits and vegetables pertain to 2001/02 and are from Directorate of Horticulture and Food Processing, Govt. of Uttarakhand.

2.3 Production Performance

2.3.1 Food Grains and Oilseeds

Food grain production in the state increased from 1.21 million tonnes in TE 1982-83 to 1.57 million tonnes in TE 1991/92 and further to 1.59 million tonnes in TE 2003/2004 (Table 7.3). During 1980s food grain production grew at an annual rate of 2.6 per cent (Table

7.4). The performance of food grain production however remained sluggish. Annual growth in production fell to 0.1 per cent since 1991/92. The poor performance is due to both decline in their area and slow growth in yield. During 1980s, food grain yield grew at 3.1 per cent a year, compared to 1.3 per cent in the subsequent years.

Rice and wheat are the principal crops in the state. These cover about 69 per cent of the area under food grains and contribute 81 per cent to total food grain production. Their share in food grain area was 54 per cent in TE 1981-82. Over the last two decades, while their area share increased, their contribution to food grain production remained almost unchanged. It was mainly due to stagnation or slow growth in their yield. Wheat yield showed some marginal improvements during 1990s, while rice yield remained almost stagnant. Rice and wheat in fact were the major drivers of growth in food grain production during 1980s contributing more than 92 per cent to the incremental production. Wheat contributed 57 per cent to the increased food grain production and rice 35 per cent. During 1980s most of the growth in rice and wheat production came from yield improvements (Table 7.4). In the subsequent years, both area as well as yield started showing signs of fatigue.

Production of rice and wheat is concentrated more in the plains than in the hills (Table 7.5, Appendix Table A-7.3). The plain districts share 42 per cent of the total rice area and 35 per cent of total wheat area in the state and

TABLE 7.3
Area (A), Production (P) and Yield (Y) of Important Crops in Uttarakhand

| | TE 1981/82 | | | TE 1991/92 | | | TE 2003/04 | | |
|------------------------|---------------------------------|-----------------------------|--------------|---------------------------------|-----------------------------|--------------|---------------------------------|-----------------------------|--------------|
| | P (^{'000 tonnes}) | A (^{'000 ha}) | Y (kg/ha) | P (^{'000 tonnes}) | A (^{'000 ha}) | Y (kg/ha) | P (^{'000 tonnes}) | A (^{'000 ha}) | Y (kg/ha) |
| Food Grains | | | | | | | | | |
| Rice | 426 | 266 | 1597 | 549 | 288 | 1903 | 556 | 292 | 1905 |
| Wheat | 522 | 374 | 1393 | 727 | 415 | 1751 | 727 | 396 | 1887 |
| Maize | 51 | 40 | 1282 | 50 | 39 | 1289 | 52 | 39 | 1358 |
| Ragi | 151 | 160 | 948 | 179 | 146 | 1227 | 168 | 145 | 1161 |
| Pulses | 21 | 38 | 562 | 25 | 39 | 644 | 34 | 34 | 998 |
| Food grains | 1214 | 1177 | 1032 | 1570 | 1167 | 1346 | 1589 | 1001 | 1590 |
| Non-food Grains | | | | | | | | | |
| Oilseeds | 97 | 97 | 999 | 37 | 35 | 1050 | 31 | 34 | 918 |
| Onion | 11 | 0.8 | 13902 | 17 | 1.2 | 14603 | 25 | 1.8 | 13706 |
| Potato | 109 | 7 | 15396 | 251 | 14 | 18388 | 223 | 17 | 12850 |
| Vegetables | | 76 | | 445 | 89 | 5016 | 588 | 80 | 7365 |
| Fruits | | 143 | | 334 | 158 | 2121 | 430 | 201 | 2145 |
| Sugarcane | 5315 | 108 | 49234 | 6927 | 117 | 59142 | 7513 | 129 | 58043 |

Source: As for Table 7.1.

contribute 56 and 57 per cent to their respective production.

There is a wide difference in yield of rice and wheat between plain and hill regions (Table 7.5, Appendix Table A-7.4). Yield of rice in the hill region is 43 per cent and of wheat 59 per cent less than that in plains. Finger millet cultivation is confined to hills. So is in cultivation of maize. Maize yield in the hills is about 20 per cent less than that in the plains.

Production of pulses increased by 1.5 times over the last two decades from 21 thousand tonnes in TE 1981/82 to 34 thousand tonnes in TE 2003/04 (Table 7.3). During 1980s pulses production increased at an annual rate of 2.9 per cent which accelerated to 4.5 per cent during 1992/93 to 2003/04 (Table 7.4). Most of the growth during later period came from yield improvements. Hill region accounts for 83 per cent of pulses area and contributes 81 per cent to total production (Table 7.5). Average yield of pulses in the hills is about 15 per cent less than in plains. *Gahat*, lentil, *urad*, *rajma* and peas are important pulses in the hills (Appendix Tables A-7.2 and A-7.3).

TABLE 7.4

Annual Compound Growth Rates in Area, Production and Yield of Important Crops in Uttarakhand

| | (Per cent) | | | | | |
|------------------------|--------------------|-------|-------|--------------------|------|-------|
| | 1980/81 to 1991/92 | | | 1992/93 to 2003-04 | | |
| | Production | Area | Yield | Production | Area | Yield |
| Food Grains | | | | | | |
| Rice | 2.8 | 0.6 | 2.1 | 0.3 | 0.6 | -0.4 |
| Wheat | 3.6 | 0.8 | 2.8 | -0.05 | -0.5 | 0.5 |
| Maize | -2.2 | -1.3 | -0.9 | 1.4 | 0.3 | 1.2 |
| Ragi | 0.6 | -1.8 | 2.5 | -0.03 | 0.3 | -0.4 |
| Pulses | 2.9 | 1.1 | 1.8 | 4.5 | 0.9 | 3.6 |
| Food grain | 2.6 | -0.5 | 3.1 | 0.1 | -1.1 | 1.3 |
| Non-food Grains | | | | | | |
| Oilseeds | -12.9 | -14.5 | 1.9 | -5.7 | -3.0 | -2.8 |
| Onion | 4.4 | 4.2 | 0.2 | 4.9 | 5.1 | -0.2 |
| Potato | 10.0 | 7.8 | 2.2 | 1.1 | 2.0 | -0.9 |
| Vegetables | NA | 2.9 | NA | 0.3 | 1.2 | -0.9 |
| Fruits | NA | 1.5 | NA | -0.8 | 1.5 | -2.3 |
| Sugarcane | 3.7 | 1.3 | 2.4 | 0.3 | 1.0 | -0.7 |

Source: As for Table 7.1.

Soybean and rapeseed-mustard are important oilseed crops in Uttarakhand. Soybean production is concentrated in the hills and rapeseed-mustard is prominently cultivated in the plains. Production of oilseeds has fallen steeply during the last two decades; from 97 thousand tonnes in TE 1981/82 to 31 thousand tonnes in TE 2003/

2004 (Table 7.3). Except rapeseed and mustard, area and production of all oilseed crops declined in the state. Soybean, which used to be an important crop in the state during 1980s, showed a steep decline in area and production.

During 1980s decline in oilseeds production was due to fall in area, which declined at annual rate of over 14 per cent (Table 7.4). Subsequently, it was a steep decline in yield as well as area that led to fall in oilseeds production. The oilseed sector is under serious threat in the state in the era of globalisation. The threat may further aggravate with increasing cultivation of transgenic varieties by the exporting countries. The state needs to be ready to provide alternative crops and cropping systems, particularly in the hill district of Nainital and plain district of Udham Singh Nagar that contribute 33 and 25 per cent, respectively, of total oilseed production in the state (Appendix Table A-7.3). Average yield of soybean is higher in the hills, and that of rapeseed-mustard in the plains (Table 7.5, Appendix Table A-7.4).

TABLE 7.5

Share of Hill and Plain Regions in Area and Production of Major Crops, 2003/04

| | Per cent Share in Area | | Per cent Share in Production | | Average Yield (kg/ha) | |
|--------------------|------------------------|--------|------------------------------|--------|-----------------------|--------|
| | Hills | Plains | Hills | Plains | Hills | Plains |
| Rice | 58.1 | 41.9 | 44.0 | 56.0 | 1443 | 2543 |
| Wheat | 65.2 | 34.8 | 43.2 | 56.8 | 1245 | 3057 |
| Maize | 98.0 | 2.0 | 97.5 | 2.5 | 1447 | 1803 |
| Pulses | 82.7 | 17.3 | 80.5 | 19.5 | 644 | 748 |
| Oilseeds | 68.3 | 31.7 | 69.5 | 30.5 | 951 | 899 |
| Sugarcane | 15.0 | 85.0 | 14.9 | 85.1 | 59900 | 59994 |
| Fruits | 94.8 | 5.2 | 85.0 | 15.0 | 1628 | 5199 |
| Vegetables | 78.7 | 21.3 | 59.3 | 40.7 | 4620 | 11747 |
| Spices | 97.0 | 3.0 | 96.8 | 3.2 | 5526 | 6008 |
| Floriculture | 68.0 | 32.0 | 69.6 | 30.4 | 1192 | 1107 |
| Gross cropped area | 71.8 | 28.2 | | | | |

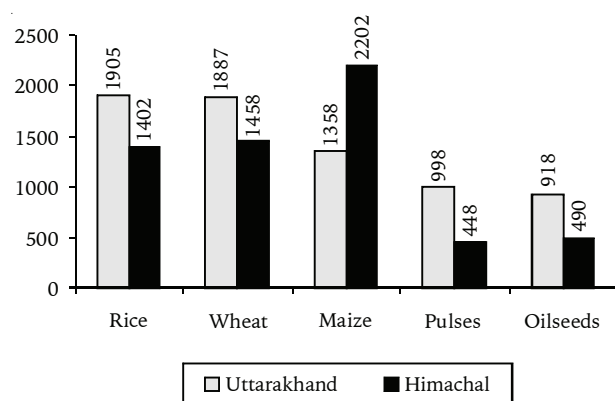
Source: As for Table 7.2.

Sugarcane is an important cash crop occupying about 9 per cent of gross cropped area in TE 2003/04, up from 6.7 per cent in TE 1982/83 (Table 7.3). Its cultivation however is confined to the plain regions in the state (Table 7.5). Sugarcane production increased from 5.3 million tonnes in TE 1981/82 to 7.5 million tonnes in TE 2003/04. The growth in production was due to yield improvement during 1980s and area expansion during 1990s (Table 7.4).

It is however of interest to compare how agriculture in the state compares with the neighbouring state of Himachal Pradesh, which has almost similar agro-climatic conditions. A comparison of the yield of some important crops indicates that food grain production is more efficient in Uttarakhand than in Himachal Pradesh (Figure 7.2). Rice and wheat yield is higher by 30-36 per cent, pulses by 180 per cent and oilseeds by 81 per cent. Maize yield in Uttarakhand is nearly two-third of that in Himachal Pradesh. Potato yield is similar in both the states.

FIGURE 7.2

Yield of Some Important Crops in Uttarakhand and Himachal Pradesh, 2003/04



2.3.2 Horticulture

Horticultural sector expanded considerably in the state. Share of fruits and vegetables together in gross cropped area increased from 14 per cent in TE 1982/83 to 19.4 per cent in TE 2003/04 (Table 7.1). As such, share of fruits in gross cropped increased from 9.7 per cent in TE 1991/92 to 13.7 per cent in TE 2003/04, while the share of vegetables remained almost stagnant around 5.5 per cent. Fruits occupy about 60 per cent of total area under horticultural crops their production increased from 334 thousand tonnes in TE 1991/92 to 430 thousand tonnes in TE 2003/04 (Table 7.3). Production of vegetables increased from 445 thousand tonnes to 588 thousand tonnes during this period. Growth in fruits as well as vegetable production came from area expansion. Yield of fruits and vegetables also improved but with gyrations. Diverse climatic conditions in the state favour cultivation of a large number of temperate and tropical fruits and vegetables. Apple, citrus mango, chestnut, peach, pear, plum, litchi and apricot are important fruits (Table 7.6). Apple occupies over 27 per cent of the total fruit area, followed by citrus (13 per cent), mango (13 per cent),

chestnut (10 per cent), peach (7 per cent) and pear (6 per cent).

Fruit production is largely concentrated in the hill districts. These share 95 per cent of fruit area and contribute over 85 per cent to total fruit output in the state (Table 7.6). Except mango and litchi almost entire fruit output comes from hills. Plains contribute about half of the mango output and one-third of the litchi output. Yield of fruits, except citrus, is much lower in the hills as compared to plains.

TABLE 7.6

Area, Production and Yield of Important Fruits in Uttarakhand, 2001/02

| (kg/ha) | Uttarakhand | | | Share of Hills | | Yield (per cent) | |
|--------------|----------------|--------------------|---------------|----------------|------------|------------------|--------|
| | Area ('000 ha) | Production ('000t) | Yield (kg/ha) | Area | Production | Hills | Plains |
| Apple | 51.8 | 59.3 | 1145 | 100.0 | 100.0 | 1,145 | |
| Citrus | 24.5 | 81.1 | 3314 | 99.4 | 99.4 | 3,314 | 3246 |
| Mango | 24.4 | 66.1 | 2709 | 68.5 | 49.3 | 1,948 | 4367 |
| Chestnut | 19.3 | 5.3 | 272 | 100.0 | 100.0 | 272 | |
| Peach | 13.4 | 17.7 | 1327 | 99.8 | 98.6 | 1,312 | 7485 |
| Pears | 12.2 | 36.7 | 3003 | 99.5 | 98.9 | 2,985 | 6369 |
| Plum | 8.8 | 12.7 | 1442 | 99.9 | 99.3 | 1,433 | 7500 |
| Litchi | 7.8 | 7.5 | 965 | 94.8 | 68.4 | 696 | 5855 |
| Apricot | 7.1 | 8.4 | 1121 | 100.0 | 100.0 | 1,121 | |
| Others | 20.7 | 50.5 | 2437 | 92.1 | 70.8 | 1,874 | 8983 |
| Total | 190.1 | 345.3 | 1818 | 94.8 | 85.0 | 1,628 | 5199 |
| Flowers (ha) | 278.3 | 324.2 | 1165 | 68.0 | 70.0 | 1,192 | 1107 |

Source: Directorate of Horticulture and Food Processing, Govt. of Uttarakhand.

Uttarakhand has a unique advantage in production of many seasonal and off-season vegetables. Potato, peas, French beans, radish and tomato are important vegetables in the state (Table 7.7). Potato occupies 21 per cent of the vegetable area, followed by peas (11 per cent), French beans (7 per cent) and radish (6 per cent).

Like fruits, vegetables are also concentrated in the hill districts. These account for 80 per cent of the vegetable area in the state and contribute 72 per cent to vegetable output. By crop, hill districts contribute 96 per cent capsicum, 89 per cent French bean, 86 per cent potato and 84 per cent onion. About 70 per cent of tomato and radish and half of the peas and cabbage output also come from hills. Production of cauliflower, brinjal and lady finger is concentrated in the plains.

Though hill region has sizeable area under vegetables, yield of most vegetables except potato is much low as compared to in plains. Yield of peas, French bean, capsicum, ladyfinger and brinjal is between 43 to 57 per cent of the yield in plains. For other vegetables it is less than 30 per cent.

TABLE 7.7

Area, Production and Yield of Important Vegetables in Uttarakhand, 2001/02

| | Uttarakhand | | | Share of Hills (per cent) | | Yield (kg/ha) | |
|-------------|---------------|-------------------|---------------|---------------------------|------------|---------------|--------|
| | Area (000 ha) | Production (000t) | Yield (kg/ha) | Area | Production | Hills | Plains |
| Potato | 22.0 | 482.0 | 21909 | 85.8 | 85.5 | 21812 | 22355 |
| Pea | 11.5 | 55.8 | 4875 | 66.9 | 52.3 | 3813 | 7021 |
| French bean | 7.2 | 28.3 | 3918 | 93.8 | 89.0 | 3714 | 7002 |
| Radish | 6.1 | 55.7 | 9106 | 88.6 | 68.9 | 7075 | 24970 |
| Ladyfinger | 5.5 | 25.2 | 4557 | 62.9 | 44.9 | 3249 | 6776 |
| Tomato | 5 | 61.4 | 12297 | 93.5 | 70.0 | 9199 | 57090 |
| Cabbage | 3.8 | 33.5 | 8767 | 90.2 | 54.6 | 5308 | 40563 |
| Onion | 3.7 | 23.1 | 6244 | 95.5 | 84.2 | 5503 | 21946 |
| Cauliflower | 2.9 | 33.5 | 11705 | 67.1 | 31.6 | 5516 | 24354 |
| Capsicum | 2.8 | 7.9 | 2883 | 97.4 | 95.5 | 2827 | 5000 |
| Brinjal | 1.6 | 14.7 | 9409 | 63.8 | 42.9 | 6331 | 14833 |
| Others | 30.4 | 153.5 | 5057 | 74.5 | 47.0 | 2800 | 9231 |
| Total | 102.5 | 974.6 | 9508 | 80.2 | 71.7 | 8357 | 13392 |

Source: As for Table 7.6.

A number of spices such as chillies, ginger, garlic, coriander, turmeric and fenugreek (*methi*) are cultivated in the state in over 6 thousand ha of area (Table 7.8). Chillies occupy 40 per cent of total spices area, followed

TABLE 7.8

Area, Production and Yield of Important Spices in Uttarakhand, 2001/02

| | Uttarakhand | | | Share of Hills (per cent) | | Yield (kg/ha) | |
|--------------|---------------|-------------------|---------------|---------------------------|------------|---------------|--------|
| | Area (000 ha) | Production (000t) | Yield (kg/ha) | Area | Production | Hills | Plains |
| Chillies | 2405 | 4062 | 1689 | 97.8 | 96.5 | 1666 | 2684 |
| Ginger | 1271 | 15815 | 12446 | 96.1 | 97.2 | 12583 | 9045 |
| Garlic | 949 | 7468 | 7871 | 96.8 | 96.9 | 7880 | 7607 |
| Coriander | 533 | 2007 | 3766 | 98.7 | 98.2 | 3746 | 5300 |
| Turmeric | 467 | 3469 | 7436 | 96.8 | 95.6 | 7350 | 10007 |
| <i>Methi</i> | 261 | 396 | 1517 | 94.2 | 88.0 | 1416 | 3167 |
| Cardamom | 55 | 39 | 712 | 100.0 | 100.0 | 712 | 0 |
| Others | 126 | 358 | 2841 | 96.4 | 91.9 | 2822 | 7250 |
| Total | 6067 | 33614 | 5541 | 97.03 | 96.8 | 5526 | 6007 |

Source: As for Table 7.7

by ginger (21 per cent), garlic (16 per cent) and turmeric (9 per cent). As in the case of fruits and vegetables, most of the spices area and production is concentrated in hills. Plains share about 3 per cent of the area and production each. Except for ginger and garlic, yield of most spices is lower in hills. Ginger and garlic yield is about 40 and 4 per cent, respectively, higher in hills, as compared to that in plains.

Floriculture is also emerging as an important agricultural activity in the state, although currently it is practiced on a limited area of less than 300ha (Table 7.9). Marigold, gladiolus and rose are important flowers being cultivated in the state. Their share in total floriculture area is estimated 38, 34 and 11 per cent respectively.

TABLE 7.9

Area, Production and Yield of Important Spices in Uttarakhand, 2001/02

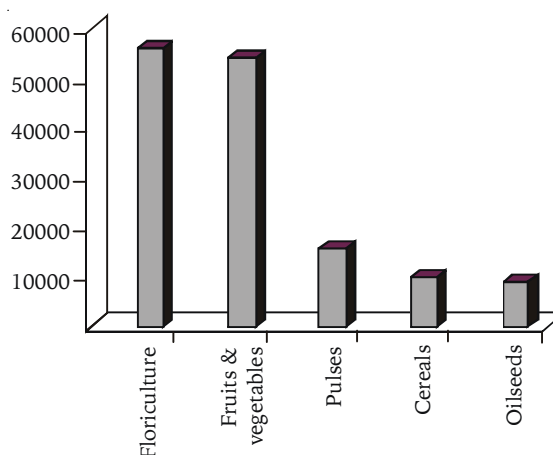
| | Area (ha) | Production (t) | Yield (kg/ha) |
|--------------------|-----------|----------------|---------------|
| Rose | 32.8 | 35.6 | 1085 |
| Gladiolus | 94.1 | 127.7 | 1357 |
| Marigold | 105.7 | 113.1 | 1070 |
| Carnation | 2.4 | 3.4 | 1458 |
| Dahlia | 7.7 | 9.9 | 1279 |
| <i>Rajnigandha</i> | 3.6 | 3.0 | 813 |
| Others | 31.9 | 31.5 | 985 |
| Total | 278.3 | 324.2 | 1165 |

Source: As for Table 7.8.

Horticultural crops are more remunerative and labour intensive than food grains and oilseeds. Figure 7.3

FIGURE 7.3

Per ha Value of Output of Different Crops in Uttarakhand, 2002/03 (Rs)



Source: Based on value of output data from Central Statistical Organisation, GoI.

compares gross value of output per ha for some important crops in Uttarakhand clearly shows this. Compared to cereals, horticultural crops yield as much as over five times gross returns.

The field evidence also indicates substantially higher returns from horticultural crops. Sharma (2005) estimated very high profit from cultivation of different vegetables compared to cereals in Himachal Pradesh (Table 7.10). The unit cost of production was also lower for vegetables. While net returns per unit of output were negative for wheat and maize, vegetables yielded very high net profit to producers.

Besides being more remunerative, horticultural crops are labour-intensive and therefore fit well in the cropping schemes of smallholders. Sharma (2005) observed higher labour intensity in vegetables as compared to cereals (Table 7.10). Labour use in vegetables varied between 126 to 400 man days/ha compared to 78 to 153 in cereals.

TABLE 7.10

Labour Use, Cost of Production and Returns from Vegetables and Cereals in Himachal Pradesh

| Crop | Labour Use (Man days/ha) | Unit Cost of Production (Rs/qtt) | Net Returns (Rs/qtt) |
|-------------|-----------------------------|-------------------------------------|-------------------------|
| Potato | 179-213 | 257-264 | 202-350 |
| Peas | 126-204 | 321-439 | 559-604 |
| Cabbage | 264-272 | 148-217 | 450-505 |
| Cauliflower | 274-306 | 219-466 | 464-478 |
| Tomato | 129-400 | 115-264 | 385-429 |
| Capsicum | 339 | 749 | 544 |
| Beans | 225 | 534 | 355 |
| Wheat | 78-121 | 702-732 | -102 to -132 |
| Maize | 125-153 | 472-608 | -22 to -158 |

Source: Sharma (2005).

2.3.3 Medicinal Plants

Domestic and international market for medicinal plants has been growing rapidly. The domestic market for traditional (*ayurvedic*) medicines is estimated to be over Rs. 4000 crores and has been expanding at 20 per cent annually (CUTS, 2004). Similar expansion is witnessed in the international market. India is one of the leading exporters of medicinal plants. Uttarakhand has a unique opportunity to encash the emerging market for medicinal plants because hills in the state are a rich reservoir of a number of medicinal and aromatic plants. Nearly 1000 species of plants with medicinal values have been documented and about half of these are used as commercial formulations of traditional medicines (NRIF, 2004).

At present, a large proportion of medicinal plants are collected from the wild, but these provide an important source of livelihood for rural people in the hills especially the landless and marginal farmers. About 50 million people in India depend on non-timber forest products for their livelihood and the most important of these being medicinal plants (CUTS, 2004). According to an estimate, sale of medicinal herbs fetched about Rs.10,000 per family living around the Great Himalayan National Park in Kullu valley (CUTS, 2004).

Though wild collection of medicinal plants is an important source of livelihood for many poor families in the hills, they are ignorant about the market and are vulnerable to exploitation. The collectors or even producers rely on contractors and local traders for marketing of the produce. Often the contractors and local traders advance credit to collectors which is repaid through sale of medicinal plants (Van de Kop *et al.*, 2006). Because of credit-linked transaction and lack of alternative market channels the price paid by the contractors to collectors is just a fraction (13-25 per cent) of the market price (NRIF, 2004).

Another related problem is overexploitation of this wild wealth. Since the primary interest of contractors is to increase volume and of collectors to increase income in a short period they are little concerned with the sustainability of medicinal plants in the forests. For example, Van de Kop *et al.* (2006) report considerable decline in per person per day collection of *Atish (Aconitum heterophyllum)* those in the Johar valley in the Pithoragarh district.

In other words, this implies a need: (i) to regulate indiscriminate and illegal collection of medicinal plants from the forests, (ii) to promote cultivation of important species of these. Though, the state government has taken some initiatives such as establishment of cooperatives (Bhaishaj Sangh) to regulate excessive and illegal collection, but most of these cooperatives are controlled by contractors and are misused for excessive and illegal collection. The State Forest Department however has now been entrusted to oversee collection and undertake marketing of medicinal plants.

Promoting cultivation and marketing of medicinal plants however is a sound proposition from the point of view of the producers as well as the state exchequer. The net income from cultivation of medicinal plants is reported to be much higher than cultivation of traditional cash crops like potato and *rajma* (Table 7.11).

TABLE 7.11
Comparative Economics of Production of Traditional
Cash Crops Versus Medicinal Crops after
Three Years of Production

| Crop | Production Cost (Rs/acre) | Yield (qt/acre) | Gross Returns (Rs/acre) | Net Returns (Rs/acre) |
|----------------------------|---------------------------|-----------------|-------------------------|-----------------------|
| Potato | 32400 | 90 | 45000 | 12600 |
| Rajma | 9675 | 6 | 15000 | 5325 |
| Kutki (Picrorhiza Kurrooa) | 22216 | 4.4 | 110500 | 88284 |

Source: Nautiyal and Nautiyal (2003).

Lack of availability of planting material, technology and package of practices and marketing are major problems in expanding cultivation of medicinal plants. The state however has established a medicinal plant board to promote cultivation of medicinal plants and strengthen marketing and value addition. The government is providing 50 per cent subsidy for cultivation and value addition. This offers a unique opportunity for participation of private sector and research institutions for harnessing the untapped potential of medicinal plants in the state.

In a nutshell, though food grains dominate agriculture production in the state, the sector is gradually diversifying towards high-value crops like fruits, vegetables and floriculture. In TE 2003/04 these shared about 18 per cent of the gross cropped area and contributed 35 per cent to crop sector output. Among vegetables, pea cultivation is becoming popular in the hills and the region has a comparative advantage in growing off-season peas and other vegetables like capsicum, cauliflower, ginger, etc., because of favourable climatic conditions. Future policies and investment strategies must favour these crops. A step towards provision of appropriate transport and market facilities and development of institutions like cooperatives, contract framing and producers' associations that strengthen backward and forward linkages would induce farmers to further expand vegetable production in the region.

The state should draw lessons from the neighbouring state of Himachal Pradesh, where fruits and vegetables contribute 68 per cent to the crop sector output. Compared to cereals gross returns/ha from fruits and vegetables are 1.5 times more in Himachal Pradesh than in Uttarakhand. This is largely due to better quality of production, especially of fruits like apple.

2.4 Agricultural Intensification

Intensification of agriculture, input management and marketing are the key processes for accelerating

agricultural growth and bring prosperity to rural areas. Land is becoming scarcer and inputs are costing dearer. The future sources of growth will rely how judiciously land and other inputs are managed. The following paragraphs provide an overview of the past patterns and current status of agricultural intensification in the state.

2.4.1 Cropping Intensity

Cropping intensity represents intensification of land. In the state, about 4.6m ha of the net cropped area is cultivated more than once, yielding a cropping intensity of 156 per cent which is higher than the national average of 135 per cent. The state however lags behind the neighbouring state of Himachal Pradesh (171 per cent). Unfortunately, cropping intensity has not changed much over the past two decades in the state. It was 162 per cent in early 1990s. The cropping intensity is 160 per cent in hills as compared to 149 per cent in plains (Appendix Table A-7.1). Haridwar has the lowest cropping intensity (135 per cent). Other districts having cropping intensity less than the state average are Dehradun, Pauri Garhwal and Rudraprayag. Bageshwar and Pithoragarh have the highest cropping intensity (172 per cent). There are two reasons for higher cropping intensity in hills: (i) average size of land holdings in hills is 0.8 ha as compared to 1.4 ha in plains, and farmers cultivate land intensively to earn their livelihood, and (ii) rainfall pattern and temperature is relatively more favourable for cultivating a variety of crops throughout the year.

2.4.2 Fertiliser Use

Fertilisers together with modern seeds have made substantial contribution to improving agricultural productivity in the country. The Central government extends subsidy to promote fertiliser use. The farmers in the state, especially in the hills however were unable to take advantage of the subsidy. Although the average fertiliser consumption in the state is 103kg/ha and higher than that in Himachal Pradesh (49.4kg/ha), it is heavily concentrated in irrigated plains, where it is about 270kg/ha (Appendix Table A-7.1). Fertiliser consumption in the hill region is about 21 kg/ha, and partly on account of higher fertiliser use in plains of Nainital district. In most other hill districts it is less than 10 kg/ha. In other words, 54 per cent of the gross cropped area receives less than 10kg/ha of fertilisers. On the other hand, remaining 46 per cent of the net sown area receives fertilisers in the vicinity of about 220 kg/ha, much higher than the recommended level.

Fertiliser use is also unbalanced in terms of nutrients. Nitrogen accounts for over 71 per cent of the total

nutrients applied through fertilisers (Appendix Table A-7.1). The imbalance prevails both in plains as well as hills. Rice, wheat and sugarcane consume bulk of the fertilisers in the plains. Historically, fertilisers have played a key role in raising agricultural productivity and hence contributed in augmenting farm income in the plain regions. The plain region of the state has largely rice-wheat based system. Plain (bhabar and terai) region uses excessive fertilisers. It may be mentioned that the bhabar and terai zones are the most progressive regions in the state, with productivity levels comparable to that in Punjab, Haryana and Western Uttar Pradesh.

The pace of fertiliser consumption in the state has been too sluggish. The policy decision in 1991/92 to withdraw partial subsidy from fertiliser had serious implications for fertiliser use. During 1980s, the consumption of fertiliser in hill and plain regions was growing but the rise in prices of fertilisers after 1991/92 has adversely affected their consumption in the hill regions. While the low use of chemical fertilisers in the hills is a clear indication of nutrient mining there excessive and injudicious use in plain regions is an indication of deterioration in soil health. Such a regional and nutritional imbalance in fertiliser consumption needs to be corrected for improving the overall fertiliser use efficiency.

2.4.3 Irrigation

The state is endowed with rich water resources but poor irrigation network. It is bestowed with a number of perennial and seasonal rivers. The state also receives plenty of rainfall. On an average, about 44 per cent of the sown area in the state is irrigated. This is much higher than in the neighbouring state of Himachal Pradesh, where irrigated area is only 20 per cent. However, the average has no rationale, as the irrigated area has high uneven spread across the districts (Appendix Table A-7.1). Plain districts have excellent irrigation network, where nearly 90 per cent of the net cropped area is irrigated. In hill region, on average 19 per cent of the net sown area has access to irrigation, but with considerable inter-district variation. Except for Nainital and Dehradun which have a sizeable proportion of irrigated area, in most other hill districts irrigation coverage is less than 10 per cent.

Natural streams are the principal sources of irrigation in the hill region. Natural sources cover about 64 per cent of the total irrigated area followed by canals (*guls*) in this region. Tehri Garhwal (88 per cent), Pithoragarh (76 per cent) and Almora (64 per cent) have relatively above average with respect to natural sources of irrigation. In Himachal Pradesh, the natural streams irrigate about 84 per cent of the cropped area. The need in the Uttarakhand

is to harness the unexploited potential of natural streams to expand the irrigated area. In the plain region, groundwater followed by canal is the predominant source of irrigation.

It is evident that the hill region of the state lags far behind in irrigation development. Undulating topography of hill region impedes irrigation development. Irrigation systems like drip and sprinkler systems, and watershed-based technologies offer enormous promises for effective water management and irrigation development in hill region. The plain, bhabar and terai zones of the state have a good network of irrigation development. The overexploitation and falling of groundwater is causing concerns even in the terai and bhabar region.

Irrigation played a catalytic role in adoption of improved cultivars and use of chemical fertilisers. However, the hill region that lagged in irrigation development also remained laggard in adoption of improved technologies, eventually tottered in overall agricultural performance. For example, yield of rice in hills is 43 per cent, wheat 49 per cent, vegetables 61 per cent and fruits 69 per cent less than in plains. This calls for a more focused and location-specific research in the rainfed and dry land areas, especially in hill region. In the irrigated plains, the focus should be on improving irrigation use efficiency. Failing to that numerous water related externalities would negate the irrigation benefits. These externalities are erupting at an alarming rate in the form of declining water table.

2.4.4 Seed

Seed is the most critical input for raising crop productivity. The public sector seed companies mainly the Terai State Seeds and Development Corporation Ltd., has played a significant role in production and distribution of improved varieties of cereals and other crops in the plains. Their concerted efforts paid high dividends. Spread of improved rice and wheat varieties in these areas was far ahead compared to the national average. Almost entire wheat area (96 to 99 per cent) is under high yielding varieties in Haridwar, Nainital and Dehradun. In case of rice, it is 97 per cent in Haridwar, 95 per cent in Nainital and 81 per cent in Dehradun. Relatively lower adoption of improved rice varieties in Dehradun is mainly due to cultivation of *basmati* varieties. Dehradun *basmati* is famous and has high export potential. At the national level, area under improved varieties of wheat was 92 per cent and of rice 79 per cent.

It is noted that the improved varieties are better suited to irrigated plains. There is a very high correlation

between irrigation development and adoption of high yielding varieties. The varieties developed for hill regions mostly remained in the shelves and did not percolate to the target domain. Slow dissemination of new knowledge and complete absence of seed sector in the hill region are the major obstacles in the spread of improved varieties. Presence of strong seed sector in districts of Nainital, Dehradun and Haridwar is reflected in adoption of improved varieties of rice and wheat.

Information on adoption of improved varieties of other crops is not available. There are conjectures that the hill agriculture is still relying on traditional varieties. The marketed surplus of different commodities in the region forms such a perception. The outputs of different commodities from the hill region is famous and preferred because the traditional varieties have better taste.

The state needs to critically review its seed policy. Three aspects need to be considered. One, the research organisations in the state need to revisit their R&D policy. Since the target domain of most of the research in the state would be hill region, the inventions need to be targeted keeping in view the resource endowment of the region. Second, critically assess the demand for technology traits of different crops by the stakeholders. The final users of the improved technologies in most of the cases would be the women farmers, therefore, their need assessment will go a long way in adopting improved technologies. Third issue is related with establishing mechanisms for seed production in the target domain and seed sale to the stakeholders, particularly women farmers.

2.5 Size Distribution of Land Holdings

Land for agricultural purposes (including cultivation of crops, culturable waste, fallows, trees and groves) in the state remained almost static during the past two decades. It is around 1.4 million ha. Expansion in vertical

utilisation of land was also at very slow pace. The smaller size of land holdings and existing land tenancy laws are impeding investment in agriculture. The growing concern is on: (i) declining holding size, (ii) increasing fragments of land holdings, (iii) rising number of small and marginal farmers, and (iv) migration of men folk for want of jobs.

Agriculture is food-based and still at subsistence level. It is dominated by smallholders. In 1995/96 nearly 72 per cent land holdings in the state were of less than 1 ha, and accounted for 27 per cent of the land (Table 7.12). Another 16 per cent holdings were in the range of 1 and 2 ha with a share of 24 per cent in arable land. Smallholdings especially of less than 0.5 ha are more pronounced in hills. These constitute 53 per cent of total holdings in hills as compared to 38 per cent in plains.

The average size of land holding in the state is only 0.95 ha, much below the national average of 1.4 ha. Average holding size is smaller in the hills (0.82 ha) compared to in the plains (1.44 ha). In Bageshwar and Pithoragarh, the average size of holding is about 0.5 ha. On the other hand, in Nainital and Pauri Garhwal, it is above 1.0 ha.

Smaller land holdings deprive the economies of scale especially in marketing. Appropriate institutional arrangements in the form of cooperatives, contracting, self-help groups and farmers' organisations would be rewarding to take advantage of economies of scale. The concept of consortium approach of small and marginal farmers need to be developed for efficiently utilise agricultural land with the twin objectives of augmenting income and accelerating agricultural growth.

2.6 Role of Women Literacy in Agriculture

Literacy level in the state is higher (72.3 per cent) than the national average (67 per cent). Literacy level is

TABLE 7.12
Distribution of Land Holdings in Uttarakhand, 1995/96

| | Uttarakhand | | | Hills | | | Plains | | |
|-----------------------|-------------------|---------------|-----------|-------------------|---------------|-----------|-------------------|---------------|-----------|
| | Per cent Holdings | Per cent Area | Size (ha) | Per cent Holdings | Per cent Area | Size (ha) | Per cent Holdings | Per cent Area | Size (ha) |
| Sub-marginal (0.5 ha) | 50.01 | 11.09 | 0.21 | 53.22 | 13.43 | 0.21 | 37.96 | 6.12 | 0.23 |
| Marginal (0.5-1.0 ha) | 21.48 | 15.47 | 0.68 | 21.74 | 18.09 | 0.68 | 20.48 | 9.91 | 0.70 |
| Small (1.0-2.0 ha) | 16.45 | 24.30 | 1.40 | 15.62 | 26.77 | 1.40 | 19.54 | 19.08 | 1.41 |
| Medium (2.0-4.0 ha) | 8.77 | 26.13 | 2.83 | 7.25 | 25.35 | 2.85 | 14.45 | 27.79 | 2.77 |
| Large (>4.0 ha) | 3.30 | 23.00 | 6.61 | 2.16 | 16.36 | 6.18 | 7.57 | 37.10 | 7.07 |
| Total | 100.00 | 100.00 | 0.95 | 100.00 | 100.00 | 0.82 | 100.00 | 100.00 | 1.44 |

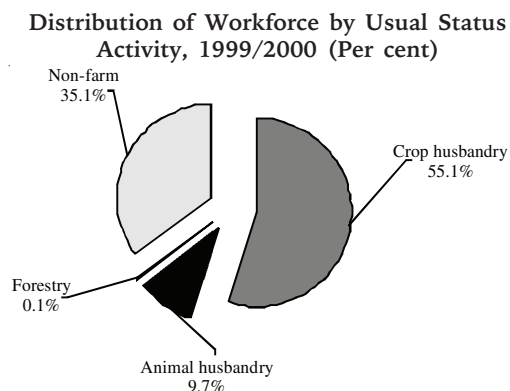
Source: <http://www.ua.nic.in>

marginally less than in the neighbouring state of Himachal Pradesh. However, there is a wide gap in literacy level of males (84 per cent) and females (60 per cent) population. The gap in male and female literacy is lower in Himachal Pradesh. In Uttarakhand three districts, namely Nainital, Dehradun and Pauri Garhwal, show higher literacy rate. Incidentally, most of the literate male members migrate and leave behind women for agricultural operation. Women literacy is also high, which should form the strength of the state. Women dominated agriculture has different problems. The strength of literate women in the state was not capitalised to transform subsistence agriculture into commercial and market-driven. The problems of women-centred agriculture are related with technology adoption, banking transaction, marketing etc., in the absence of appropriate legislative measures. For example, the credit availability is restricted to women farmer in the absence of the land ownership.

2.7 Rural Work-force

In 1999/2000 agriculture and allied activities engage 65 per cent of the work force in the state (Figure 7.4). This is more than the national average of 58 per cent. In rural areas, agriculture provides employment to 78 per cent of the work force. Most of the employment is in crop production and animal husbandry.

FIGURE 7.4



Source: Extracted from electronic database supplied by NSSO.

Agriculture is largely in the domain of women. Over 54 per cent of the work force engaged in crop production and 87 per cent in animal husbandry are women. This is largely because of small size of land holding and low income syndrome in agriculture which forces males to migrate outside the state in search of employment.

2.8 Infrastructure

Roads, markets and electricity are essential for

agricultural development. Due to topography and undulated terrain, developing a good road network is difficult. Earlier, when the state was a part of Uttar Pradesh, it received least priority in developing road network due to obvious reasons. In TE 2000/01 the road density was as low as 33 km/100sq.km in Uttarakhand (Appendix Table A-7.1) as compared to 53 km/100sq.km in Himachal Pradesh. This however has increased to 43 km/100sq.km in 2005. Road density in hills is very low (30km/100sq.km), compared to in the plains (62km/100sq.km). Udham Singh Nagar, Nainital, Dehradun and Haridwar districts have a better road network.

Obviously, a poor road network constrains input delivery system and marketing of outputs. Lack of road connectivity is the paramount obstacle in attaining higher agricultural growth and diversification of agriculture towards high value crops, livestock and agro-processing. Poor road connectivity raises the transportation costs and adversely affects the competitiveness of the produce from the hill regions. It is therefore important that the state give high priority to develop roads to reduce the transportation costs. It has other benefits as well. Earlier evidence revealed that investment in roads yielded highest returns and contributed in poverty alleviation in the harsh and fragile environments (Fan *et al.*, 2000).

Similarly, markets for agricultural produce are not well developed in the state. The state has a total 21 agricultural produce markets and 10 of these are in plain districts of Udham Singh Nagar and Haridwar. Almora, Chamoli, Champawat, Pithoragarh, Rudraprayag and Uttarkashi do not have any agricultural produce market. The market density in the state is thus only 2.7 markets per one lakh ha of area. The corresponding figure for Himachal Pradesh is 10.3 per lakh ha area.

Markets are essential for accelerating the pace of agricultural growth. These are critical for high value and perishable commodities (for example fruits, vegetables, milk, poultry, etc.). Lessons may be drawn from Himachal Pradesh in marketing and processing for value addition.

Status of electrification is better in the state than the national average but behind Himachal Pradesh. About 85 per cent villages in Uttarakhand are electrified as compared to 98 per cent in Himachal Pradesh. Assured and quality electrification is essential for agricultural-based processing sector.

Agriculture in the state is largely dominated by the smallholders, and they face acute capital constrain in intensifying and expanding agriculture. In 2004/05, a total of Rs. 432 crores was disbursed for agricultural activities,

translating into about Rs. 3500/ha of gross cropped area. This is less than the national average of Rs. 4630/ha. The state however needs more credit especially for diversification of agriculture towards high-value crops especially fruits that are more capital-intensive compared to other crops.

Uttarakhand Industrial Policy, 2001 envisages for developing critical infrastructure facilities, viz., roads, power, water supply, telecommunication, etc., with private sector participation. The policy document also proposes to upgrade the existing airport and airstrips at Jolly Grant (Dehradun), Pantnagar (Udham Singh Nagar), Gochar (Chamoli), Chinyalisaur (Uttarkashi) and Pithoragarh. It is proposed that immediate action would be taken up to operationalise these airstrips in a time bound manner and encourage private sector participation in this process. On the power sector, the policy of the state is to tap the potential of hydro-power and provide good quality, uninterrupted power supply to the industry.

2.9 Land Degradation

The problem of degradation of soil and water resources is critical in the state. The problem is of soil erosion and nutrient mining in hill regions, and declining water table in the plain region. These problems need immediate attention. Any slackness in that will seriously jeopardise agricultural production in the state. These problems are briefly discussed below.

About 914 thousand ha area in the state is affected by mild to severe degradation problems. This comprises about 17 per cent of the geographical area. The problem has grown during the past two decades. The extent of land degradation was 887 thousand ha (about 16 per cent) in 1981-82. The annual increase in degraded area was increasing at an annual rate of 1.8 thousand ha since 1981. The speed of degradation has slowed down during 1990s as compared to 1980s. The land degradation during 1980s was at an annual rate of 2.10 per cent, it came down to 1.33 per cent during 1990s.

Another problem is related with the decline of water table in the plain region. Excessive use of groundwater is adversely affecting the groundwater table. The problem is more prominent in the plain, bhabar and terai regions of the state. Haridwar and Nainital districts have symptoms of falling groundwater table. The principal cause of declining water table are: (i) mushrooming growth of tube wells in the region, (ii) subsidised electricity to extract groundwater, (iii) scarcity of canal water, and (iv) expansion of high water requirement crops like rice and sugarcane.

The adverse effect of declining water table is rise in the energy cost of water extraction. It has equity implications as well. Introduction of water saving devices, like micro-irrigation systems, precision farming, and diversification of agriculture towards low water requirement crops and withdrawal of subsidies on power may control the fall in water table. Conjunctive use of surface and groundwater will control the fall in water table.

Nutrient mining is another constraint in agricultural production in the state especially in the hill region. The available evidence suggests that soils are becoming deficient with respect to nitrogenous and other macronutrients, like phosphorous and potash. The status of macronutrients (N,P,K) is deteriorating in all the regions. Zinc and manganese deficiency in bhabar, terai and plain regions are becoming prominent. Boron deficiency is also gradually emerging in the terai region. Beside nutrient deficiency, the imbalance use of N:P:K is also disturbing nutrient balance, which has adverse implications on crop yields. The N:P:K ratio has been distorted to 8.12:2.78:1.0 in 2004-05 in contrast to the recommended ratio as 4.0:2.0:1.0. Integrated Nutrient Management (INM) consisting of leguminous crops in the cropping sequence and more effective use of organic fertilisers may correct the distortion in fertiliser use. To correct the imbalance use of fertiliser, the state government has given Soil Health Cards to 25,000 out of 0.5 million farm households by the end of 2004.

3. Opportunities for Growth

The above discussion brings out that agriculture in the state is passing through the phase of stagnation. Irrigation is low and crop production in most parts of the state is rain dependant. Land degradation is acute. Smallholders have a near complete dominance in the state. Women largely dominate agriculture as a large number of men folk migrate to seek job opportunities outside the state. The infrastructure facilities are also limited in the state, which are essential for accelerated and higher agricultural growth.

Agriculture of Uttarakhand is characterised as a smallholder agriculture based on food crops, dominated by women, capital-starved and with poor infrastructure. Besides, the state is prone to high climatic uncertainty, high production and price risks, and lacks appropriate markets and input service centres. Despite these problems, the state possesses enormous opportunities. The state has strength on various areas. These include rich natural (water) resources, high literacy rate, advantage of off-season crops and presence of organic farming (Table 7.13). The growth opportunities exist

through harnessing the untapped yield reservoir, management of watershed programmes, diversification of agriculture in favour of high-value and low volume crops, agro-processing and organic farming.

The state needs to give highest priority to water conservation. Each drop of water needs to be conserved where it falls. The next priority for the state should be investment on roads to connect producers with the markets. These will change the agricultural scenario of the state. These actions will induce diversification of agriculture in favour of high-value commodities, and substantially augment farm income, generate employment

and check migration. The role of the government is to create an enabling environment of integrating production-marketing-value-addition through cooperatives or contract farming or self-help groups. The special niche of the state in terms of off-season crops and organic farming needs to be promoted by identifying niche markets and consumers. R&D needs to be targeted to the hill region keeping in view the target users and their resource endowments. These would require substantial resources. To meet the challenges, the government should develop programmes that encourage effective people's participation and involve private sector.

TABLE 7.13

SWOT Analysis of Uttarakhand Agriculture

| <i>Strengths</i> | <i>Weaknesses</i> | <i>Opportunities</i> | <i>Threats</i> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Diverse agro-climatic conditions suitable for cultivation of a variety of high-value seasonal and off-season crops like fruits, vegetables, flowers, baby corn, and herbs. | Undulating topography especially in hills causing soil erosion and loss of nutrients. | Sustained income growth and urbanisation are fuelling rapid growth in domestic demand for high-value commodities. | Intensification of agriculture may cause environmental problems such as declining water table in the plains and soil degradation in the hills. |
| | Lack of irrigation. | Rising global demand for high-value food products giving rise to increased exports. | High market risks discourages producers to allocate more resources to perishables. |
| | Dominance small holdings leading to diseconomies of scale. | Market liberalisation offers scope for greater participation by private sector. | Natural calamities like landslides excessive snowfall has adverse effects on production. |
| | Poor markets and transportation. | Proximity to Delhi metropolitan. | Lack of funds. |
| Sufficient availability of natural water. High literacy rate and low wages. | Greater capital requirement of high value crops. | Watershed development. | Migration of literate males outside the State in search of employment, causing scarcity of skilled labour. |
| | Low agro processing and low value addition. | Huge scope to develop small-scale food processing industries at low cost especially in cold temperate regions. Comparative cost advantage in production. | Scarcity of resources to fund agricultural research and extension. |
| Good agricultural research system. | Lack of conservation efforts. | Greater scope to improve quality of commodities especially fruits, which hitherto do not compete with fruits from other states. | |
| | Lack of facilities to develop entrepreneurship. | Rapid growth in the global demand for organic products. | Low demand for organic products in the domestic markets. |
| Organic production with locally available dung and leaf manure. | Lack of non-farm employment opportunities. | Hill- tourism offers great scope to market organic products. | High incidence of insect pests and diseases may cause deterioration in cosmetic quality of produce. |
| | Lack of technologies suitable to diverse agro-climates. | Niche market in proximity (Delhi). | |
| | Poor research-extension linkages. | Emerging culture of super markets. | Uncertainty in exports and volatility in international prices. |
| | Lack of irrigation Lack of domestic markets for organic products. | | |
| | Low or no price premium for organic produce in the domestic market. | | |
| | High cost of certification. | | |
| | Lack of information on cultivation and marketing practices. | | |
| | Lack of processing and high packaging costs. | | |

Notwithstanding, agriculture in the state is gradually diversifying out of staples towards high-value food commodities. This offers an opportunity for growth in agricultural sector, as the demand for high-value commodities like fruits, vegetables, milk, meat and eggs has been increasing in the country. Between 1983 and 1999/2000 while per capita consumption of cereals declined by 12 per cent, consumption of fruits and vegetables increased by 25 per cent and of milk by 70 per cent. Per capita consumption of various foods shown in Table 7.14 indicates higher consumption of milk, sugar, edible oils and fruits and vegetables in Uttarakhand than the national average.

TABLE 7.14
Consumption of Selected Food Items 1999/2000
(kg/capita/annum)

| | Uttarakhand | India |
|--------------|-------------|-------|
| Cereals | 158.8 | 147.5 |
| Pulses | 13.1 | 12.5 |
| Milk | 81.8 | 73.5 |
| Edible oils | 7.1 | 6.7 |
| Eggs (no.) | 10.5 | 19.2 |
| Fish | 0.1 | 3.5 |
| Meat | 1.7 | 3.1 |
| Vegetables | 72.4 | 76.1 |
| Fresh fruits | 10.4 | 12.1 |
| Sugar | 15.9 | 10.6 |

Source: Extracted from electronic database on consumption supplied by NSSO.

Another opportunity lies in exports of high value food products. In recent years, there has been a considerable increase in exports of fruits, vegetables and dairy products, which can be gainfully produced in the state. Between 1991/1993 and 2001/2003 exports of fruits and vegetables increased from US\$578 million to US\$876 million (at 2000 US prices) and of dairy products from US\$5 million to US\$44 million (Joshi *et al.*, 2003). It may be noted that globalisation is creating opportunities in developing countries to increase the exports of high-value food products. Diaz-Bonilla and Recca (2000) observed an increased flow of fruits and vegetables from developing to developed countries especially after 1991.

The state thus has significant opportunities in accelerating agricultural production and in fact has comparative advantage on several counts. The important

strengths of the state are: (i) rich natural (water) resources, (ii) high literacy rate, (iii) advantage of off-season crops and (iv) organic farming. The strength of the state needs to be harnessed. Key opportunities in agriculture are briefly discussed below:

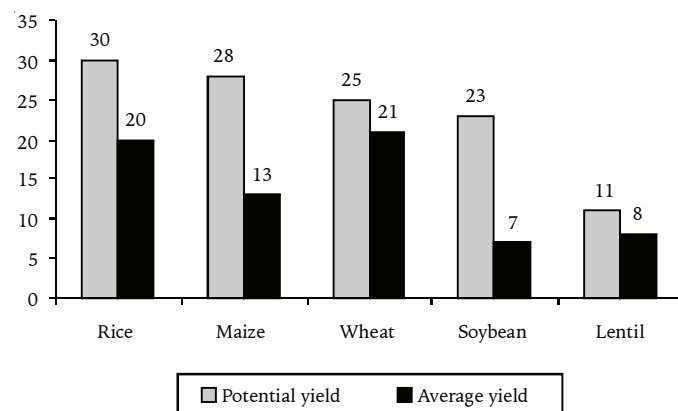
3.1 Untapped Yield Reservoir

The existing average yield levels of important crops are low in the state with the exception of Udham Singh Nagar and Haridwar districts (Appendix Table A-7.4). Non-adoption of improved technologies and continuation of traditional system of agriculture are the major reasons for low crop yields. The availability of location-specific high yielding varieties, appropriate water management technologies and improved nutrient management practices indicate enormous potential for enhancing agricultural production (Gupta, 2002). Figure 7.5 shows the gap between average and potential yields² of important crops. Soybean, which can become a promising crop in the state, witnessed a high level of yield gap between existing and potential yields. The yield of improved varieties is about 23 q/ha in the hill regions, while the existing levels are mere 11 q/ha. Other crops also show untapped production potential of improved technologies. Existing average yield of rice is two third of the potential yield. Existing yield of maize is also much lower than the potential yield.

Yield gaps need to be bridged through dissemination of low-cost technologies. Main reasons of vast gap between existing and potential yields are: (i) non-adoption of improved technologies, including high-yielding

FIGURE 7.5

Actual and Potential Yield of Some Important Crops in Uttarakhand



2. Potential yield is the yield achieved in demonstrations on farmers' fields using recommended usage of inputs and cultivation practices. Yield gap is the difference between potential yield and actual yield.

varieties, water management and nutrient management, (ii) use of poor quality seed, and (iii) low seed replacement rate. In 2005, the seed replacement rate in the state was 16 per cent in wheat, 15 per cent in paddy and 12 per cent in soybean as against their recommended replacement rate of 25 per cent.³ Seed replacement rate in maize was only 2.3 per cent compared to recommended rate of 35 per cent for traditional varieties. As such, 17.2 per cent farmers in the state replace seed every year another 16.2 per cent every alternate year as against the national average of 29.3 and 30.5 per cent respectively (GoI, 2005). Seed replacement is expected to be lower in the hills because of infrastructure constraints.

Seed production and its distribution should receive high priority in the state. The state government has developed a seed plan with 10 per cent seed replacement rate in the hill regions. The plan also includes the provision of seed production villages and making smaller seed packets. The Terai Seed and Development Corporation Ltd., needs to coordinate with the research organisations and state departments to produce seeds of improved varieties of important crops for specific target domain. The state government has relaxed the rules for seed certification. In view of small farm size, the new guidelines allow seed production and certification in a plot of 22 sq m.

Soybean is technically a very promising crop but showing large yield gap. Its area has also declined sharply in the state. The crop is facing two important challenges. One, the premature drying of the crop due to some diseases. Second, the WTO regime does not favour production of this crop under low-yield and high-cost scenario. There are apprehensions that cheap soybean from other countries may be imported, which may adversely affect the soybean economy in the country. It is therefore important that the potential of improved technology may be utilised to contain the threat of cheap import.

3.2 Watershed Development

Most of the hill agriculture in Uttarakhand is rainfed. Incidentally, the rainfall pattern is well distributed. Often hill agriculture faces problems of too-high or too-low water syndrome due to erratic and uneven distribution of rainfall. The high intensity of rains and uneven topography render most of the rainfall as runoff causing

loss of the top soils as well. The rain water needs to be conserved through watershed development. Conservation of water through watershed not only enhances productivity but also control soil erosion. The studies from hill regions show significant contribution of watersheds in enhancing farm income, generating employment opportunities and conserving soil and water resources (Dhyani *et al.*, 1997). Watershed development received some attention in the state in the past. Some of the watershed evaluation studies were complied and their pooled results are presented in Table 7.15. It is noted that the investments on watershed programmes were quite rewarding. The benefit cost ratio was about 1.96, indicating that one rupee invested in watershed programmes had yielded Rs. 1.96. The internal rate of return was 21 per cent, which is comparable of any other development programme. Watershed programme has enormous potential for employment generation and conservation of soil and water resources. The irrigated area has also expanded and cropping intensities have increased as a result of watershed development.

The ongoing watershed development programme of the state government is promising and effective. The watershed development of the state has passed three stages. It begins with the first generation watersheds during 1982 to 1988 and focused largely on afforestation and soil conservation. The second phase (1988-1992) watershed programmes became multidisciplinary and integrated at an apex level. The ongoing, third generation (since 1993) watershed programmes became more people's participatory. The ongoing watershed development programmes revolve around: (i) closer governance, (ii) more devolution of powers, (iii) active people's participation, (iv) bottom-up approach⁴, and (v) more transparency in functioning. The aim is to give more autonomy, decentralise the decision-making processes, better control over resources by the community, and get rid of subsidy syndrome. The concept of 'GAREMA' (Gaon Resource Management Association) was launched to address these components by forming village level institutions (e.g. self-help groups) and preparing village plans by community participation. Presently, 353 GAREMAs have been formed which consist of 36,000 members. The concept is now upgraded to COREMAs (Clusters of Resource Management Associations) by shifting focus more on common economic enterprises. These models have some revolving funds and are

3. [http://www.wagricoop.nic.in/Kharif2006/Kharif2006ppt/JS\(Crops\)](http://www.wagricoop.nic.in/Kharif2006/Kharif2006ppt/JS(Crops))

4. In bottom-up approach farmers identify the problems and present these for solution before researchers, extension workers and policy makers who in turn design strategies to solve these problems with active involvement of the farmers.

represented by roughly 33 per cent women farmers and 20 per cent by socially backward groups. The concept promotes the knowledge and skills of women farmers and socially backward groups to develop self-confidence among them. These also provide small loans to the members.

TABLE 7.15
Benefits from Watersheds

| Indicator | Particulars | Unit | Mean | t-value |
|----------------|--------------------|-----------|---------|---------|
| Efficiency | B/C ratio | ratio | 1.96 | 9.41 |
| | IRR | per cent | 21.00 | 21.00 |
| Equity | Jobs | days/ha | 44.00 | 5.41 |
| Sustainability | Irrigated area | per cent | 14.00 | 6.51 |
| | Cropping intensity | per cent | 53.00 | 9.16 |
| | Soil runoff | per cent | - 13.88 | 25.11 |
| | Soil loss | t/ha/year | - 5.04 | 3.99 |

Source: Derived from various studies conducted in Uttarakhand.

The concept of 'GAREMA' needs to be replicated in more areas. The above mentioned benefits suggest that investment in watershed programme should receive high priority in the hill region. Watershed development programme should be launched in a mission mode. The mission should be to conserve each drop of water *in situ*. The purpose should be 'more revenue and happiness from each drop'. Conservation of water should be the prime target in the hill areas. Sustainable harvesting of local water including the rainwater offers immense scope for the overall socioeconomic development of the state.

Rainwater harvesting has several advantages. These include: (i) rainwater is usually less polluted than surface and groundwater, (ii) rainwater is usually widely distributed and is generally available close to home unlike river water or groundwater, and (iii) rainwater projects are simple and cost-effective (Ramasastri, 2002). Besides, water-harvesting programme would augment agricultural production, enhance farm income, generate employment and conserve soil and water resources. Such an investment would check migration. Earlier studies have shown that the watershed programme, if implemented effectively, controlled the migration of male population and contributed in agricultural prosperity (Dhyani *et al.*, 1997).

3.3 Crop Diversification

Diversification of agriculture refers to a larger crop-mix to augment farm income and enhance resource

productivity. In a subsistence agricultural system, diversification is considered as a strategy to minimise farm risk, which arise as a result of fluctuations in output prices, weather uncertainties and incidence of insect pests, among others. In an era of commercial and market-led agriculture, diversification is nothing but introduction of high value commodities as growth strategy, which is expected to take entrepreneurs away from subsistence system. Nevertheless, it takes care of risk aversion in agricultural production. Broadly, the purpose of diversification can be listed as: (i) increase in the farm income, (ii) generate employment opportunities, (iii) stabilise farm income over the seasons and (iv) conserve and enhance natural resources (Vyas, 1996, Joshi *et al.*, 2003). Simple strategy for diversification is to shift crop enterprises in favour of more profitable crops from the less profitable ones. Price signals and market conditions largely determine the path of diversification.

Though food grains dominate agriculture in the state, the sector is gradually diversifying towards fruits and vegetables. Promising areas for diversification of agriculture in Uttarakhand are in favour of fruits and vegetables, dairy, poultry and cold water fisheries. Area under fruits and vegetable is growing in the state. Similarly, population of livestock has went up in the state. Particularly, number of buffaloes and goats has registered an increasing trend. Backyard poultry also offers enormous potential to augment income and improve the nutritional requirements of the hill farmers. Cold water fisheries can also contribute to food and nutritional security of the hill and remote regions. These enterprises suit the needs of small and marginal farmers. These enterprises require more labour, which small and marginal farmer possesses more, and generates quick returns, which is the utmost need of small and marginal farmer. Production of high value enterprises engages more labour of vulnerable population groups, such as women (Wann, 2000). Their production is also found to be beneficial to the soil health and utilises water most efficiently in terms of both production and economic efficiency (Ali, 2000). But the success of diversification in favour of high value commodities relies on how capital (credit) is made available to farmers and how markets are developed. The small and marginal farmers have too low capital and tiny marketable surplus, which make them unviable for production of high value commodities. Major constraints encountered in further increase in production of horticulture and livestock are: (i) non-availability of location-specific technological recommendations and species, (ii) non-availability of quality and hybrid seeds, (iii) lack of capital for high-tech

horticulture and dairy, (iv) loss due to diseases, (v) complete lack of knowledge based extension and technology dissemination mechanism, and (vi) lack of markets and absence of integration between production and marketing.

The state is also a tourism paradise and its proximity to the national capital gives it an added advantage. The state can capitalise the potential of high value commodities through tourism. The current status of tourism is also rewarding. The high value commodities are in high demand in the tourist industry (hotels, restaurants). Districts like Nainital, Almora and Dehradun receive seasonal tourists. To some extent these districts are gradually diversifying in favour of fruits and vegetables. More than 1/3rd increase in fruit and vegetable area in the state come from these three districts. Area expansion of fruits and vegetables was also relatively more (13-18 per cent) in these districts than other districts.

Water availability opens up more opportunities for agricultural diversification. To underpin the diversification in hill regions, introduction of water saving devices, such as sprinkler, drip systems, should receive incentives. Lessons should be drawn from Maharashtra, which is an example where the water saving devices in the water scarce regions have intensified diversification in favour of fruits, vegetables and floriculture by substituting coarse cereals.

Cultivation of medicinal and aromatic plants is another avenue for diversification. Hill region has a number of species of aromatic and medicinal plants. At present, most of the species are in wild forests, and are being collected by tribals to earn income for their livelihood. Markets for aromatic and medicinal products however are informal and exploitative. Cultivation of medicinal and aromatic plants if promoted and accompanied by development of local markets would benefit immensely to the farmers in the hill region where holding size is too small (Box 7.1).

Future strategies must consider the production and marketing needs together. Often production is emphasised and markets are ignored. Therefore, pro-diversification policies (both in production and post-harvest) and adequate institutional arrangements would offer immense promises to create conditions for diversification. These need to be tuned to match the nature and process of diversification. Obviously, horticultural and livestock products require more attention for post-harvest transport, storage and processing. They need quick processing for delayed disposal and value addition. The requirement for processing of sugarcane, oilseeds and pulses are different than horticulture and livestock

products. Incentives to private sector in strengthening backward and forward linkages-processing will unambiguously boost agricultural diversification. Institutions such as cooperatives, producers' association and contract farming may go a long way in accelerating the pace of production of high value commodities and benefiting small and marginal farmers (Box 7.2).

BOX 7.1

Public-Private Partnership for Harnessing Potential of Medicinal Plants

The High-Altitude Plant Physiology Research Centre (HAPPRC), in Uttarakhand developed technologies and cultivation practices for a number of medicinal plants and was searching for mechanisms to transfer these to farmers. HAPPRC approached farmers of Ghese village in Chamoli district with whom it had successfully worked earlier on cultivation of vegetables. The farmers agreed to cultivate medicinal plants and HAPPRC provided planting material and technology free of cost. Simultaneously HAPPRC tied up with a Delhi-based firm viz., Dhawan International for marketing of the produce. While the HAPPRC provides planting material and package of practices, the firm provides an assured market at pre-agreed prices and credit to the farmers. This helped overcoming marketing, technological and extension constraint.

Source: Extracted from Van de Kop *et al.* (2006).

BOX 7.2

Benefits of Institutional Innovations to Producers

Economic reforms have paved way for participation by private sector in agricultural markets. Agricultural markets are now transforming from an open to vertically coordinated structures, like cooperatives, producers' associations and contract farming. Main advantage of such arrangements for producers is an assured access to market. Many a firms provide quality inputs, technology, extension services and credit to producers and thus contribute to improving production efficiency. Benefits of some forms of vertical coordination especially contract farming however are questioned on grounds of monopsonistic exploitation by the firm and exclusion of the smallholders. These apprehensions are largely theoretical and generalised based on a few such instances. Not much empirical evidence exists to prove these contentions. In a study of contract farming (dairy and poultry) and producers' associations (vegetables) in India it was found that such arrangements provide an assured market to producers, improve farm profitability, reduce transaction costs, absorb price risk and improve scale of production. Smallholders who had small marketable surplus were benefited the most from such arrangements. Further, the study did not observe any exclusion of smallholders from any of these arrangements.

Source: Extracted from Birthal *et al.* (2005)

Agricultural research should also shift priorities towards the farming system approach (which encompasses diversification) with multiple objectives of augmenting and sustaining farm income, generating employment opportunities, alleviating poverty and conserving natural resources.

3.4 Agro-processing

Agro-processing and value-addition are other areas for faster economic growth in the state. These are lacking in the state due to lack of capital investment. Agro-processing requires strong vertical integration between production, marketing and consumption. The promise lies in processing of peas, potatoes, mixed vegetables and ginger in case of vegetables, and making juice, jelly, jam, etc., from raw fruits. These require different types of industrial units in different areas. A blend of public and private sector participation can promote agro-processing and value addition of agricultural enterprises.

Public sector needs to invest in development of infrastructure, and facilitate in strengthening backward and forward linkages. Development of rural roads and establishment of cold chains, pre-cooling facility, cold storage and grading, sorting and packaging facilities are pre-requisite for encouraging agro-processing sector.

The participation of private sector is crucial in agro-processing and value addition. To encourage private sector participation, the role of government is to create an enabling environment for agro-processing and value-addition. The need is to: (i) rationalise tax structure on processed food and processing machinery, (ii) harmonise and simplifies food laws, (iii) simplify documentation procedures, and (iv) strengthen extension services to encourage pre-processing facilities. The state is conscious of these constraints and committed to amend the exist APMC Act and introduce model marketing act. The model APMC act will pave the way for the private sector participation in agri-business.

In essence the success of agro-processing would rely on: (i) production of desired quality of raw material, (ii) regular supply of raw material for full capacity utilisation, (iii) uninterrupted power supply, and (iv) appropriate transport for supplying the product to niche markets and niche consumers.

3.5 Organic Farming

Organic farming is another promising source of future agricultural growth. The hill region of the state has comparative advantage in the organic farming as the use of chemical fertilisers and pesticides is meagre. Over the

past two decades, the consumption of inorganic fertiliser has not changed much. Use of chemical pesticides is also low in the state. The organic farming in Uttarakhand has added advantage because the state is singularly rich both in green manure and green leaf manure (Tolia, 2002). Organic farming has multiple benefits. It not only improves the sustainability of natural resources, but augments farm income as well. Specifically, the advantages of the organic farming are: (i) improve soil fertility, (ii) conserve rainwater more effectively, and (iii) price premium for organic products.

Uttarakhand has the potential to emerge as an organic state for commodities like *basmati* rice, fruits and vegetables; the domestic and international demand for which has been growing fast. Although the Government of Uttarakhand has taken some steps in identification of commodities, their production regions and international markets, focused approach is needed to promote the concept of organic farming in the state. So far 983 villages covering about 24,171 ha area have been adopted organic farming in the state. The programme benefited more than 20 thousand farmers. It should be done through appropriate capacity building programmes and developing 'bio-villages'. The success of organic farming will rely on: (i) identification of niche commodities, markets and consumers in the country and abroad, (ii) mechanisms developed and implemented for certification of organic products, and (iii) how sanitary and phyto-sanitary (SPS) issues are adhered to in case of export commodities. So far only 5 per cent area was covered for certification of organic produce. It is unlikely to get a strong market for organic products in the state unless strong certification mechanism is evolved. There is a specific consumer class for specific commodities for the organic products who can pay a price premium. There is a need to identify such markets and consumers. Accordingly the marketing strategy may be devised. The available information suggests that a class of consumer in European countries prefer organic products. The certification mechanisms should be stringent to gain the confidence of the consumers of organic product. The state needs to take a proactive role with the Central government to devise the certification mechanisms to meet the needs of importing countries of organic products.

4. Strategies for Harnessing Growth Opportunities

This section discusses how the potential of the existing growth opportunities can be harnessed to accelerate agricultural growth and reduce rural poverty.

4.1 Invest in Watershed Programme

The state should receive highest priority to invest on watershed development programme. A large area in the state is rainfed. The water from rainfall and other sources need to be tapped through conserving and harvesting water. There are indications that the water availability from natural sources in the hill regions has declined sharply. Effective people's participation through replication of 'GAREMA' concept should receive highest priority. People of the state need to be educated that water is the lifeline for the state. Concept of 'Integrated Water Management Approach' needs to be applied in the watersheds. The approach includes identification of appropriate cropping systems, use of water saving devices and cultivation of high-value and low water-requirement crops.

4.2 Disseminate Improved Technologies

In terms of adoption of improved agricultural technology, there is a huge gap between the hill and plain regions. Whereas the plain region is far ahead in adoption of improved technologies, the hill region is lagging far behind. The hill region of the state needs special attention in dissemination of improved technologies. The extension machinery needs to be geared up and the potential of information technology may be utilised. To harness the growth opportunities, like diversification of agriculture, high-tech horticulture, organic farming, precision farming, off-season crops, floriculture, export-oriented agriculture, etc., the information dissemination needs to be fast and reliable. Information technology may play key role in disseminating required information. Numerous examples are cited on emergence of innovative institutions for technology dissemination through information technology. Examples are related to 'help-line' service, agricultural related websites, and participation of private sector in the process of technology dissemination.

The existing linkage between research and extension needs to be strengthened. The state agricultural university, research institutions and extension department should jointly adopt villages for demonstration of improved technologies. Examples from Andhra Pradesh, where 'Village Adoption Programme' has made significant difference in technology dissemination process may be adopted in the hill regions of Uttarakhand. The programme includes weekly interactions of scientific community, extension personnel with the farmers on all farming related problems. Such programmes may be budgeted in the state and aggressively launched to make the farming community, particularly women, aware about

the new technologies and solve problems encountered in their adoption.

Seed sector needs special attention. Lack of good quality seed is one of the major impediments in agricultural growth. Role of seed corporations, government farms, research institutions, and the state agricultural university have to gear up seed production, certification and distribution programme of different crops for different agro-climatic target domains. Particular attention needs to be given to horticultural crops.

4.3 Incentives for Contract Farming

Marginal and small farmers dominate in the state. They have tiny marketable surpluses. Even if they are efficient in production, their meagre marketable surplus makes them inefficient due to high transaction costs. Besides, they are highly prone to production and marketing risks. To overcome these problems, contract farming offers enormous promise to augment income, reduce cost and minimise production and marketing risk. The country is witnessing a silent revolution in contract farming. Private sector and cooperatives are playing key role in harnessing the potential of marginal and small farmers by providing them information, technical know-how, critical inputs and capital. These institutions utilise their labour and available land and offer them assured markets and prices to overcome the market and price risk. Few successful examples are Safal in fruits and vegetable sector, Venkateshwara hatchery in poultry sector, National Dairy Development Board (NDDB), Nestle in dairy sector and Hindustan Lever in wheat. Lessons from these successes need to be promoted in the state. The state has enormous potential for contract farming in vegetables, fruits, dairy, backyard poultry and angora wool, among others.

Historically, cooperatives in small-scale dairy sector have provided good market opportunities but it is yet to reach in the remote areas of the state. Safal has also made a beginning in the state for off-season pea, cauliflower, tomato and other vegetables. The recent successful case is from Kanasar in Chakarata block through Agricultural Diversification Project and the Mamta Welfare Organisation, an NGO, which tied-up with Safal for the sale of tomato in Delhi market (Anonymous, 2002). Farmers could get almost double the price in Delhi market than the prevailing price in the local market. Such mechanisms of integrating production and marketing need to be replicated to benefit the marginal farmers.

To promote contract farming, the state needs to relax the land ceiling act. Some steps have been initiated in this direction. It has been decided that the act will be relaxed

on case-to-case basis. To make use of degraded forest lands for contract farming, the state needs to seek approval from the central government for beneficial and economic use of those lands. Rationalise fees, cess, taxes, levies, duties, etc., on procurement of agricultural produce processed through contract farming. Some incentives may be extended to the industry and private sector for promoting contract farming. Encouraging contract farming may reduce cost on several service sectors, like extension, input delivery, etc. The private sector would actively involve in dissemination of information and technology and delivery of inputs. This may provide an opportunity to gradually transfer the extension system, input delivery system and output marketing system to the private sector.

4.4 Strengthen Vertical Coordination

The state produces a large variety of cereals, fruits, vegetables and spices. A strong vertical linkage between production, processing and marketing would offer immense opportunities to add value to the raw products. Large quantities of such products are wasted due to lack of appropriate storage, packaging and processing facilities. To strengthen the agro-processing sector, backward and forward linkages are to be developed. The Industrial Policy 2001 of the State has a provision to strengthen this sector. The salient features are: (i) establishment of small and medium size agro parks to provide common infrastructure facilities for storage, processing and marketing, (ii) encourage establishment of fruits and vegetables based wineries, (iii) develop agro export zone for agro-based export, (iv) modernise the packaging industry by producing durable, attractive, and eco-friendly packaging material, (v) create an integrated network for marketing of horticulture produce including cool chains, and (vi) assistance by the government for development of high quality horticulture farms, which will act as hubs for developing commercial horticulture with the latest technology and techniques.

The state has also a rare diversity of flowers and excellent climatic conditions conducive to commercial floriculture. Some of important flowers are marigold, gladiolus and roses. The industrial policy proposes to establish a 'Floriculture Park' with common infrastructure facilities for sorting, grading, pre-cooling, cold storage, processing, packaging and marketing facilities.

4.5 Legal Framework for Enforcement of Acts

Sound legislative measures and appropriate policies are to be enacted to integrate various measures suggested for accelerated agricultural growth in the state. For example, legislative measures are immediately needed to reform

existing land tenure and market laws, attract private sector for contract farming, incentives to private sector for investment in agro-processing and value addition, laws for certification of organic products, laws for seed production and certification, laws for greater and democratic participation of community in watershed management, etc. The state has launched the Industrial Policy, which has a vision for creating conducive environment for rapid and ecologically sustainable development. The policy shows enormous promise for bringing prosperity in the state. In the absence of appropriate legislative measures, it appears that the policy may not yield desired results.

The reforms should begin with liberalising agricultural markets by amending the APMC Act, which otherwise restricting entry of agri-business firms. There is a need to promote competition among the private sector to venture in the agriculture sector. In the absence of appropriate legal framework, many promising programmes may not yield desired results. Most of the existing laws suit the needs of plain region. The legislative measures can be quickly changed as the state was recently separated from Uttar Pradesh. This opportunity should be immediately availed. Any delay may lead to many rigidities and mar the prospective strategies and policies.

4.6 Revisit Research, Extension and Development in Agriculture

Research, extension and development are vital for the growth of agriculture. These are important future sources of growth in agriculture. The state needs to revisit its research portfolio by giving more focus to hill and backward areas. The aim of research investment may be to enhance farm income, generate employment, check migration and conserve natural resources. More research focus may be towards women-friendly technologies and high-value enterprises. Women are the backbone of hill agriculture in Uttarakhand. Therefore, the implements may be modified to suit the needs of women farmers. Since the state has comparative advantage and strength on horticultural commodities, research and development may be focused towards production and marketing strategies for high-tech horticulture, organic horticulture and low-volume and high-value enterprises. Research may also be extended to develop appropriate marketing strategies, encourage contract farming and growth oriented agricultural policies. There is a need to delineate target domains and production niches for most competitive agriculture, horticulture and livestock enterprise for research and development.

In an era of scarce research resources, 'consortium approach' may be adopted to solve the critical and

complex problems. Various research institutions and universities in the state may come together for addressing the key issues in the state. Such an approach will not only save scarce resources but also avoid lot of duplication of research efforts. The amount saved can be judiciously used for more basic and strategic research. For example, the Rice-Wheat Consortium of the Consultative Group of International Agricultural Research (CGIAR) and the initiative of International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) towards seed and watershed research are quite successful and the adoption rate of technologies is much higher than the traditional research and extension approach. In the consortium approach, the entire gamut of problems are addressed in a holistic approach by involving different stakeholders including

research organisations, NGOs, private sector, policy makers, and farmers.

Research efforts in the field of biotechnology may be encouraged. The state claims more research resources for biotechnology research because the traditional research methods have shown low probability of success due to harsh and difficult environment. The state may develop a white paper on 'Biotechnology Research'. It should cover the purpose of biotechnology in the state. The crops and enterprises will be different and research strategy will differ with the purpose of biotechnology research. For example, targeting biotechnology research for poverty alleviation, nutritional security, participation in export, import substitution, conservation of natural resources will have different crops or enterprises and different research strategies.

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APPENDIX TABLE A-7.1
Selected Indicators of Agricultural Sector in Districts of Uttarakhand, TE 2000/01

| | Share of NPK in Total Fertiliser (per cent) | | | | |
|---------------|---------------------------------------------|---------------------------------|--------------------------|----------------|-------------|
| | Net Sown Holding (ha) | Gross Area Irrigated (per cent) | Nitrogen (N) Use (kg/ha) | Phosphorus (P) | Potassh (K) |
| Almora | 8.5 | 10.3 | 68.7 | 24.2 | 7.1 |
| Bageshwar | 17.5 | 19.4 | 69.9 | 23.2 | 6.9 |
| Chamoli | 6.6 | 7.3 | 51.7 | 47.6 | 1.0 |
| Champawat | 7.8 | 7.8 | 62.9 | 29.9 | 7.2 |
| Dehradun | 42.3 | 45.5 | 72.2 | 21.8 | 6.0 |
| Haridwar | 82.5 | 85.7 | 77.4 | 19.2 | 3.4 |
| Nainita | 58.2 | 55.3 | 61.6 | 27.9 | 10.6 |
| Pauri Garhwal | 9.2 | 9.9 | 68.7 | 27.3 | 4.0 |
| Pithoragarh | 9.0 | 8.6 | 71.8 | 25.2 | 3.0 |
| Rudraprayag | 6.0 | 7.5 | 60.6 | 38.9 | 1.3 |
| Tehri Garhwal | 14.4 | 17.2 | 61.2 | 36.3 | 2.5 |
| US Nagar | 96.7 | 98.8 | 70.8 | 18.1 | 11.1 |
| Uttarkashi | 20.0 | 23.0 | 40.3 | 57.1 | 2.6 |
| Uttarakhand | 43.5 | 43.9 | 71.7 | 19.7 | 8.6 |
| Plains | 90.3 | 93.4 | 72.9 | 18.4 | 8.6 |
| Hills | 18.7 | 19.5 | 64.1 | 27.4 | 8.5 |

Source: <http://www.ua.nic.in>

APPENDIX TABLE A-7.2
Area under Crops in Districts of Uttarakhand TE 2003/04 (ha)

| Crop | Almora | Bageshwar | Pithoragarh | Champawat | Pauri Garhwal | Tehri Garhwal | Chamoli | Rudrapurayag | Uttarkashi | Dehradun | Nainital | Haridwar | US Nagar |
|------------------|--------|-----------|-------------|-----------|---------------|---------------|---------|--------------|------------|----------|----------|----------|----------|
| Cereals | | | | | | | | | | | | | |
| Wheat | 46220 | 14015 | 30338 | 13015 | 36641 | 25083 | 15263 | 10663 | 15643 | 25337 | 26560 | 47187 | 91266 |
| Rice | 23908 | 10775 | 24190 | 8369 | 25455 | 15880 | 12210 | 10646 | 9884 | 14237 | 11995 | 19105 | 101659 |
| Ragi | 33687 | 5437 | 7731 | 2874 | 42111 | 15318 | 9719 | 5392 | 5537 | 4083 | 3813 | 0 | 0 |
| Sanwa | 24765 | 739 | 1279 | 1261 | 23609 | 22759 | 4403 | 3359 | 2144 | 539 | 516 | 0 | 0 |
| Maize | 5881 | 435 | 3828 | 809 | 3162 | 2211 | 8195 | 190 | 5982 | 12122 | 6316 | 723 | 295 |
| Barley | 2873 | 1685 | 13187 | 1275 | 6115 | 1559 | 1598 | 1286 | 175 | 1175 | 1136 | 43 | 41 |
| Pulses | | | | | | | | | | | | | |
| Lentil | 278 | 1384 | 3876 | 1140 | 117 | 633 | 194 | 24 | 240 | 874 | 448 | 1316 | 2313 |
| Gahat | 190 | 197 | 1060 | 764 | 3118 | 2641 | 451 | 191 | 604 | 599 | 1045 | 0 | 0 |
| Urud | 22 | 141 | 804 | 328 | 2218 | 1995 | 661 | 361 | 380 | 739 | 595 | 396 | 199 |
| Pea | 235 | 0 | 19 | 11 | 0 | 549 | 13 | 56 | 633 | 464 | 604 | 160 | 2702 |
| Rajma | 0 | 0 | 0 | 34 | 95 | 1024 | 23 | 84 | 1011 | 474 | 47 | 0 | 0 |
| Oilseeds | | | | | | | | | | | | | |
| Soybean | 746 | 109 | 1325 | 1764 | 284 | 752 | 927 | 66 | 184 | 40 | 9980 | 0 | 3131 |
| Rapeseed mustard | 722 | 163 | 294 | 115 | 456 | 1232 | 386 | 217 | 922 | 952 | 1122 | 758 | 6020 |
| Groundnut | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 179 | 810 | 1449 | 70 |
| Sugarcane | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5781 | 13369 | 72417 | 36051 |
| Fruits | | | | | | | | | | | | | |
| Apple | 7661 | 710 | 1518 | 445 | 5658 | 7278 | 3858 | 508 | 7050 | 4015 | 13124 | 0 | 0 |
| Lemon | 2979 | 1292 | 2771 | 1524 | 3058 | 2568 | 3312 | 951 | 1550 | 2212 | 2103 | 46 | 96 |
| Mango | 2518 | 721 | 1078 | 1115 | 2407 | 2322 | 564 | 100 | 243 | 5295 | 357 | 4739 | 2935 |
| Chestnut | 1637 | 614 | 1735 | 642 | 2298 | 5233 | 2001 | 450 | 1550 | 2000 | 1195 | 0 | 0 |
| Peach | 1517 | 441 | 899 | 627 | 698 | 1741 | 1165 | 324 | 1019 | 1210 | 3689 | 33 | 0 |
| Pears | 2070 | 570 | 1103 | 796 | 997 | 1444 | 1055 | 226 | 954 | 1203 | 1742 | 15 | 50 |
| Plum | 1453 | 443 | 817 | 797 | 808 | 1040 | 867 | 162 | 900 | 713 | 831 | 12 | 0 |
| Litchi | 417 | 92 | 394 | 545 | 1141 | 1116 | 235 | 2 | 0 | 3380 | 81 | 55 | 352 |
| Apricot | 1043 | 293 | 710 | 498 | 1018 | 1031 | 842 | 148 | 0 | 800 | 800 | 0 | 0 |
| Others | 2227 | 897 | 2580 | 1746 | 2314 | 2975 | 1419 | 605 | 2102 | 1441 | 784 | 153 | 1490 |

(Contd....)

| ... | Almora | Bageshwar | Pithoragarh | Champawat | Pauni Garhwal | Tehri Garhwal | Chamoli | Rudraprayag | Uttarkashi | Dehradun | Nainital | Haridwar | US Nagar |
|-------------------|--------|-----------|-------------|-----------|------------------|------------------|---------|-------------|------------|----------|----------|----------|----------|
| Vegetables | | | | | | | | | | | | | |
| Potato | 2363 | 529 | 1627 | 1852 | 1302 | 2410 | 2385 | 555 | 1810 | 1705 | 2350 | 720 | 2412 |
| Peas (green) | 956 | 223 | 469 | 452 | 170 | 1710 | 339 | 80 | 113 | 1630 | 1521 | 750 | 3040 |
| French bean | 858 | 260 | 625 | 270 | 199 | 1569 | 523 | 115 | 294 | 975 | 1086 | 200 | 246 |
| Radish | 1013 | 220 | 822 | 500 | 247 | 604 | 668 | 90 | 664 | 238 | 362 | 475 | 220 |
| Ladyfinger | 268 | 95 | 400 | 155 | 88 | 775 | 92 | 69 | 45 | 816 | 673 | 1880 | 169 |
| Tomato | 545 | 160 | 577 | 380 | 767 | 683 | 200 | 33 | 65 | 1080 | 181 | 288 | 35 |
| Cabbage | 476 | 137 | 373 | 380 | 33 | 690 | 378 | 34 | 41 | 553 | 352 | 334 | 41 |
| Onion | 615 | 156 | 579 | 310 | 140 | 605 | 300 | 83 | 26 | 395 | 330 | 62 | 105 |
| Cauliflower | 390 | 96 | 95 | 132 | 15 | 101 | 25 | 10 | 0 | 825 | 234 | 850 | 91 |
| Capsicum | 542 | 150 | 516 | 225 | 45 | 213 | 43 | 8 | 38 | 50 | 853 | 65 | 7 |
| Brinjal | 135 | 49 | 37 | 43 | 105 | 0 | 90 | 28 | 47 | 373 | 87 | 550 | 14 |
| Others | 1742 | | 1036 | 640 | 6155 | 855 | 1975 | 312 | 5421 | 2908 | 1295 | 7015 | 635 |
| Spices | | | | | | | | | | | | | |
| Chillies | 1185 | 39 | 22 | 47 | 250 | 402 | 105.4 | 122.5 | 111.9 | 39 | 28 | 44 | 9.6 |
| Ginger | 225 | 29 | 60 | 214 | 50 | 180 | 24.9 | 38.2 | 18.46 | 212 | 170 | 8 | 41.2 |
| Garlic | 153 | 25 | 32 | 72 | 240 | 193 | 30.8 | 38 | 31 | 48.5 | 55 | 15 | 15.5 |
| Coriander | 121 | 24 | 18 | 9.3 | 124 | 36 | 21.2 | 30.5 | 107.3 | 26 | 9 | 6 | 0.67 |
| Turmeric | 143 | 60 | 32 | 30 | 45 | 16.2 | 16.45 | 23.8 | 1.5 | 37.5 | 46 | 5 | 10.1 |
| Methi | 80 | 13 | 33 | 12.3 | 60 | 7 | 0 | 0 | 0 | 22 | 18.5 | 10 | 5 |
| Cardamom | 7 | 3 | 4 | 15 | 6.5 | 3.2 | 5 | 5 | 2.46 | 1 | 2.5 | 0 | 0 |
| Other spices | 6 | 3 | 5.2 | 9.5 | 0 | 0 | 27.5 | 36.5 | 0 | 0 | 29 | 0 | 4 |
| Floriculture | 41 | 14.5 | 1.65 | 1.69 | 18 | 3.65 | 23 | 5.8 | 0.26 | 51.54 | 28.18 | 70 | 19 |

Note: Area for fruits, vegetables, spices and flowers pertain to 2001/02.

Source: Information Compiled from the Directorate of Agriculture (area, production and yield of cereals, pulses and oilseeds) and the Directorate of Horticulture and Food Processing (fruits, vegetables, spices and floriculture).

APPENDIX TABLE A-7.3
Production of Some Important Crops in Districts of Uttarakhand, 2003/04 (tonnes)

| Crop | Almora | Bageshwar | Pithoragarh | Champawat | Pauri Garhwal | Tehri Garhwal | Chamoli | Rudrapur | Uttarkashi | Dehradun | Nainital | Haridwar | US Nagar |
|----------------------|--------|-----------|-------------|-----------|---------------|---------------|---------|----------|------------|----------|----------|----------|----------|
| Cereals | | | | | | | | | | | | | |
| Wheat | 31189 | 13639 | 37340 | 21015 | 34091 | 33895 | 14561 | 11729 | 18393 | 40197 | 66063 | 107350 | 315853 |
| Rice | 24487 | 16223 | 31870 | 10678 | 29011 | 23632 | 15151 | 13947 | 16476 | 30081 | 30134 | 38818 | 268207 |
| Ragi | 35075 | 9218 | 11390 | 4390 | 49009 | 23930 | 14191 | 7881 | 8794 | 4945 | 5200 | 0 | 0 |
| Sanwa | 22935 | 839 | 1841 | 1614 | 28534 | 34163 | 6516 | 4082 | 2804 | 618 | 594 | 0 | 0 |
| Maize | 6469 | 581 | 4743 | 1072 | 4259 | 3804 | 11382 | 242 | 7968 | 21037 | 9460 | 1298 | 535 |
| Barley | 2018 | 1876 | 15716 | 1841 | 5557 | 1557 | 1978 | 1340 | 203 | 1132 | 1179 | 43 | 41 |
| Pulses | | | | | | | | | | | | | |
| Lentil | 174 | 731 | 2481 | 654 | 80 | 378 | 113 | 16 | 100 | 483 | 312 | 787 | 1758 |
| Gahat | 152 | 144 | 864 | 588 | 1939 | 2113 | 379 | 132 | 438 | 439 | 765 | 0 | 0 |
| Urud | 8 | 56 | 314 | 121 | 825 | 670 | 218 | 82 | 103 | 273 | 245 | 188 | 91 |
| Pea | 153 | 0 | 14 | 8 | 0 | 271 | 10 | 32 | 317 | 325 | 462 | 120 | 2351 |
| Rajma | 0 | 0 | 0 | 47 | 95 | 1284 | 28 | 77 | 1389 | 602 | 56 | 0 | 0 |
| Oilseeds | | | | | | | | | | | | | |
| Soybean | 1119 | 155 | 1988 | 2967 | 262 | 677 | 1261 | 130 | 303 | 46 | 9426 | 0 | 2618 |
| Rapeseed and mustard | 354 | 90 | 182 | 76 | 296 | 752 | 228 | 130 | 562 | 841 | 1028 | 712 | 5653 |
| Groundnut | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 170 | 774 | 1449 | 70 |
| Sugarcane | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 341079 | 802140 | 4E+06 | 2E+06 |
| Fruits | | | | | | | | | | | | | |
| Apple | 2430 | 170 | 20 | 444 | 2595 | 87 | 4000 | 603 | 4268 | 6250 | 38462 | 0 | 0 |
| Lemon | 7070 | 3490 | 24054 | 7600 | 9340 | 1202 | 7500 | 6097 | 7390 | 2643 | 4212 | 46 | 415 |
| Mango | 6555 | 2770 | 2176 | 2217 | 8450 | 445 | 1000 | 565 | 1983 | 5425 | 985 | 16583 | 16926 |
| Chestnut | 760 | 235 | 36 | 52 | 822 | 422 | 600 | 82 | 1445 | 400 | 410 | 0 | 0 |
| Peach | 2205 | 560 | 2474 | 787 | 1255 | 392 | 1400 | 420 | 250 | 2642 | 5100 | 247 | 0 |
| Pears | 8140 | 3115 | 6830 | 6990 | 2195 | 998 | 1000 | 325 | 320 | 2250 | 4131 | 94 | 320 |
| Plum | 2145 | 800 | 1866 | 2067 | 160 | 384 | 1100 | 195 | 467 | 1605 | 1869 | 90 | 0 |
| Litchi | 60 | 32 | 125 | 1042 | 552 | 180 | 10 | 1 | 0 | 2970 | 181 | 440 | 1943 |
| Apricot | 1510 | 390 | 287 | 823 | 382 | 392 | 950 | 129 | 0 | 1400 | 1792 | 0 | 0 |
| Other fruits | 4060 | 1250 | 1372 | 1460 | 7005 | 1078 | 5440 | 2534 | 7314 | 3036 | 1225 | 1432 | 13327 |

(Contd...)

| ...contd... | Almora | Bageshwar | Pithoragarh | Champawat | Pauri Garhwal | Tehri Garhwal | Chamoli | Rudrapurayag | Uttarkashi | Dehradun | Nainital | Haridwar | US Nagar |
|-------------------|--------|-----------|-------------|-----------|------------------|------------------|---------|--------------|------------|----------|----------|----------|----------|
| Crop | | | | | | | | | | | | | |
| Vegetables | | | | | | | | | | | | | |
| Potato | 52460 | 10640 | 31200 | 31800 | 29100 | 66575 | 43764 | 9000 | 43020 | 44191 | 50235 | 18000 | 52015 |
| Peas | 2328 | 580 | 1117 | 1290 | 105 | 850 | 1910 | 583 | 769 | 10940 | 8750 | 3750 | 22858 |
| French bean | 3430 | 915 | 1010 | 800 | 283 | 782 | 2810 | 783 | 2790 | 6064 | 5494 | 1400 | 1723 |
| Radish | 6185 | 1572 | 2677 | 4980 | 347 | 302 | 4730 | 763 | 6644 | 2916 | 7285 | 11870 | 5484 |
| Ladyfinger | 704 | 140 | 850 | 620 | 63 | 2082 | 320 | 314 | 1134 | 2716 | 2351 | 13180 | 705 |
| Tomato | 3613 | 1040 | 3038 | 3740 | 16150 | 2022 | 1730 | 228 | 1634 | 6495 | 3280 | 17190 | 1250 |
| Cabbage | 1591 | 437 | 582 | 3690 | 140 | 828 | 2740 | 242 | 734 | 3910 | 3402 | 13810 | 1401 |
| Onion | 1700 | 477 | 1145 | 3095 | 110 | 3221 | 2150 | 586 | 652 | 3180 | 3158 | 620 | 3045 |
| Cauliflower | 1221 | 307 | 39 | 1039 | 199 | 108 | 168 | 72 | 0 | 5241 | 2213 | 21250 | 1667 |
| Capsicum | 1473 | 402 | 1316 | 435 | 135 | 1413 | 218 | 62 | 381 | 283 | 1466 | 325 | 35 |
| Brinjal | 138 | 54 | 31 | 408 | 570 | 0 | 488 | 183 | 945 | 1885 | 1591 | 7800 | 566 |
| Other vegetables | 6735 | 3080 | 3185 | 2490 | 5185 | 2637 | 3736 | 2144 | 27228 | | 6138 | 61084 | 9535 |
| Spices | | | | | | | | | | | | | |
| Chillies | 765 | 40 | 7 | 214 | 1000 | 430 | 105.2 | 159 | 1100 | 62.4 | 36 | 132 | 11.85 |
| Ginger | 852 | 150 | 1200 | 2050 | 880 | 1204 | 262.8 | 347 | 3695 | 2374.6 | 2355 | 80 | 365 |
| Garlic | 286 | 39 | 150 | 549 | 1200 | 1126 | 146.85 | 169 | 2325 | 445.2 | 800 | 135 | 97 |
| Coriander | 138 | 20 | 34.21 | 45 | 62 | 45 | 23.1 | 30.8 | 1485 | 38.56 | 50 | 12 | 23.35 |
| Turmeric | 300 | 300 | 751 | 258 | 360 | 71.4 | 170.2 | 215 | 228 | 114.58 | 550 | 50 | 101.1 |
| Methi | 122 | 21 | 11.1 | 90 | 30 | 9 | 0 | 0 | 0 | 27.95 | 37 | 30 | 17.5 |
| Cardamom | 7 | 1 | 8 | 6.5 | 1.95 | 3.3 | 2.05 | 2.8 | 3.41 | 0.9 | 2 | 0 | 0 |
| Other spices | 6 | 3 | 8.77 | 9 | 0 | 0 | 33 | 38.7 | 0 | 0 | 230 | 0 | 29 |
| Floriculture | 42.5 | 15.15 | 2.46 | 2.03 | 30 | 4.94 | 27.5 | 5.43 | 1.35 | 60.46 | 33.86 | 75.05 | 23.46 |

Note: Area for fruits, vegetables, spices and flowers pertain to 2001/02.

Source: Information Compiled from the Directorate of Agriculture (area, production and yield of cereals, pulses and oilseeds) and the Directorate of Horticulture and Food Processing (fruits, vegetables, spices and floriculture).

APPENDIX TABLE A-7.4
Yield of Some Important Crops in Districts of Uttarakhand, 2003/04 (kg/ha) Crop

| Crop | Almora | Bageshwar | Pithoragarh | Champawat | Pauri Garhwal | Tehri Garhwal | Chamoli | Rudrapurayag | Uttarkashi | Dehradun | Nainital | Haridwar | US Nagar |
|----------------------|--------|-----------|-------------|-----------|---------------|---------------|---------|--------------|------------|----------|----------|----------|----------|
| Cereals | | | | | | | | | | | | | |
| Wheat | 675 | 973 | 1231 | 1615 | 930 | 1351 | 954 | 1100 | 1176 | 1586 | 2487 | 2275 | 3461 |
| Rice | 1024 | 1506 | 1317 | 1276 | 1140 | 1488 | 1241 | 1310 | 1667 | 2113 | 2512 | 2032 | 2638 |
| Ragi | 1041 | 1695 | 1473 | 1527 | 1164 | 1562 | 1460 | 1462 | 1588 | 1211 | 1364 | | |
| Sanwa | 926 | 1135 | 1439 | 1280 | 1209 | 1501 | 1480 | 1215 | 1308 | 1147 | 1151 | | |
| Maize | 1100 | 1336 | 1239 | 1325 | 1347 | 1720 | 1389 | 1274 | 1332 | 1735 | 1498 | 1795 | 1814 |
| Barley | 702 | 1113 | 1192 | 1444 | 909 | 999 | 1238 | 1042 | 1160 | 963 | 1038 | 1000 | 1000 |
| Pulses | | | | | | | | | | | | | |
| Lentil | 626 | 528 | 640 | 574 | 684 | 597 | 582 | 667 | 417 | 553 | 696 | 598 | 760 |
| Gahat | 800 | 731 | 815 | 770 | 622 | 800 | 840 | 691 | 725 | 733 | 732 | | |
| Urud | 364 | 397 | 391 | 369 | 372 | 336 | 330 | 227 | 271 | 369 | 412 | 475 | 457 |
| Pea | 651 | 0 | 737 | 727 | 0 | 494 | 769 | 571 | 501 | 700 | 765 | 750 | 870 |
| Rajma | 0 | 0 | 0 | 1382 | 1000 | 1254 | 1217 | 917 | 1374 | 1270 | 1191 | | |
| Oilseeds | | | | | | | | | | | | | |
| Soybean | 1500 | 1422 | 1500 | 1682 | 923 | 900 | 1360 | 1970 | 1647 | 1150 | 944 | | 836 |
| Rapeseed and mustard | 490 | 552 | 619 | 661 | 649 | 610 | 591 | 599 | 610 | 883 | 916 | 939 | 939 |
| Groundnut | | | | | 0 | 0 | 0 | 0 | 0 | 950 | 956 | 1000 | 1000 |
| Sugarcane | | | | | | | | | | 59000 | 60000 | 60000 | 60000 |
| Fruits | | | | | | | | | | | | | |
| Apple | 317 | 239 | 13 | 998 | 459 | 12 | 1037 | 1187 | 605 | 1557 | 2931 | | |
| Lemon | 2373 | 2701 | 8681 | 4987 | 3054 | 468 | 2264 | 6411 | 4768 | 1195 | 2003 | 1000 | 4323 |
| Mango | 2603 | 3842 | 2019 | 1988 | 3511 | 192 | 1773 | 5650 | 8160 | 1025 | 2759 | 3499 | 5767 |
| Chestnut | 464 | 383 | 21 | 81 | 358 | 81 | 300 | 182 | 932 | 200 | 343 | | |
| Peach | 1454 | 1270 | 2752 | 1255 | 1798 | 225 | 1202 | 1296 | 245 | 2183 | 1382 | 7485 | |
| Pears | 3932 | 5465 | 6192 | 8781 | 2202 | 691 | 948 | 1438 | 335 | 1870 | 2371 | 6267 | 6400 |
| Plum | 1476 | 1806 | 2284 | 2593 | 198 | 369 | 1269 | 1204 | 519 | 2251 | 2249 | 7500 | |
| Litchi | 144 | 348 | 317 | 1912 | 484 | 161 | 43 | 500 | | 879 | 2235 | 8000 | 5520 |
| Apricot | 1448 | 1331 | 404 | 1653 | 375 | 380 | 1128 | 872 | | 1750 | 2240 | | |
| Other fruits | 1823 | 1394 | 532 | 836 | 3027 | 362 | 3834 | 4188 | 3480 | 2107 | 1563 | 9359 | 8944 |

(Contd...)

| ...contd... | Almora | Bageshwar | Pithoragarh | Champawat | Pauri Garhwal | Tehri Garhwal | Chamoli | Rudrapurayag | Uttarkashi | Dehradun | Nainital | Haridwar | US Nagar |
|-------------------|--------|-----------|-------------|-----------|---------------|---------------|---------|--------------|------------|----------|----------|----------|----------|
| Vegetables | | | | | | | | | | | | | |
| Potato | 22201 | 20113 | 19176 | 17171 | 22350 | 27624 | 18350 | 16216 | 23768 | 25918 | 21377 | 25000 | 21565 |
| Peas | 2435 | 2601 | 2382 | 2854 | 618 | 497 | 5634 | 7288 | 6805 | 6712 | 5753 | 5000 | 7519 |
| French bean | 3998 | 3519 | 1616 | 2963 | 1422 | 498 | 5373 | 6809 | 9490 | 6219 | 5059 | 7000 | 7004 |
| Radish | 6106 | 7145 | 3257 | 9960 | 1405 | 500 | 7081 | 8478 | 10006 | 12252 | 20124 | 24989 | 24927 |
| Ladyfinger | 2627 | 1474 | 2125 | 4000 | 716 | 2686 | 3478 | 4551 | 25200 | 3328 | 3493 | 7011 | 4172 |
| Tomato | 6629 | 6500 | 5265 | 9842 | 21056 | 2960 | 8650 | 6909 | 25138 | 6014 | 18122 | 59688 | 35714 |
| Cabbage | 3342 | 3190 | 1560 | 9711 | 4242 | 1200 | 7249 | 7118 | 17902 | 7071 | 9665 | 41347 | 34171 |
| Onion | 2764 | 3058 | 1978 | 9984 | 786 | 5324 | 7167 | 7060 | 25077 | 8051 | 9570 | 10000 | 29000 |
| Cauliflower | 3131 | 3198 | 411 | 7871 | 13267 | 1069 | 6720 | 7200 | 10026 | 6353 | 9457 | 25000 | 18319 |
| Capsicum | 2718 | 2680 | 2550 | 1933 | 3000 | 6634 | 5070 | 7750 | 20106 | 5660 | 1719 | 5000 | 5000 |
| Brinjal | 1022 | 1102 | 838 | 9488 | 5429 | 6634 | 5422 | 6536 | 20106 | 5054 | 18287 | 14182 | 40429 |
| Other vegetables | 3866 | | 3074 | 3891 | 842 | 3084 | 1892 | 6872 | 5023 | | 4740 | 8708 | 15016 |
| Spices | | | | | | | | | | | | | |
| Chillies | 646 | 1026 | 318 | 4553 | 4000 | 1070 | 998 | 1298 | 9830 | 1600 | 1286 | 3000 | 1234 |
| Ginger | 3787 | 5172 | 20000 | 9579 | 17600 | 6689 | 10554 | 9084 | 20016 | 11201 | 13853 | 10000 | 8859 |
| Garlic | 1869 | 1560 | 4688 | 7625 | 5000 | 5834 | 4768 | 4447 | 75000 | 9179 | 14545 | 9000 | 6258 |
| Coriander | 1140 | 833 | 1901 | 4839 | 500 | 1250 | 1090 | 1010 | 13840 | 1483 | 5556 | 2000 | 34851 |
| Turmeric | 2098 | 5000 | 23469 | 8600 | 8000 | 4407 | 10347 | 9034 | 15200 | 3055 | 11957 | 10000 | 10010 |
| Methi | 1525 | 1615 | 336 | 7317 | 500 | 1286 | | | | 1270 | 2000 | 3000 | 3500 |
| Cardamom | 1000 | 333 | 2000 | 433 | 300 | 1031 | 410 | 560 | 1386 | 900 | 800 | | |
| Other spices | 1000 | 1000 | 1687 | 947 | | | 1200 | 1060 | | | 7931 | | 7250 |
| Floriculture | 1037 | 1045 | 1491 | 1201 | 1667 | 1353 | 1196 | 936 | 5192 | 1173 | 1202 | 1072 | 1235 |

Note: Area for fruits, vegetables, spices and flowers pertain to 2001/02.

Source: Information Compiled from the Directorate of Agriculture (area, production and yield of cereals, pulses and oilseeds) and the Directorate of Horticulture and Food Processing (fruits, vegetables, spices and floriculture).

Chapter 8

Industry



1. Introduction

Uttarakhand has a unique history of traditional and sunrise industries. The traditional industries include handicrafts, handloom, wool-based industry, and *khadi* and village industry and wax-based industry. The State Government of Uttarakhand, after it was carved out of Uttar Pradesh, identified certain industries, which had the potential to flourish and become competitive, and termed them as sunrise industries. These include biotechnology, information technology, agro-based and food processing industry, floriculture, industry-based on herbal and medicinal plants, tea industry, forest-based industry and recreational and entertainment industry. Special emphasis has been given to the State Industrial Policies to develop these industries with the intention of creating additional employment opportunities, increasing the state domestic product and eventual widening of the resource base of the state.

With its clean environment, proximity to the national capital, high literacy rate, concentration of high quality educational institutions and the presence of a large number of national institutions, Uttarakhand has the potential to develop as a major industrial state of the country.

Despite these favourable characteristics, the state is still economically backward which is evident from the fact that per capita income in Uttarakhand continues to lag behind all Indian average. Various factors have contributed to the economic backwardness of the state in the past, one of the foremost being slow industrial growth. After the formation of independent state, the growth in industrial sector has taken an upward trend

(Figure 8.1). However, the level of industrialisation continues to be far below that of its neighbouring state of Himachal Pradesh¹ and the all-India average. In case of India, industry sector's contribution has remained stagnant at around 21 to 23 per cent. One important point worth mentioning is that in 1993-94 and 1994-95, the share of industry sector in Uttarakhand was much higher than that in Himachal Pradesh; however, from 1995-96 the industry sector in Himachal Pradesh picked up while that of Uttarakhand started declining.

Despite impressive performance in overall industrial activities, Uttarakhand is still performing poorly in manufacturing sector. The percentage share of manufacturing sector in total GSDP (at constant price) for Uttarakhand over the period 1993/94 to 2003/04² has been computed and compared with Himalayan states like Himachal Pradesh and Assam (Figure 8.2). The percentage share of manufacturing GSDP in total real GSDP (at constant price) shows a declining trend during the period 1993-94 to 2003-04 and it is far below the all-India average and Himachal Pradesh. In fact, it is similar to that of Assam, which is one of the most economically backward states.

The Uttarakhand government has framed two industrial policies since its formation, one in 2001 and the other in 2003. The New Industrial Policy will remain in force for a period of five years. The thrust behind these policies was to identify the areas where the state has a comparative advantage *vis-à-vis* other states and to develop those in cooperation with the private sector.

The First Industrial Policy aimed at ensuring rapid, balanced and sustained industrial development. Special

1. Himachal Pradesh has been selected for comparison since it is also one of the Himalayan states neighbouring Uttarakhand.

2. 2001-02 is the latest year for which data pertaining to manufacturing GSDP and total GSDP for Uttarakhand is available.

FIGURE 8.1

Contribution of Industry to Gross State Domestic Product of Uttarakhand, Himachal Pradesh and India

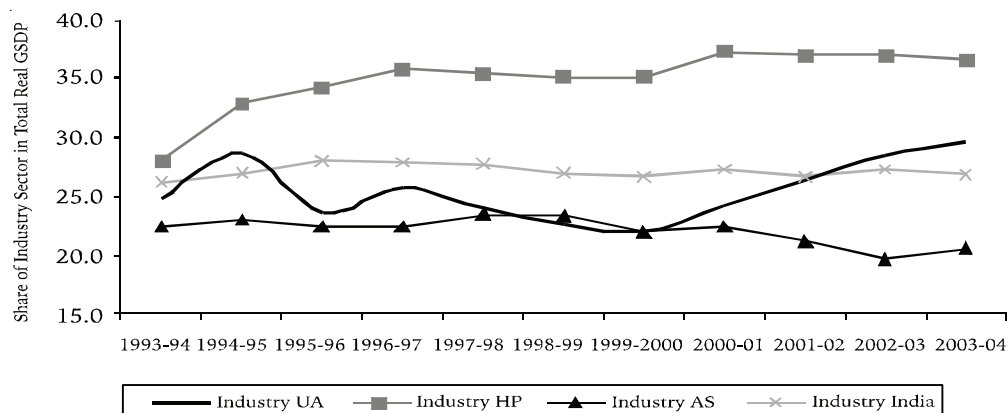
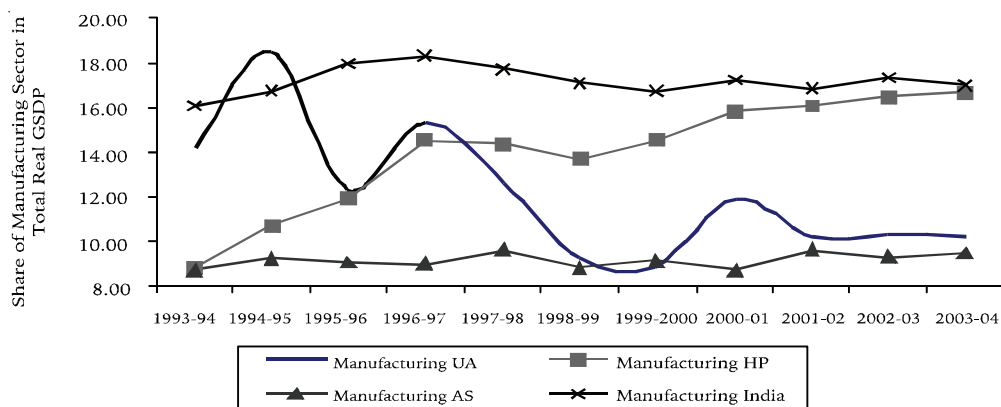


FIGURE 8.2

Contribution of Manufacturing Sector to GSDP of Uttarakhand, Himachal Pradesh and India



emphasis was paid to the revival and growth of traditional industries to ensure the economic development of remote and hilly areas of the state. Development of infrastructure enhanced private participation, human resource development, expansion of marketing facilities and protection of environment was identified as focus areas. This first ever policy for industrial development of this area, was the outcome of a consultative process involving industry associations, concerned government departments and organisations, and public representatives. Above all, this policy endeavoured to create an industry-friendly environment, with the state government playing the role of a facilitator in industrial development.

The New Industrial Policy of 2003 is based on the special package of incentives to promote industrial development. The stakeholders were consulted and

experiences from other states were factored into drafting the new policy. The Industrial Policy contains the vision for Uttarakhand, a set of fiscal and non-fiscal incentives³ and a number of institutional mechanisms for the development of industrial sector. In addition, sections on traditional and sunrise sectors also found place along with main features and opportunities in these sectors.

The major objectives of this chapter are to: (a) present an overview of both registered and unregistered manufacturing sectors of the state with respect to their performance and competitiveness and (b) analyse the inter-district variations in the availability of infrastructure facilities and socio-economic factors required for attracting industrial investment. Accordingly, the discussion is organised as follows: the following Section 2 presents an overview of manufacturing sector in the state. Section 3

3. The detailed vision and fiscal and non-fiscal incentives in the two Industrial Policies of Uttarakhand are given in Appendix A-8.1 and A-8.2.

takes account of industrial competitiveness of organised sector in the state. Section 4 discusses the problems and potential areas of Uttarakhand. The development strategies for industry are presented in Section 5.

2. An Overview of Industry in Uttarakhand

The total number of factories registered under the Act of 1948 was 698 in 2001-02. However, only 660 factories were operational employing 40,880 persons of which 27,317 were workers. These factories had a fixed capital of INR 1966 crore and generated output of INR 5214 crore. As a percentage of the all-India output, the contribution of Uttarakhand was only a minute 0.54 per cent and it contributes 0.56 per cent to the gross value added at the all-India level. Within Uttarakhand, most of the industrialisation has taken place in Udham Singh Nagar, Haridwar, Dehradun and Nainital. More than 75 per cent industrial outputs come from two districts of US Nagar and Haridwar. The contribution of unorganised manufacturing in the GSDP of Uttarakhand is just about two per cent,

which is one third of the level of the contribution of this sector at all-India level. Box 8.1 summarises the key features of the two sectors in Uttarakhand.

The pattern of the comparative advantage across sector indicate that Uttarakhand has only two sectors, namely food products and beverages (15) and wood and wood products (20), where both organised as well as unorganised sectors reveal comparative advantage. However, there is a large segment of sectors revealing comparative advantage under unorganised sector.

2.1 Registered Manufacturing Sector

In this section, the data for the registered manufacturing sector at 3-digit level of NIC-98 is collated from various issues of Annual Survey of Industries (ASI). These industries are registered under section 2m(i) and 2m(ii) of the Factories Act, 1948. Only unmerged sectors that are common in 2001-02 and 2002-03 have been considered for analysis since it is difficult to compare the merged⁴ sectors across time.

BOX 8.1

Key Features of Uttarakhand's Registered and Unregistered Manufacturing Sectors

| <i>Registered Manufacturing</i> | | <i>Unregistered Manufacturing</i> | |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Participation | 78 per cent (in two digit sectors), which constitute about 72 per cent of the factory operations in India. | High labour intensive | Larger number of units and labour as compared to Himachal Pradesh (HP). |
| Contribution in output | About 0.73 per cent. | Low wage rates | Average emolument is almost half of what is obtained in HP. |
| Comparative advantage | Competitive advantage in output <i>vis-à-vis</i> the national average with respect to thirteen registered manufacturing sectors at the 3-digit level. | Financial resources | Reliance more on own financial resources as compared to other parts of the country. About 78 per cent. |
| | | Contribution in output comparative advantage | At two digits level five groups reveal competitive advantage but the scale of operation is small. |
| Penetration (presence) | Presence in only 8 districts out of 13 districts. Low penetration in the districts of Tehri Garhwal, Pauri Garhwal, Almora and Champawat with low basic and total employment and very high district population to basic employment (and total employment) ratio. | Penetration (presence) | Presence in all the 13 districts. High penetration districts. High penetration with high basic and total employment figures and a reasonably low district population to basic employment (and total employment) ratio. |

4. Merged industries are those which are combined with the other industries.

According to this criterion, a total of 27 sectors (3-digit NIC-98) have become eligible for the review. The competitiveness at the state level has been measured in terms of output specialisation and at the district level through labour specialisation. In addition, a brief description of the sectors with regard to number of operating factories, employment and investment in fixed capital has been presented to have a better understanding of the sectors.

In 14 out of 27 sectors of the registered manufacturing sectors the number of factories was found to be below 10. In 8 sectors, the number of factories lies between 20 to 60. The sector 153 (grain mill products, starches and starch products and prepared animal feeds) has the largest number of factories (220 in 2002-03) and these units are concentrated in Udham Singh Nagar district. Similarly, the sector 269 (non-metallic mineral products) has the second largest number of factories (53). The remaining three sectors i.e., 210 (paper and paper products), 242 (other chemical products), and 154 (other food products), reported number of factories being 34, 30 and 26 respectively (See Table 8.1).

2.1.1 Labour Intensity of Sectors

With respect to employment, in 17 out of 27 sectors, the average number of workers⁵ per factory is less than 50. There is only one very large sector where the average number of workers per factory is more than 200. In five sectors, the average number of workers per factory is between 100 and 200. The sector 333 (watches and clocks) is the most labour-intensive sector. It has the largest number of workers per factory in both the years, being 244 workers per factory in 2001-02, which decreased marginally to 235 in 2002-03. The most noticeable change in employment is observed in sector 171 (spinning, weaving and finishing of textiles) sector, which has experienced a drastic reduction in workers per factory from 127 workers per factory in 2001-02 to 27 in 2002-03. The downsizing of workers could be due to the loss-making status of the sector. In the remaining three sectors, i.e., 273 (casting of metals), 261 (glass and glass products) and 111 (paper and paper products), the number of workers is 179, 158 and 111 respectively.

2.1.2 Capital Intensity

The most capital-intensive registered manufacturing sector (measured through fixed capital⁶ per factory) in

Uttarakhand is sector 252 (plastic products) followed by paper and paper product (210) and 242 (other chemical products). The least capital-intensive sector is 361 (furniture) in 2001-02 and 201 (saw milling and planing of wood) in 2002-03. Majority of the sectors has suffered a decline in the fixed capital per factory in 2002-03 compared to 2001-02. The decline is marginal in some sectors and substantial in others. Few sectors that have experienced a rise in investment of fixed capital are 154 (other food products), 151 (production, processing and preservation of meat, fish, fruit, vegetables, oils and fats), 221 (publishing), 241 (basic chemicals), 289 (other fabricated metal products, metal working service activities), and 315 (electric lamps and lighting equipment). Top five registered manufacturing sectors identified, (based on 2002-03 data), with respect to number of operating factories, employment and fixed capital investment is presented in Table 8.1.

It may be mentioned that sector 210 (paper and paper product) has appeared in the list of top 5 sectors in all the three list of indicators (number of factories, number of workers per factory and fixed capital per factory) with 3rd, 5th and 2nd place in the list respectively. Sector 242 (other chemical products) has appeared at two places i.e., in respect of number of factories and fixed capital per factory with a rank of 4th and 3rd respectively. Similarly, sector 154 has also appeared at two places, in the list of number of factories and number of workers per factory with 5th and 2nd place respectively.

2.1.3 Partial Labour Productivity

The partial labour productivity of the registered manufacturing sectors in Uttarakhand has been looked into in terms of: (i) gross value added per worker and (ii) 'wages per worker'. The distribution of the sectors by gross value added per worker and wages per worker during 2001-02 and 2002-03 is presented below.

In both the years 2001-02 and 2002-03 maximum number of sectors (13 out of 27) have gross value added per worker below INR 2 lakh (see Table 8.2). There was only one sector with gross value added per worker above INR 12 lakh in 2001-02, which increased to three in 2002-03. In addition, there was a rise in the number of sectors with gross value added per worker between INR 6 lakh and INR 12 lakh from 3 in 2001-02 to 6 in the following year (Table 8.2).

5. Workers include all persons employed directly or through any agency whether for wages or not and engaged in any manufacturing process or in cleaning any part of the machinery or premises used for manufacturing process or in any other kind of work incidental to or connected with the manufacturing process or subject of the manufacturing process. It does not include managers and supervisors.

6. Fixed capital represents the depreciated value of fixed assets owned by the factory as on the closing day of the accounting year.

TABLE 8.1
Top Five Registered Manufacturing Sectors based on Number of Factories, Employment and Fixed Capital Investment

| Sector | Number of Factories | Sector | Number of Workers Per Factory | Sector | Fixed Capital per Factory (INR Lakh) |
|--------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------|-------------------------------|-----------------------------------------------|--------------------------------------|
| Manufacture of grain mill products, starches and starch products and prepared animal feeds (153) | 220 | Manufacture of watches and clocks (333) | 235 | Manufacture of plastic products (252) | 2100.14 |
| Manufacture of non-metallic mineral products n.e.c. (269) | 53 | Manufacture of other food products (154) | 181 | Manufacture of paper and paper product (210) | 1903.79 |
| Manufacture of paper and paper product (210) | 34 | Casting of metals (273) | 179 | Manufacture of other chemical products (242) | 971.07 |
| Manufacture of other chemical products (242) | 30 | Manufacture of glass and glass products (261) | 158 | Manufacture of glass and glass products (261) | 735.50 |
| Manufacture of other food products (154) | 26 | Manufacture of paper and paper product (210) | 111 | Manufacture of other food products (154) | 671.92 |

Source: Computed from *Annual Survey of Industries 2001-02 & 2002-03*.

TABLE 8.2

Distribution of Registered Manufacturing Sectors according to Gross Value Added per Worker

| Range-Gross Value Added Per Worker in INR Lakh. | Number of Sectors | |
|-------------------------------------------------|-------------------|---------|
| | 2001-02 | 2002-03 |
| Above 12 | 1 | 3 |
| 6-12 | 3 | 6 |
| 2-6 | 10 | 5 |
| Below 2 | 13 | 13 |

Source: Computed from *Annual Survey of Industries 2001-02 & 2002-03*.

As regards wages per worker, there were only two sectors in 2001-02 and 2002-03 with wages per worker above INR 1 lakh. In 13 out of 27 sectors, 'wages per worker' ranges between INR 50000 to INR 1 lakh during 2002-03 (Table 8.3).

The sector 252 (plastic products) has the highest labour productivity measured in terms of 'gross value added per worker' in both the years (Table 8.4). The minimum labour productivity is witnessed in sector 261(glass and glass products) in 2001-02 and 281(structural metal products, tanks, reservoirs and steam generators) in 2002-03. In fact, 261 (glass and glass products) was the only sector with a negative gross value added in 2001-02. A negative gross value added implies that the sector's intermediate consumption was greater than its value of output.

TABLE 8.3

Distribution of Registered Manufacturing Sectors according to Wages per Worker

| Range-Wages Per | Number of Sectors Worker in INR Lakh | |
|-----------------|--------------------------------------|---------|
| | 2001-02 | 2002-03 |
| Above 1.0 | 2 | 2 |
| 0.5-1.0 | 11 | 13 |
| 0.3-0.5 | 11 | 9 |
| Below 0.3 | 3 | 3 |

Source: Computed from *Annual Survey of Industries 2001-02 & 2002-03*.

The two-year period witnessed some changes in the labour productivity across sectors. Twenty out of the twenty-seven sectors experienced a rise in labour productivity in 2002-03 compared to 2001-02. On the other hand, seven sectors experienced a decline in labour productivity, the maximum decline was recorded in sector 241(basic chemicals) and the minimum was in 153(grain mill products, starches and starch products and prepared animal feeds).

Out of 27 sectors, 18 sectors experienced a rise in 'wages per worker' with sector 221 (publishing) recording the highest increase of about 35 per cent in 2002-03 over 2001-02. Nine sectors reported a decline in 'wages per worker'. The decrease was maximum (23 per cent) in 222 (printing and service activities related to printing) (Table 8.4).

After examining the status of the registered manufacturing sectors in terms of labour productivity and wages per worker, the relationship between the two has been gauged through correlation coefficients. In the years 2001-02 and 2002-03, wages and productivity have shown a weak but positive correlation. The correlation coefficients

between 'wages per worker' and 'gross value added per worker' are 0.32 in 2001-02 and 0.37 in 2002-03.

Out of the list of 27 sectors presented in Table 8.4, the top five registered manufacturing sectors (based on 2002-2003 data) with respect to partial labour productivity and 'wages per worker' is presented in Table 8.5.

TABLE 8.4
Labour Productivity and Wages: Registered Manufacturing Sector

| Sector Codes | Sector Names | Gross Value Added Per Worker (INR Lakh) | | Wages Per Worker (INR Lakh) | |
|--------------|---------------------------------------------------------------------------------------------|-----------------------------------------|---------|-----------------------------|---------|
| | | 2001-02 | 2002-03 | 2001-02 | 2002-03 |
| 252 | Manufacture of plastic products | 13.97 | 20.73 | 0.78 | 0.81 |
| 311 | Manufacture of electric motors, generators and transformers | 5.71 | 12.63 | 0.60 | 0.66 |
| 242 | Manufacture of other chemical products | 8.15 | 12.58 | 0.57 | 0.72 |
| 222 | Printing and service activities related to printing | 8.33 | 8.65 | 0.73 | 0.56 |
| 333 | Manufacture of watches and clocks | 4.70 | 8.59 | 1.17 | 1.25 |
| 151 | Production, processing and preservation of meat, fish, fruit vegetables, oils and fats. | 3.15 | 8.06 | 0.34 | 0.38 |
| 155 | Manufacture of beverages | 6.37 | 6.70 | 0.38 | 0.48 |
| 221 | Publishing | 4.16 | 6.33 | 0.44 | 0.60 |
| 315 | Manufacture of electric lamps and lighting equipment | 5.35 | 6.08 | 0.65 | 0.74 |
| 210 | Manufacture of paper and paper product | 4.39 | 5.31 | 0.72 | 0.68 |
| 273 | Casting of metals | 3.45 | 5.11 | 1.71 | 1.79 |
| 369 | Manufacturing n.e.c. | 3.94 | 3.11 | 0.31 | 0.30 |
| 181 | Manufacture of wearing apparel, except fur apparel | 1.95 | 2.19 | 0.34 | 0.35 |
| 152 | Manufacture of dairy product | 3.99 | 2.13 | 0.64 | 0.53 |
| 154 | Manufacture of other food products | 2.26 | 1.88 | 0.67 | 0.62 |
| 251 | Manufacture of rubber products | 1.48 | 1.66 | 0.45 | 0.53 |
| 201 | Saw milling and planing of wood | 1.10 | 1.50 | 0.58 | 0.65 |
| 153 | Manufacture of grain mill products, starches and starch products, and prepared animal feeds | 1.48 | 1.39 | 0.33 | 0.31 |
| 202 | Manufacture of products of wood, cork, straw and plaiting materials | 0.93 | 1.24 | 0.28 | 0.28 |
| 261 | Manufacture of glass and glass products | -0.35 | 1.23 | 0.70 | 0.88 |
| 361 | Manufacture of furniture | 0.77 | 1.21 | 0.27 | 0.28 |
| 289 | Manufacture of other fabricated metal products; metal working service activities | 0.88 | 1.15 | 0.33 | 0.35 |
| 269 | Manufacture of non-metallic mineral products n.e.c. | 1.13 | 1.13 | 0.33 | 0.33 |
| 271 | Manufacture of basic iron & steel | 1.15 | 1.04 | 0.34 | 0.38 |
| 171 | Spinning, weaving and finishing of textiles. | 0.38 | 0.92 | 0.34 | 0.34 |
| 241 | Manufacture of basic chemicals | 1.39 | 0.73 | 0.60 | 0.50 |
| 281 | Manufacture of structural metal products, tanks, reservoirs and steam generators | 0.64 | 0.51 | 0.28 | 0.29 |

Source: Computed from Annual Survey of Industries 2001-02 & 2002-03.

TABLE 8.5
Top Five Registered Manufacturing Sectors—Labour Productivity and Wages

| Sector Code | Gross Value Added per Worker (INR Lakh) | Sector Code | Wages per Worker (INR Lakh) |
|-------------------------------------------------------------------|-----------------------------------------|------------------------------------------------------------|-----------------------------|
| Manufacture of plastic products (252) | 20.73 | Casting of metals (273) | 1.79 |
| Manufacture of electric motors, generators and transformers (311) | 12.63 | Manufacture of watches and clocks (333) | 1.25 |
| Manufacture of other chemical products (242) | 12.58 | Manufacture of glass and glass products (261) | 0.88 |
| Printing and service activities related to printing (222) | 8.65 | Manufacture of plastic products (252) | 0.81 |
| Manufacture of watches and clocks (333) | 8.59 | Manufacture of electric lamps and lighting equipment (315) | 0.74 |

Source: Computed from Annual Survey of Industries 2001-02 & 2002-03.

It may be observed from Table 8.5 that there is only one sector, 333 (watches and clocks) that is appearing in the list of top five sectors in respect of both labour productivity and wages per worker.

2.1.4 Profitability

The ratio of profit⁷ to total output⁸ has been considered as an indicator of profitability, which shows the return on total output in Table 8.6.

During 2001-02, 18 out of 27 (more than 50 per cent) sectors recorded losses. However, in 2002-03, there is a perceptible change in the situation in respect of profitability. Five sectors switched over to 'above 20 per

| Range-Profit by Total Output (Per cent) | Number of Sectors | |
|-----------------------------------------|-------------------|---------|
| | 2001-02 | 2002-03 |
| Above 20 | 2 | 7 |
| 10-20 | 6 | 2 |
| 5-10 | 1 | 3 |
| 0-5 | 9 | 7 |
| Below 0 | 9 | 8 |

Source: Computed from Annual Survey of Industries 2001-02 & 2002-03.

TABLE 8.7
Profit by Total Output: Registered Manufacturing Sector

| Sector Codes | Sector Names | Profit by Total Output (per cent) | |
|--------------|---------------------------------------------------------------------------------------------|-----------------------------------|---------|
| | | 2001-02 | 2002-03 |
| 222 | Printing and service activities related to printing | 60.91 | 69.98 |
| 369 | Manufacturing n.e.c. | 42.41 | 36.48 |
| 333 | Manufacture of watches and clocks | 12.16 | 35.88 |
| 311 | Manufacture of electric motors, generators and transformers | 14.37 | 30.78 |
| 221 | Publishing | 15.16 | 24.28 |
| 252 | Manufacture of plastic products | 5.05 | 20.35 |
| 315 | Manufacture of electric lamps and lighting equipment | 16.03 | 20.07 |
| 155 | Manufacture of beverages | 19.53 | 17.46 |
| 242 | Manufacture of other chemical products | 14.84 | 11.96 |
| 361 | Manufacture of furniture | 0.00 | 8.56 |
| 151 | Production, processing and preservation of meat, fish, fruit vegetables, oils and fats. | 1.83 | 6.84 |
| 201 | Saw milling and planing of wood | 1.48 | 5.37 |
| 210 | Manufacture of paper and paper product | -2.13 | 4.22 |
| 202 | Manufacture of products of wood, cork, straw and plaiting materials | 1.11 | 3.92 |
| 181 | Manufacture of wearing apparel, except fur apparel | 3.35 | 3.75 |
| 251 | Manufacture of rubber products | 1.60 | 3.64 |
| 269 | Manufacture of non-metallic mineral products n.e.c. | 0.52 | 2.90 |
| 153 | Manufacture of grain mill products, starches and starch products, and prepared animal feeds | -0.51 | 0.81 |
| 289 | Manufacture of other fabricated metal products; metal working service activities | -4.56 | 0.28 |
| 271 | Manufacture of basic iron & steel | -1.59 | -1.23 |
| 152 | Manufacture of dairy product | 2.54 | -1.78 |
| 281 | Manufacture of structural metal products, tanks, reservoirs and steam generators | 3.15 | -1.88 |
| 171 | Spinning, weaving and finishing of textiles. | -40.88 | -5.02 |
| 273 | Casting of metals | -17.71 | -6.82 |
| 261 | Manufacture of glass and glass products | -32.01 | -7.86 |
| 241 | Manufacture of basic chemicals | -7.55 | -19.23 |
| 154 | Manufacture of other food products | -5.97 | -31.11 |

Source: Computed from Annual Survey of Industries 2001-02 & 2002-03.

7. Profit is calculated by deducting total emoluments from net income.

8. Total output comprises of total ex-factory value of products and by-products manufactured as well as other receipts from non-industrial services rendered to others, work done for others on material supplied by them, value of electricity produced and sold, sale value of goods sold in the same conditions purchased, addition in stock of semi-finished goods and value of own construction.

cent' category increasing the number of sectors from 2 in 2001-02 to 7 in 2002-03. However, still majority of sectors incurred losses or earning profit between 0-5 per cent. The sector-wise details of profitability are presented in Table 8.7 and Table 8.8.

TABLE 8.8

Top Five Registered Manufacturing Sectors: Profitability

| <i>Sector Code</i> | <i>Profit by Total Output (per cent)</i> |
|-------------------------------------------------------------------|----------------------------------------------|
| Printing and service activities related to printing (222) | 69.98 |
| Manufacturing n.e.c. (369) | 36.48 |
| Manufacture of watches and clocks (333) | 35.88 |
| Manufacture of electric motors, generators and transformers (311) | 30.78 |
| Publishing (221) | 24.28 |

Source: Computed from *Annual Survey of Industries* 2001-02 & 2002-03.

Out of 27 sectors, 9 sectors had incurred losses in 2001-02, which came down to 8 in 2002-03. However sector 289 (other fabricated metal products, metal working service activities); 153 (grain mill products, starches and starch products and prepared animal feeds) and 210 (paper and paper product) managed to recover themselves from losses and had reported profit in 2002-2003. In 2001-02 and 2002-03, sector 222 (printing and service activities related to printing) had the maximum profitability of more than 60 per cent. Sector 171 (spinning, weaving and finishing of textiles) had reported the maximum loss per unit of output in 2001-02, while in 2002-03 'other food products' (154) comprising mainly of factories manufacturing and refining sugar had incurred maximum loss per unit of output.

It seems that these loss-making firms are surviving since they are able to recover their variable costs. However, this is only a short-term phenomenon since in the long run, retention and distribution of a portion of profits are important criteria for survival of firms.

2.1.5 District Level Specialisation

In this section, economic base technique has been used for regional analysis of district level specialisation. The analysis is grounded on the assumption that the local economy can be divided into two very general sectors: (a) a basic (or non-local) sector, and (b) a non-basic (or local) sector. Basic sector is made up of local firms that are entirely dependent upon external factors and do not sell their products to local markets but export their goods. The non-basic sector, in contrast, is composed of firms

that depend largely on local business conditions and sell their goods to local economy.

Firms that sell to both local and an export market must, therefore, be assigned to one of these sectors or there should be some techniques to apportion their employment to each of these two sectors. The theory asserts that basic sectors lead to regional growth and economic development and it is the strongest when it develops these sectors, which are not closely tied to the local economy. The local economy can better insulate itself from economic downturns since it is possible that the external markets will remain strong even if the local economy experiences problems. (Refer Appendix A-8.3 for the model.)

With this theoretical background, the basic industries in the registered manufacturing sector have been identified and basic employment in these industries with respect to each district have been estimated. In addition, the two ratios, viz.: (a) district population to basic employment in the registered manufacturing sector, and (b) district population to total employment in the registered manufacturing sector have been calculated to find out the number of people supported by every member of the labour force including himself/herself. Hence, a lower ratio of district population to basic employment is warranted. In this context it may be said that higher specialisation (i.e., higher LQ) leads to higher basic employment and in turn would lower the ratio of district population to basic employment.

For the registered manufacturing sectors, we have collated data from the ASI unit level database for the year 2002-03 has been collected. In this analysis, the specialisation (as indicated through LQ) of registered manufacturing sectors in a particular district implies sectors' specialisation *vis-à-vis* other registered manufacturing sectors in the state.

It is evident from Table 8.9 that registered manufacturing sectors are distributed among only 8 districts out of 13 districts in Uttarakhand. The penetration of registered manufacturing sector is very low in the districts of Tehri Garhwal, Pauri Garhwal, Almora and Champawat and this is reflected in the low basic and total employment figures and a very high district population to basic employment (and total employment) ratio. However, it has to be borne in mind that the information presented in Table 8.9 relates to only registered manufacturing sector and thus reveals a partial picture of the districts with respect to employment and district population to basic employment (and total

TABLE 8.9
District-wise Basic Industries in Registered Manufacturing Sector (2002-03)

| <i>District</i> | <i>Basic Sector Codes</i> | <i>Total Employment in the Registered Manufacturing</i> | <i>Basic Employment in the Registered Manufacturing Sector (Nos.)</i> | <i>District Population to Basic Employment Sector (Nos.)</i> | <i>District Population to Total Employment</i> |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------|
| Tehri Garhwal | 201 (31.08); 221 (12.14); 222 (51.01); 261 (1.11); 271 (6.87); 289 (2.85); 315 (1.38); 323 (54.06); 343 (25.23) | 492 | 381 | 1644 | 1273 |
| Dehradun | 152 (1.20); 171 (1.05); 181 (4.68); 191 (5.51); 221 (3.60); 241 (4.13); 242 (2.61); 261 (5.24); 281 (5.18); 289 (2.50); 292 (3.70); 311 (3.66); 315 (1.50); 332 (2.89); 359 (5.51); 369 (4.54) | 4825 | 2250 | 590 | 275 |
| Pauri Garhwal | 152 (7.24); 192 (55.53); 202 (1.14); 271 (3.25); 289 (1.46); 322 (55.53); 361 (10.63) | 479 | 418 | 1728 | 1508 |
| Almora | 152 (31.98); 171 (8.65); 242 (7.95); 269 (7.12) | 264 | 236 | 2768 | 2474 |
| Nainital | 152 (1.62); 160 (5.65); 201 (2.40); 202 (1.21); 210 (3.60); 269 (4.06); 333 (4.72); 361 (3.97); | 4704 | 3126 | 253 | 168 |
| Haridwar | 154 (1.19); 172 (4.37); 173 (4.37); 271 (2.87); 291 (4.37); 312 (3.83); 319 (2.28); 331 (4.37); 332 (2.08); 352 (4.37) | 6082 | 3451 | 434 | 246 |
| Udham Singh Nagar | 151 (2.17); 153 (2.42); 154 (1.50); 155 (2.42); 171 (1.63); 202 (1.71); 232 (2.74); 251 (2.06); 252 (2.68); 289 (1.20); 314 (2.74); 315 (1.92); 319 (1.04); 321 (1.97); 343 (1.46); 372 (2.74) | 9715 | 3703 | 346 | 132 |
| Champurawat | 241 (81.96) | 36 | 36 | 6461 | 6461 |

Note: 1. The figures in the parenthesis represent LQ.

2. Uttarkashi, Chamoli, Rudraprayag, Bageshwar and Pithoragarh have not been considered for the above analysis since there is hardly any registered sector in these districts.

3. For sector codes, refer to Appendix A-8.4.

Source: Computed from *Annual Survey of Industries 2002-03*.

employment) ratio. A similar discussion on unregistered manufacturing sector has been made in Section 3 and this together with the analysis pertaining to the registered manufacturing sector would give us the actual status of districts of Uttarakhand with respect to employment and district population to basic employment (and total employment) ratio.

The basic employment in the registered manufacturing sector is the largest in Udham Singh Nagar closely followed by Haridwar and Nainital. Dehradun has also a relatively high number of basic employment. By and large, all the districts of Uttarakhand have a high district population to basic employment ratio. It would be prudent for the government to encourage the basic industries identified in each district (mainly districts other than Udham Singh Nagar, Haridwar, Nainital and Dehradun) to grow. The growth in basic industries is likely to generate more basic employment, which would ultimately reduce the dependence of district population on basic employment.

2.2 Unregistered Manufacturing Sector

In this section, similar to the review of the registered manufacturing sector, an attempt has been made to assess the status of the industries in the unregistered sector of the state in terms of their partial labour productivity, profitability and competitiveness at the district level with the help of labour specialisation (same methodology as adopted in the case of registered manufacturing sector). In addition, a brief description of the sectors with regard to number of operating factories, employment and investment in fixed capital has been presented to have a better understanding of the sectors.

The source of the data is NSSO Survey on Unorganised Manufacturing (56th round), 2000-01. Out of total 43 unregistered sectors in Uttarakhand the status of top 10 sectors have been taken up for analysis. The complete list of sectors with their performance indicators has been presented in Appendix A-8.4.

In Uttarakhand, 17 out of 43 unregistered manufacturing sectors have a number of operating

factories below 100. On the other hand, in 13 sectors the number of factories is more than 1000. Table 8.10 shows the top ten unregistered manufacturing sectors in 2000-01 in terms of number of factories.

TABLE 8.10
Top Ten Unregistered Manufacturing Sectors:
Number of Factories

| Sector Code | Sector Names | Number of Factories |
|-------------|---------------------------------------------------------------------------------------------|---------------------|
| 202 | Manufacture of products of wood, cork, straw and plaiting materials | 24109 |
| 181 | Manufacture of wearing apparel, except fur apparel | 22674 |
| 153 | Manufacture of grain mill products, starches and starch products, and prepared animal feeds | 18874 |
| 172 | Manufacture of other textiles | 16181 |
| 281 | Manufacture of structural metal products, tanks, reservoirs and steam generators | 5747 |
| 160 | Manufacture of tobacco products | 4459 |
| 371 | Recycling of metal waste and scrap | 4221 |
| 154 | Manufacture of other food products | 4083 |
| 289 | Manufacture of other fabricated metal products; metal working service activities | 3696 |
| 269 | Manufacture of non-metallic mineral products n.e.c. | 3608 |

Source: Computed from NSSO Survey on Unorganised Manufacturing (56th round), 2000-01.

The sector 202 (products of wood, cork, straw and plaiting materials) is the largest with 24109, while sector 269 (non-metallic mineral products) is the smallest with 3608 factories.

26 out of 43 sectors in the state, have average number of workers per factory between 2 and 5. It is also observed that majority of the unregistered manufacturing sectors (22 out of 43 sectors) has fixed capital investment, below INR 1 lakh.

For better understanding, we have also listed below the top ten sectors in terms of 'fixed capital per factory' and 'workers per factory'.

Table 8.11 reveals that sector 232 (refined petroleum products) is the largest sector in terms of 'fixed capital per factory' and 'workers per factory'. The sector 173 (knitted and crocheted fabrics and articles) has the lowest 'fixed capital per factory' among the top ten sectors. This sector has also figured in among the top ten sectors in terms of workers per factory.

2.2.1 Profitability and Productivity Analysis

The profitability of the sectors has been measured by the ratio 'profit to total output'. 'Gross value added per worker' has been used as a measure of labour productivity. Table 8.12 indicates the distribution of sectors according to gross value added per worker and profit to total output.

TABLE 8.11
Top Ten Unregistered Manufacturing Sectors: Fixed Capital and Employment

| Sector Code | Sector Names | Fixed Capital per Factory | Sector Code (INR Lakh) | Sectors | Workers per Factory |
|-------------|---------------------------------------------------------------------------|---------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| 232 | Manufacture of refined petroleum products | 22.55 | 232 | Manufacture of refined petroleum products | 8 |
| 251 | Manufacture of rubber products | 19.20 | 251 | Manufacture of rubber products | 7 |
| 291 | Manufacture of general purpose machinery | 18.37 | 342 | Manufacture of bodies (coach work) for motor vehicles; manufacture of trailers and semi-trailers | 7 |
| 241 | Manufacture of basic chemicals | 13.96 | 292 | Manufacture of special purpose machinery | 6 |
| 221 | Publishing | 7.51 | 331 | Manufacture of medical appliances and instruments and appliances for measuring, checking, testing, navigating and other purposes except optical instruments | 6 |
| 300 | Manufacture of office, accounting and computing machinery | 4.15 | 241 | Manufacture of basic chemicals | 6 |
| 292 | Manufacture of special purpose machinery | 4.06 | 173 | Manufacture of knitted and crocheted fabrics and articles | 6 |
| 343 | Manufacture of parts and accessories for motor vehicles and their engines | 3.50 | 231 | Manufacture of coke oven products | 5 |
| 231 | Manufacture of coke oven products | 3.43 | 321 | Manufacture of electronic valves and tubes and other electronic components | 5 |
| 173 | Manufacture of knitted and crocheted fabrics and articles | 2.73 | 315 | Manufacture of electric lamps and lighting equipment | 5 |

Source: Computed from NSSO Survey on Unorganised Manufacturing (56th round), 2000-01.

TABLE 8.12

Distribution of Unregistered Manufacturing Sectors by Gross Value Added per Worker and Profit to Total Output

| Range- Gross value Added per Worker (INR Lakh) | Number of Sectors | Range- Profit to Total Output (per cent) | Number of Sectors |
|------------------------------------------------|-------------------|------------------------------------------|-------------------|
| Above 1 | 1 | Above 50 | 6 |
| 0.5-1 | 4 | 30-50 | 9 |
| 0.1-0.5 | 32 | 15-30 | 16 |
| Below 0.1 | 6 | 10-15 | 4 |
| | | Below 10 | 8 |

Source: Computed from NSSO Survey on Unorganised Manufacturing (56th round), 2000-01.

There are 32 sectors (out of a total of 43) whose 'gross value added per worker' is between INR 10000 and INR 50000. The number of sectors in other ranges is comparatively very less. Only one sector has gross value added per worker above INR 1 lakh. With respect to profitability, maximum numbers of unregistered sectors (16) report a profitability ratio between 15 per cent to 30 per cent.

Table 8.13 indicates the top ten sectors in terms of profitability and labour productivity.

The sector 'tobacco products' (160) has the highest profit per unit of output closely followed by 'non-metal

waste and scrap' (372). Maximum labour productivity has been observed in 'basic chemicals' (241) and it is substantially higher than rest of the top 10 sectors. We also notice that there is only one sector 'electricity distribution and control apparatus' (312), which is among the top rankers with regard to both profitability and labour productivity.

2.2.2 District Level Specialisation

With the same theoretical background as spelt out in section 2.4, we have identified the basic industries in the unregistered manufacturing sector and estimated basic employment in these industries with respect to each district. In addition, the two ratios, viz.: (a) district population to basic employment in the unregistered manufacturing sector, and (b) district population to total employment in the unregistered manufacturing sector have been calculated. As mentioned earlier, a lower ratio of district population to basic employment is warranted. In this context it may be said that higher specialisation (i.e., higher LQ) leads to higher basic employment and which in turn, would lower the ratio of district population to basic employment.

In this analysis, the specialisation (as indicated through LQ) of unregistered manufacturing sectors in a particular district implies sectors' specialisation *vis-à-vis* other unregistered manufacturing sectors in the state.

TABLE 8.13

Top Ten Unregistered Manufacturing Sectors: Profitability and Labour Productivity

| Sector Code | Sector | Profit by Total Output | Sector Code (per cent) | Sectors | GVA per Worker (INR Lakh) |
|-------------|--------------------------------------------------------------------------------------------------|------------------------|------------------------|---------------------------------------------------------------------------|---------------------------|
| 160 | Manufacture of tobacco products | 80.86 | 241 | Manufacture of basic chemicals | 3.70 |
| 372 | Recycling of non-metal waste and scrap | 80.36 | 221 | Publishing | 0.83 |
| 371 | Recycling of metal waste and scrap | 63.17 | 252 | Manufacture of plastic products | 0.68 |
| 319 | Manufacture of other electrical equipment n.e.c. | 55.93 | 312 | Manufacture of electricity distribution and control apparatus | 0.59 |
| 342 | Manufacture of bodies (coach work) for motor vehicles; manufacture of trailers and semi-trailers | 53.33 | 292 | Manufacture of special purpose machinery | 0.52 |
| 172 | Manufacture of other textiles | 52.61 | 311 | Manufacture of electric motors, generators and transformers | 0.45 |
| 181 | Manufacture of wearing apparel, except fur apparel | 46.59 | 251 | Manufacture of rubber products | 0.43 |
| 312 | Manufacture of electricity distribution and control apparatus | 42.57 | 343 | Manufacture of parts and accessories for motor vehicles and their engines | 0.40 |
| 321 | Manufacture of electronic valves and tubes and other electronic components | 40.00 | 173 | Manufacture of knitted and crocheted fabrics and articles | 0.38 |
| 153 | Manufacture of grain mill products, starches and starch products, and prepared animal feeds | 39.10 | 291 | Manufacture of general purpose machinery | 0.36 |

Source: Computed from NSSO Survey on Unorganised Manufacturing (56th round), 2000-01.

Table 8.14 presents the basic unregistered manufacturing industries, basic employment and the ratios of district population to basic employment and district population to total employment with respect to each district of Uttarakhand.

It is seen that all the 13 districts report presence of unregistered manufacturing sector. The penetration of unregistered manufacturing sectors in all the districts of Uttarakhand is quite high and this is reflected in the high basic and total employment figures and a reasonably low district population to basic employment (and total employment) ratio. In fact, the districts where the penetration of registered manufacturing sectors is nil or abysmally low, the unregistered manufacturing sector is driving the economy.

Haridwar has reported the largest basic employment in the unregistered manufacturing sector (see Table 8.14). It is worth mentioning that Pithoragarh, where there is negligible number of registered manufacturing sectors, has a substantially large number of basic employment in the unregistered manufacturing sector. Even districts like Uttarkashi, Chamoli, Bageshwar and Rudraprayag reveal a similar phenomenon.

As mentioned earlier, in order to get a holistic view of the districts of Uttarakhand with respect to total manufacturing sector employment, we have combined the information of the registered and unregistered manufacturing sectors. However, it has to be kept in mind that the discussions pertaining to registered and unregistered sectors do not correspond to the same year.

TABLE 8.14
Basic Industries in Unregistered Manufacturing Sector in 2000-01

| District | Basic Sector Codes | Total Employment in the Unregistered Manufacturing | Basic Employment in the Unregistered Manufacturing Sector (Nos.) | District Population to Basic Employment Sector (Nos.) | District Population to Total Employment |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------|-----------------------------------------|
| Uttarkashi | 173 (1.10); 181 (3.37); 201 (7.09); 202 (2.15); 369 (6.44) | 5089 | 3128 | 94 | 58 |
| Chamoli | 151 (14.39); 153 (1.32); 181 (1.28); 371 (9.33) | 2801 | 1175 | 315 | 132 |
| Tehri Garhwal | 153 (2.29); 181 (1.14); 202 (3.11); 221 (5.95); 361 (2.40) | 11085 | 5584 | 108 | 55 |
| Dehradun | 151 (1.03); 153 (2.20); 171 (2.00); 173 (7.28); 181 (1.45); 210 (1.83); 221 (5.45); 222 (4.49); 242 (4.23); 251 (7.81); 252 (4.57); 291 (7.81); 300 (7.81); 314 (2.47); 315 (7.81); 319 (7.81); 369 (3.87) | 27981 | 12838 | 100 | 46 |
| Pauri Garhwal | 153 (1.07); 181 (1.48); 202 (2.52); 210 (4.66); 222 (2.47); 252 (7.91); 281 (1.25); 321 (19.09); 361 (3.74) | 11448 | 4817 | 145 | 61 |
| Pithoragarh | 172 (1.76); 202 (2.08); 281 (4.63) | 25810 | 13016 | 36 | 18 |
| Almora | 154 (1.27); 202 (1.51); 261 (7.95); 289 (1.82); 369 (1.49); 371 (4.47) | 19525 | 5239 | 120 | 32 |
| Nainital | 151 (3.85); 152 (2.09); 154 (1.59); 181 (2.46); 182 (24.24); 201 (2.27); 241 (10.91); 289 (3.47); 342 (24.24); 361 (1.54); 369 (1.27); 371 (1.24) | 9013 | 3969 | 192 | 85 |
| Haridwar | 152 (1.46); 154 (2.02); 155 (1.03); 171 (1.80); 172 (1.49); 192 (2.68); 201 (1.73); 210 (1.44); 242 (1.27); 269 (2.51); 289 (1.18); 312 (2.81); 314 (1.93); 331 (2.81); 361 (1.21); 372 (2.81) | 77641 | 23595 | 61 | 19 |
| Udham Singh Nagar | 151 (2.01); 152 (4.51); 155 (7.53); 160 (11.73); 172 (1.69); 181 (1.03); 231 (11.85); 232 (11.85); 241 (6.52); 292 (10.94); 311 (11.85); 343 (11.85); 361 (1.32) | 18435 | 8369 | 148 | 67 |
| Bageshwar | 172 (1.27); 281 (1.58); 289 (2.11); 371 (14.78) | 4851 | 2898 | 86 | 51 |
| Champawat | 153 (3.70); 202 (2.38); 289 (3.98) | 1969 | 1206 | 186 | 114 |
| Rudraprayag | 153 (1.04); 202 (4.10); 281 (1.29); 289 (4.31) | 2852 | 1503 | 151 | 80 |

Note: 1. The figures in the parenthesis represent LQ.

2. For sector codes, refer to Appendix A-8.5.

Source: NSSO Survey on Unorganised Manufacturing (56th round), 2000-01.

The earlier discussions on registered manufacturing sector are mainly based on 2002-03 data while the unregistered sector's data corresponds to 2000-01. In order to bring parity in our analysis, we have analysed the employment figures of registered manufacturing sector in Uttarakhand for the year 2000-01. Table 8.15 presents the results.

3. Industrial Competitiveness of Uttarakhand in Organised Sector

This section analyses the competitiveness of Uttarakhand state with regard to registered manufacturing sectors. The state-level competitiveness has been measured on the basis of output share. In this case, the output share analysis equates the gain in competitiveness to an increase in output share.

Index of Output Specialisation (IOS) has been used to assess the competitive strengths and weaknesses of Uttarakhand's manufacturing sector. Here output of a sector has been measured in terms of its 'gross value added'. The data has been collated from the ASI database of registered manufacturing sector. IOS has been calculated for the years 2001-02 and 2002-03. At the state level, the IOS will be equal to the ratio of percentage share of a given sector in state's total output to percentage share of the sector in national output. When this ratio equals 1 for a given sector in a given state, the percentage share of that sector is identical with the national average. Where this ratio is above 1, the state is said to be specialised in that sector.

Growth in IOS (IOSG) is calculated by dividing the IOS for 2002-03 by the IOS for the year 2001-02. A figure greater than unity shows that the competitiveness in output during the period 2001-02 to 2002-03 has increased. The following table gives the IOS and IOSG of various sectors under consideration. It also identifies the districts in which the sector is located.

Table 8.16 shows that Uttarakhand has competitive advantage in respect of output as compared to the national average in 13 sectors. The IOS of these sectors is greater than unity in both the years under consideration. However, out of these 13 sectors, only 5 sectors have reported an increase in competitiveness in 2002-03 compared to 2001-02 as indicated by IOSG being greater than unity.

Once we know IOS and IOSG of each sector, the following formulae are used to classify Uttarakhand's industries into the four categories defined above:

1. Rising stars (IOS > 1 and IOSG > 1)
2. Lost opportunity (IOS > 1 and IOSG < 1)
3. Possible future stars (IOS < 1 and IOSG > 1)
4. Retreat (IOS < 1 and IOSG < 1)

The classification of the sectors would help the State government to formulate the strategies depending on their category affiliation. Table 8.17(a) presents the distribution of the sectors in four categories based on the above-

TABLE 8.15
Manufacturing Sector in Uttarakhand: Basic and Total Employment

| District | Total Employment in the Manufacturing Sector (Nos.) | Basic Employment in the Manufacturing Sector (Nos.) | District Population to Basic Employment | District Population to Total Employment |
|-------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------|-----------------------------------------|
| Uttarkashi | 5089 | 3128 | 94 | 58 |
| Chamoli | 2801 | 1175 | 315 | 132 |
| Tehri Garhwal | 11848 | 6209 | 97 | 51 |
| Dehradun | 32753 | 15041 | 85 | 39 |
| Pauri Garhwal | 12109 | 5402 | 129 | 58 |
| Pithoragarh | 25810 | 13016 | 36 | 18 |
| Almora | 19757 | 5441 | 116 | 32 |
| Nainital | 14095 | 7471 | 102 | 54 |
| Haridwar | 84790 | 27545 | 53 | 17 |
| Udham Singh Nagar | 28173 | 12038 | 103 | 44 |
| Bageshwar | 4851 | 2898 | 86 | 51 |
| Champawat | 1969 | 1206 | 186 | 114 |
| Rudraprayag | 2852 | 1503 | 151 | 80 |

Source: NSSO Survey on Unorganised Manufacturing (56th round), 2000-01; Annual Survey of Industries 2000-01.

TABLE 8.16
Index of Output Specialisation of Unmerged Registered Manufacturing Sectors in
Uttarakhand at 3-digit level of NIC'98

| <i>Sector Code</i> | <i>Sector</i> | <i>District Location</i> | <i>IOS2001-02</i> | <i>IOS2002-03</i> | <i>IOSG</i> |
|--------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-------------|
| 333 | Manufacture of watches and clocks | Dehradun (33 per cent); Nainital (67 per cent) | 15.33 | 28.28 | 1.84 |
| 315 | Manufacture of electric lamps & lightning equipment | Tehri Garhwal (20 per cent); Dehradun (63 per cent); Udham Singh Nagar (17 per cent) | 19.88 | 16.10 | 0.81 |
| 210 | Manufacture of paper and paper product Haridwar (8 per cent) | Pithoragarh (14 per cent); Udham Singh Nagar (51 per cent); Dehradun (27 per cent); | 7.81 | 6.27 | 0.80 |
| 252 | Manufacture of plastic goods (61 per cent); Pithoragarh (17 per cent) | Dehradun (22 per cent); Udham Singh Nagar | 5.17 | 5.34 | 1.03 |
| 311 | Manufacture of electric motors, generators and transformers | Dehradun (14 per cent); Udham Singh Nagar (43 per cent); Haridwar (43 per cent) | 4.15 | 4.68 | 1.13 |
| 273 | Casting of metals | Dehradun (50 per cent); Haridwar (50 per cent) | 3.52 | 3.27 | 0.93 |
| 151 | Production, processing & preservation of meat, fish, fruit vegetables, oils and fats | Pauri Garhwal (19 per cent); Nainital (4 per cent); Udham Singh Nagar (62 per cent); Haridwar (15 per cent) | 1.07 | 2.15 | 2.01 |
| 222 | Printing and service activities related to printing | Dehradun (75 per cent); Tehri Garhwal (25 per cent) | 3.03 | 2.15 | 0.71 |
| 202 | Manufacture of products of wood, cork, straw & plaiting material | Nainital (26 per cent); Udham Singh Nagar (41 per cent); Haridwar (14 per cent); Pauri Garhwal (5 per cent); Dehradun (14 per cent) | 2.18 | 1.67 | 0.77 |
| 201 | Saw milling & planing of wood | Tehri Garhwal (20 per cent); Nainital (80 per cent) | 1.51 | 1.66 | 1.10 |
| 153 | Manufacture of grain mill products, starches & starch products, and prepared animal feeds | Dehradun (4 per cent); Nainital (10 per cent); Udham Singh Nagar (76 per cent); Haridwar (10 per cent) | 1.61 | 1.49 | 0.93 |
| 154 | Manufacture of other food products | Uttarkashi (8 per cent); Dehradun (28 per cent); Haridwar (36 per cent); Udham Singh Nagar (28 per cent) | 1.86 | 1.39 | 0.75 |
| 155 | Manufacture of beverages | Dehradun (44 per cent); Udham Singh Nagar (44 per cent); Tehri Garhwal (12 per cent) | 1.48 | 1.24 | 0.84 |
| 261 | Manufacture of glass and glass products | Tehri Garhwal (20 per cent); Udham Singh Nagar (20 per cent); Haridwar (40 per cent); Dehradun (20 per cent) | -0.34 | 0.92 | |
| 242 | Manufacture of other chemical products | Dehradun (25 per cent); Nainital (19 per cent); Haridwar (28 per cent); Udham Singh Nagar (8 per cent); Tehri Garhwal (11 per cent); Almora (6 per cent); Pauri Garhwal (3 per cent) | 0.77 | 0.87 | 1.13 |
| 369 | Manufacturing n.e.c. | Dehradun (34 per cent); Nainital (44 per cent); Haridwar (22 per cent) | 0.65 | 0.50 | 0.77 |
| 221 | Publishing | Tehri Garhwal (20 per cent); Dehradun (40 per cent); Nainital (40 per cent) | 0.37 | 0.42 | 1.14 |
| 152 | Manufacture of dairy products | Nainital (14 per cent); Dehradun (44 per cent); Pauri Garhwal (14 per cent); Almora (14 per cent); Udham Singh Nagar (14 per cent) | 0.42 | 0.26 | 0.62 |
| 269 | Manufacture of non-metallic products n.e.c. | Nainital (42 per cent); Pauri Garhwal (4 per cent); Almora (4 per cent); Udham Singh Nagar (23 per cent); Haridwar (24 per cent); Tehri Garhwal (3 per cent) | 0.29 | 0.25 | 0.86 |
| 251 | Manufacture of rubber products | Udham Singh Nagar (25 per cent); Tehri Garhwal (8 per cent); Dehradun (50 per cent); Nainital (8 per cent); Haridwar (8 per cent) | 0.28 | 0.24 | 0.84 |
| 281 | Manufacture of structural metal products, tanks, reservoirs and steam generators | Dehradun (87 per cent); Haridwar (13 per cent) | 0.33 | 0.20 | 0.60 |
| 361 | Manufacture of furniture | Dehradun (20 per cent); Pauri Garhwal (20 per cent); Bageshwar (20 per cent); Nainital (40 per cent) | 0.11 | 0.20 | 1.81 |

Contd...

...contd...

| Sector Code | Sector | District Location | IOS2001-02 | IOS2002-03 | IOSG |
|-------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------|
| 289 | Manufacture of other fabricated metal products; metal working service activities | Udham Singh Nagar (10 per cent); Dehradun (33 per cent); Nainital (6 per cent); Haridwar (17 per cent); Tehri Garhwal (17 per cent); Pauri Garhwal (17 per cent) | 0.15 | 0.11 | 0.72 |
| 181 | Manufacture of wearing apparel, except fur apparel | Dehradun (67 per cent); Udham Singh Nagar (33 per cent) | 0.10 | 0.08 | 0.74 |
| 271 | Manufacture of basic iron & steel | Tehri Garhwal (31 per cent); Pauri Garhwal (31 per cent); Udham Singh Nagar (22 per cent); Dehradun (16 per cent) | 0.10 | 0.04 | 0.41 |
| 241 | Manufacture of basic chemicals | Udham Singh Nagar (22 per cent); Champawat (4 per cent); Dehradun (26 per cent); Nainital (22 per cent); Haridwar (26 per cent) | 0.06 | 0.03 | 0.45 |
| 171 | Spinning, weaving & finishing of textiles | Dehradun (43 per cent); Udham Singh Nagar (29 per cent); Haridwar (14 per cent); Almora (14 per cent) | 0.04 | 0.01 | 0.35 |

Note: The figures in the parenthesis indicate the percentage distribution of manufacturing units across districts.

Source: Computed from Annual Survey of Industries 2001-02 & 2002-03.

mentioned formulae.

The analysis pertaining to IOS and IOSG have been done at the 3-digit level of NIC-98. It is worth mentioning that just because an industrial sector at 3-digit level

exhibits $IOS > 1$ and $IOSG > 1$, it is not necessary that all its sub-sectors at 4-5 digit level would also show similar competitiveness. From the state government's strategic viewpoint, it is thus necessary to pinpoint, at a more disaggregated level, the competitive sectors. From the

TABLE 8.17a
Classification of Uttarakhand's Registered Manufacturing Sectors:
A Strategic Viewpoint

| <i>Rising Stars: Segments that need to be Sustained in the State</i> | <i>Lost Opportunity: Segments that need Urgent Action by the State</i> | <i>Possible Future Stars: Segments that need to be Nurtured by the State</i> | <i>Retreat: Segments that do not Warrant the kind of Policy Attention as Rising Stars, Lost Opportunity and Possible Future Stars in the Initial Policy Phase</i> |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Production, processing & preservation of meat, fish, fruit vegetables, oils and fats (151). | 1. Manufacture of grain mill products, starches & starch products, and prepared animal feeds (153). | 1. Publishing (221). | 1. Manufacture of dairy products (152). |
| 2. Saw milling & planing of wood (201). | 2. Manufacture of other food products (154). | 2. Manufacture of other chemical products (242). | 2. Spinning, weaving & finishing of textiles (171). |
| 3. Manufacture of plastic goods (252). | 3. Manufacture of beverages (155). | 3. Manufacture of glass and glass products (261). | 3. Manufacture of wearing apparel, except fur apparel (181). |
| 4. Manufacture of electric motors, generators and transformers (311). | 4. Manufacture of products of wood, cork, straw & plaiting material (202). | 4. Manufacture of furniture (361). | 4. Manufacture of basic chemicals (241). |
| 5. Manufacture of watches and clocks (333). | 5. Manufacture of paper and paper product (210). | | 5. Manufacture of rubber products (251). |
| | 6. Printing and service activities related to printing (222). | | 6. Manufacture of non-metallic products n.e.c. (269). |
| | 7. Casting of metals (273). | | 7. Manufacture of basic Iron & steel (271). |
| | 8. Manufacture of electric lamps & lightning equipment (315). | | 8. Manufacture of structural metal products, tanks, reservoirs and steam |
| | | | 9. Manufacture of other fabricated metal products; metal working service activities (289). |
| | | | 10. Manufacturing n.e.c. (369). |

unit-level data of ASI pertaining to registered manufacturing sector in Uttarakhand, we have identified, at the 5-digit level of NIC-98, the driving sectors based on the share of gross value added. In the following table, we have classified the 5-digit manufacturing sectors of Uttarakhand into 'rising star'; 'lost opportunity' and 'possible future stars' based on the results of 3-digit level analysis.

Rising Stars

Uttarakhand has competitive advantage in output *vis-à-vis* the national average with respect to thirteen registered manufacturing sectors at the 3-digit level. However, out of these 13 sectors only 5 sectors have reported an increase in competitiveness in 2002-03 compared to 2001-2002. These have been identified as 'rising star'. The segments numbering 7 include: manufacture of vegetable oils and fats through solvent extraction process (15143), manufacture of hydrogenated oils and *vanaspati ghee* (15141), fruit and vegetables preservation n.e.c (15139), sawing and planing of wood (other than plywood) (20101), manufacturer of semi-finished products of plastics (25201), manufacturer of generators/ generating sets (31101) and manufacturer of watches and clocks of all kinds. 'Plastic products' has the maximum 'gross value added per worker' in both the years indicating the highest partial labour productivity. In addition, on the profitability

side, this sector is earning a healthy profit of more than 20 per cent on value of output. Hence, 'plastic products' should be considered as one of the most important sectors of Uttarakhand. The correlation coefficients between 'wages per worker' and 'gross value added per worker' are 0.32 in 2001-02 and 0.37 in 2002-03, which indicates labour surplus economy. Similarly in 2001-02, 'printing and service activities related to printing' had the maximum profitability of more than 60 per cent.

For the rising stars, the state government has to take necessary action to sustain these sectors and eventually all the 'rising star' sectors have shown good financial viability through moderate to high profitability ratios (Refer Table 8.17a and b).

Possible Future Stars

There are some sectors, which are not competitive, but their competitiveness demonstrates a positive sign. Such sectors are termed as 'possible future stars'. Among the four sectors falling in the 'possible future star', only one i.e., 'manufacture of chemical products or preparations of a kind used in textiles, paper, leather or like industries' has the potential to become the competitive one since the IOS is very close to unity and the financial viability of the sector is relatively sound. Moreover, this sector can get a good support from the paper industry, which is an established one in Uttarakhand (Refer Table 8.17a and b).

TABLE 8.17b
Classification of Uttarakhand's Registered Manufacturing Sectors:
A Disaggregated Level Analysis

| <i>Rising Stars: Segments that need to be Sustained in the State</i> | <i>Lost Opportunity: Segments that need Urgent Action by the State</i> | <i>Possible Future Stars: Segments that need to be Nurtured by the State</i> |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 1. Manufacture of vegetable oils and fats through solvent extraction process (15143) | 1. Rice milling (15312). | Publishing of newspapers (22121). |
| 2. Manufacture of hydrogenated oils and <i>vanaspati ghee</i> etc. (15141) | 2. Manufacture and refining of sugar (vacuum pan sugar factories) (15421) | Manufacture of chemical products or preparations of a kind used in the textiles, paper, and leather or like industries (24297). |
| 3. Fruit and vegetables preservation n.e.c. (15139) | 3. Manufacture of aerated drinks (15541). | Manufacture of hollow glassware (bottles, jars etc.) for the conveyance or packing of goods (26103). |
| 4. Sawing and planing of wood (other than plywood). (20101) | 4. Manufacture of plywood and veneer sheets (20211). | Manufacture of furniture & fixtures made of wood, cane & reed (36101). |
| 5. Manufacture of semi-finished products of plastics (25201) | 5. Manufacture of flush doors and other boards or panels (20212) | Manufacture of furniture and fixtures primarily of metal (36102). |
| 6. Manufacture of generators/generating sets (31101) | 6. Manufacture of paper incl. printing & writing paper (21012). | |
| 7. Manufacture of watches and clocks of all kinds. (33301) | 7. Printing and allied activities, n.e.c. (22219). | |
| | 8. Casting of iron and steel (27310) | |
| | 9. Manufacture of electric filament lamps including manufacture of sealed beam lamp units (31501) | |

Lost Opportunity

All the competitive sectors with decline in competitiveness are termed as the 'lost opportunity' sectors. The state needs to take urgent action to revive their competitiveness. Out of the 8 sectors falling in 'lost opportunity' category, 4 of them, viz., 'rice milling', 'manufacture and refining of sugar', 'manufacture of paper including printing and writing paper' and 'casting of iron and steel' needs to be restructured, to make them profitable. (Refer Table 8.17a and b.)

4. Analysis of Problems and Prospects

4.1 Lagging Manufacturing Sector

The level of manufacturing sector in terms of its share in state's real GSDP is far below all-India average. In particular, the share of manufacturing sector in Uttarakhand has registered a declining trend from 18.5 per cent in 1994-95 to 10.2 per cent in 2003-04. On the other hand, a similar neighbouring state like Himachal Pradesh has registered a perceptible increase in the contribution of manufacturing sector over the same period, and it has achieved much higher level of manufacturing activity as compared to Uttarakhand.

4.2 Vital Industries Lagging

It is observed that only two sectors, viz., 'paper and paper product' and 'other food products' have appeared among the top five largest sectors with regard to all the indicators viz., 'number of operating factories', 'fixed capital investment per factory' and 'number of workers per factory' (See Table 8.1). The sector 'manufacture of other food products', which mainly covers sugar refining, is incurring losses. Given that Uttarakhand has a comparative advantage in output *vis-à-vis* the national average in this sector, urgent actions are needed to revive its profitability. Most of the units in this sector are public limited companies. One of the plausible ways to improve its profitability is to cut down the fixed costs. Similarly, the sector 'paper and paper product' has a substantial competitive advantage but its profitability is fragile.

4.3 Skewed Industrialisation

The analysis has revealed that registered manufacturing sectors are located only in 8, out of 13 districts in Uttarakhand. The penetration of registered manufacturing sector is very low in the districts of Tehri Garhwal, Pauri Garhwal, Almora and Champawat, and this is reflected in the low basic and total employment figures and a very high district population to basic employment (and total

employment) ratio. It would be prudent for the government to encourage the exporter industries identified in these districts to grow. The growth in exporter industries would reduce the dependence of the district population on basic employment through further generation of basic employment.

4.4. Investment Attractiveness and Prospects of Industrial Corridors

'Investment Attractiveness Index' has been constructed for each district based on the availability of certain infrastructure facilities and socio-economic factors required for attracting industrial investment (Refer Appendix A-8.5 for methodology and related Tables A-8.1 and A-8.2). The objective is to construct an 'Investment Attractiveness Index' for each district based on the availability of certain infrastructure facilities and socio-economic factors required for attracting industrial investment. The ranking of districts based on this index is a relative ranking. In this exercise, the difference between a 'good district' and a 'not so good district' lies in the extent of availability of certain infrastructure facilities.

These infrastructure facilities and socio-economic factors are the outcomes of various institutional elements and policies in the districts. Though the state policy initiatives apply equally to all the districts, their effects can differ considerably, depending upon the nature of various institutional elements and policies in the districts.

At the outset it should be mentioned that we have not considered qualitative factors like governance, corruption, attitude of the government staff, etc., while trying to calculate 'Investment Attractiveness Index' at the district level. Our argument is that it is difficult to capture clear perceptions of investors, industrialists and other stakeholders regarding variation of these qualitative factors across different districts of the same state (e.g. Haridwar *versus* Nainital). However, across the various states of the country, the perceptions are likely to be more realistic (e.g. Uttarakhand *versus* Uttar Pradesh). So, qualitative factors like governance and corruption are more of state specific than district issues with regard to industrial investment decisions.

Principal Component Analysis (PCA) has been used to arrive at a single composite index representing the overall 'Investment Attractiveness' with respect to each district. On the basis of this index, the districts have been ranked. (Refer Appendix A-8.6). Table 8.18 depicts the index pertaining to each of the 13 districts of Uttarakhand.

TABLE 8.18

Investment Attractiveness Index—Ranking of Districts

| <i>District</i> | <i>Investment Attractiveness Index</i> | <i>Rank</i> |
|-------------------|----------------------------------------|-------------|
| Dehradun | 9.1905183 | 1 |
| Nainital | 4.3615184 | 2 |
| Udham Singh Nagar | 2.4085906 | 3 |
| Haridwar | 2.3338142 | 4 |
| Pauri Garhwal | -0.8313013 | 5 |
| Chamoli | -1.5748439 | 6 |
| Pithoragarh | -1.7135964 | 7 |
| Tehri Garhwal | -1.7605708 | 8 |
| Almora | -2.0749981 | 9 |
| Uttarkashi | -2.0870799 | 10 |
| Champawat | -2.3148441 | 11 |
| Rudraprayag | -2.3985499 | 12 |
| Bageshwar | -3.3946151 | 13 |

Dehradun, Nainital, Udham Singh Nagar and Haridwar are the four top ranking districts and the 'Investment Attractiveness Index' of these districts is positive. The rest of the 9 districts are having negative indices and they need to substantially improve their status in all the indicators for attaining a positive IA index. In this analysis, zero is the mean since the variables used in constructing the index have been standardised to eliminate the scale bias.

Another issue that is worth mentioning is that the disparity with regard to the status of 'Investment Attractiveness' between Dehradun and rest of the districts is quite substantial. Even the Investment Attractiveness Index of Nainital, which is having rank 2, is far below than that of Dehradun.

In Uttarakhand, district-wise investment (fixed assets) figures and Investment Attractiveness Indices have a high positive correlation and the correlation co-efficient is estimated to be more than 0.50. This signifies that the districts with higher Investment Attractiveness Index have attracted more investment than the rest of the districts. The crux of the state government's strategy should be to focus on those indicators for which a particular district is not performing well. The indicators whose standardised values are less than zero (which is the mean) can help the Government to identify weak areas (e.g. physical infrastructure, social amenities, financial infrastructure, etc.). Appropriate formulation of strategy framework to address the weak areas would help the particular district to improve its status with respect to 'Investment Attractiveness Index' thereby increasing the possibility of attracting investment. The detailed performance of each

district with respect to the selected indicators is given in Appendix A-8.8.

Therefore, an industrial corridor can be conceived with Dehradun as the key centre connecting Haridwar, Nainital and Udham Singh Nagar.

4.5 Potential of Creating Modern Clusters in Unregistered Manufacturing Sector

All the 13 districts of Uttarakhand report presence of unregistered manufacturing sector. The penetration of unregistered manufacturing sectors in all the districts of Uttarakhand is quite high and this is reflected in the high basic and total employment figures and a reasonably low district population to basic employment (and total employment) ratio. In fact, the districts where the penetration of registered manufacturing sectors is nil or abysmally low, the unregistered manufacturing sector is driving the economy. The review of the unregistered manufacturing sectors of Uttarakhand has revealed that 26 sectors have more than 100 factories and 13 sectors have more than 1000 factories. In the profitability front, maximum number of sectors (16) reported a profitability ratio between 15 per cent to 30 per cent.

Haridwar has reported the largest basic employment in the unregistered manufacturing sector. It is worth mentioning that Pithoragarh, where there is negligible number of registered manufacturing sectors, has a substantially large number of basic employment in the unregistered manufacturing sector. Other districts like Uttarkashi, Chamoli, Bageshwar and Rudraprayag reveal a similar phenomenon.

5. Policy Recommendations

Uttarakhand has the potential to develop as a major industrial state of the country due to its proximity to Delhi, the national capital, high literacy rate, concentration of high quality educational institutions, presence of a large number of national institutions and widely spread informal sector. The programme of stabilisation and reform underway since 1991 has radically changed the framework within which the states' development policies are implemented. States can now attract private capital in such sectors as power, irrigation, ports, roads and all areas of manufacturing and it is their ability to attract private capital, which now determines a state's growth performance. Development spending now needs to be narrowly focussed on the states' areas of comparative advantage, where it complements rather than substitutes for the private sector.

5.1 Tangible and Intangible Incentive System

Since the return and risk guide private investors on investment in choosing among alternative investment opportunities, the promotional strategy should focus on three factors:

- Investment incentives (fiscal, financial and others)
- Efforts to emphasise the comparative advantage of host base (resource base and market factors)
- Promotional activities (such as sending missions, advertising etc.—a role to be performed by Udyog Bandhu)

Uttarakhand has provided numerous excise and other tax benefits to attract industries to the state. However, the infrastructure facilities and intangible benefits will determine whether investment would come from within Uttarakhand or from the neighbourhood. States are rapidly restructuring their response systems to investment enquiries, simplifying procedures and eliminating red tape. There are few well-established principles applied to achieve this objective.

- *The Negative List:* This is a published list of those sectors in which private investment is not allowed (for example armaments and military hardware)
- *New operations face the same rules as old ones:* All prospective investors are informed of the various rules under which they are expected to operate right from conception to the starting of production. Absolute transparency is maintained in this regard. Under this arrangement, no “clearances” are required.
- *The Positive List:* Industries that can be ‘encouraged’, i.e., industries whose distinctive capabilities can be turned into ‘competitive advantages’ at the state level. This option can be implemented by either entering into a Memorandum of Understanding (MoU) for mega projects in thrust areas or through announcing a policy outlining promotional features for new industries in the identified “thrust” areas.

5.2 Infrastructure

It is well recognised that growth and development of infrastructure leads to higher labour productivity and therefore the level of infrastructure is positively correlated with income generation in two ways: (i) by directly affecting an increase in labour productivity, (ii) by increasing the level of profitability from employment of other inputs. Infrastructure also helps diversify

production, expand trade, absorb the growth in population, reduce the incidence of poverty and in improve environmental conditions.

5.2.1 Development of Industrial Corridors

A viable approach for the development of infrastructure is to identify industrial corridors, so those regions relatively better off in terms of infrastructure could be targeted to grow faster in the new competitive environment. An industrial corridor is a selection of contiguous districts that are fairly developed. The contiguity facilitates the realisation of benefits associated with the economies of scale, scope and agglomeration. The delineation is based on the premise that the first three categories of development (very high, high and moderate) are most suitable to be the part of the industrial corridors because of the presence of environs conducive to industrial activities.

5.2.2 Overcoming Infrastructure Bottlenecks

Ideally, the problem of power shortage should be addressed by attracting fresh investment into power generation or allowing captive generation of power by new industries.

5.2.3 Improving Social Infrastructure

The private sector could be roped in for investment into education and health care. Incentives should be offered in this sector at par with those for industry.

5.3 Need for Improving the Economy of Scale in Registered Manufacturing Sector

With respect to the size of registered manufacturing sectors in Uttarakhand, ‘grain mill products, starches and starch products, and prepared animal feeds’ have the largest number of factories being 220 in 2002-03. This sector has the largest number of factories but the average size of the factories as indicated by ‘fixed capital per factory’ and ‘workers per factory’ is relatively small. In fact, this sector is the smallest in terms of workers per factory in 2001-02 with only eight workers per factory that rose marginally to eleven in 2002-03 (See Table 8.1). Labour productivity is low relative to other registered manufacturing sectors and the profit margin is abysmally low. In fact, this sector incurred losses in 2001-02 (See Table 8.4). The large size of the sector may allow it to maintain a thin profit margin, but the present profit margin is not sustainable.

The most labour-intensive registered manufacturing sector in Uttarakhand is ‘watches and clocks’. It has the

largest number of workers per factory with 244 workers per factory in 2001-02 that decreased marginally to 235 in 2002-03. Most importantly, with only three factories in Uttarakhand, it has appeared among the top five sectors in terms of labour productivity, profitability and wages per worker. This is one of the most productive and profitable sectors of the state, which is driving the economy in terms of employment generation. The most noticeable fact in terms of employment is that the sector 'spinning, weaving and finishing of textiles' has experienced a drastic decline in the number of workers per factory from 127 workers per factory in 2001-02 to just 27 in 2002-03. The downsizing of workers may possibly be attributed to the loss-making status of the sector.

5.4 Marketing Comparative Advantage

Apart from announcing incentives, the government should make efforts to harness Uttarakhand's comparative advantages as a host base in terms of availability of resources and markets. Suitable promotional activities should be taken up like undertaking a public relations drives, sending missions to other parts of India and abroad for conducting road-shows and taking out advertisements. Udyog Bandhu will have to play a crucial role in this exercise.

5.5 Development of Small Enterprises Using Cluster Approach

Clusters of enterprises make the same, similar or complimentary products. They have many advantages including a usage of collective efficiency, recognition of heterogeneity, product characteristics, technology, type of markets served production scale, etc.

Following UNIDO's work on clusters (Gulati *et al.*, 1997) policy recommendations, the following can be drawn:

- 1) The private sector should be providers of common services rather than state-level public sector agencies.
- 2) FDI into clusters that have inherent export capabilities should be encouraged.
- 3) The state should involve clusters in dialogues to evolve policies and plans on industry.
- 4) Flexible and unconventional support instruments should be introduced. A number of consortia could be formed for export promotion, mutual credit guarantee and purchases. The institutional capacities of local associations can be upgraded. These are some of the support instruments that can

be exploited to the advantage of clusters and their local economies.

- 5) Positive competition should be induced. Encouraging competition, both external and internal, for clusters based on quality rather than price would ensure motivation for upgradation, which is necessary for units in Uttarakhand to retain their competitiveness.
- 6) Cooperation mechanisms should be induced. Clusters could be encouraged to develop task forces so as to make them self-sufficient to the maximum extent possible.
- 7) Stimulate induction of new firms: A continuous process of introducing new firms into the clusters and phasing out of ineffective ones, whether induced or natural, is quite the norm. The process of development can be hastened by identifying the gaps in the value chain, which would necessitate the entry of a particular kind of firm. This is done not by the conventional system of providing financial incentives but through a positive approach. Providing services and linkages with local associations and research bodies could help new firms.
- 8) A database on clusters should be built. Clusters should be typecast into them according to their production and marketing at three levels—local, national and international. Some of the most important typologies relevant in Uttarakhand are: family firms, rural firms operating on a survival basis for the local market; urban firms in the formal and informal sectors catering to the local markets, and specialised firms within well known areas catering to national as well as international markets.
- 9) Policy support and development assistance in this crucial time will have to strike a fine balance between the speed of change and the capacity of the small firms in these clusters to absorb change. At the lowest end the artisan clusters producing handicrafts would have to be protected. On the other hand, modern SSI clusters having the capacity to carry out international contracts would need to be promoted.

5.6 Sector-specific Policies Worth Pursuing

EOUs and engineering exports: It is important to include the development of EOUs as a special thrust area. The logic for this stems from the fact that India has been successful in engineering exports over the past decade.

For instance, India's performance in exports of simple metal products with high labour content (flat forged hand tools, sanitary castings, etc) has been quite encouraging.

Information technology—software: IT clusters in Bangalore contribute to around 35 per cent of India's software exports. 'Electronics and computer software' accounts for 40 per cent of Karnataka's exports. The NCAER study for Bangalore where the IT cluster narrates development of successful linkages with research and academic institutes ('software diamond'). McKinsey's projected of the growth of India's IT sector to \$ 50 billion by 2008 employing 2.2 million knowledge workers, which throws up the possibility for exciting inter-state competition.

IT-enabled services exports: As foreign organisations are concentrating on their 'core competencies', a lot of IT-enabled services are being outsourced. A sharp fall in real

costs of international telecom services has opened up enormous opportunities in this sector.

Bio-informatics or the use of IT in biology: Bangalore has developed bio-informatics as a key growth area in service exports. Dehradun can emulate this as it has all the resources, the market technology and social infrastructure to be competitive in this important area.

Garments assembly: A proactive, induced cluster-oriented approach in developing garments 'parks' around Dehradun and Haridwar is the need of the hour as Multi-Fibre Agreement has lapsed in 2005. Garments assembly activity accounts for over 14 per cent of Karnataka's exports. Moreover, Dehradun and Haridwar are one of the most favoured tourist destinations (Refer Chapter-Tourism). Therefore, these districts potentially become a market centre for developing rural handicrafts and garments industry especially supporting manufacturers of hilly regions.

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APPENDIX A-8.1

Policy Incentives

*Industrial Policy 2001**Industrial Policy 2003*

FISCAL INCENTIVES

1. Subsidy on the rate of interest on loans taken by SSI units from financial institutions to the tune of 2 per cent was to be given subject to a ceiling of INR 2.00 lakh per unit.
2. Without compromising on quality, purchase preference will be given in government purchases for items manufactured by SSI units of the state.

Under the Transport Subsidy Scheme of Government of India, 50 per cent of transport cost on the basis of rates decided by the State government or actual freight paid, which ever is less, was provided as subsidy up to 5 years from the date of production.

Central Sales Tax (C.S.T) for small and medium industries on a selective basis will be reduced from 4 per cent to 1 per cent

Assistance by way of equity/financial participation in infrastructure projects was provided on a case-by-case basis.

The state government shall make efforts with the Government of India to obtain a Special Package for Industrial Development on the lines of some special category states, which may include Income Tax holidays, rebate in central excise and capital investment subsidy etc.

Nothing mentioned in the policy.

Nothing mentioned in the policy.

Nothing mentioned in the policy.

Industrial units obtaining quality certification from approved institutions/research laboratories were provided assistance to the tune of 50 per cent of the expenditure up to a maximum of INR 1.00 lakh. The units getting ISO-9000 certification were given subsidy upto INR 75000 per unit during the period of 10th five-year Plan.

Industrial units, who register their patents, were provided assistance to the tune of 75 per cent of the expenses incurred up to a maximum of INR 2.00 lakh.

1. Interest incentive @ 3 per cent with a maximum of INR 2 lakh per annum per unit shall be provided to New Small Scale Industries (SSIs) and existing SSIs for modernisation¹ and substantial expansion², provided they have availed loan from state level financial institutions or banks operating in Uttarakhand and not defaulted in payment of principal or interest instalments.
2. For S.S.I units and units notified as thrust industries being set up in remote areas, the interest incentive shall be granted @ 5 per cent with a maximum of INR 3 lakh/annum.
3. For revival/rehabilitation of sick SSI units, interest incentive @ 3 per cent with a maximum of INR 2 lakh per annum shall be provided on the loan taken under fully tied up revival and rehabilitation package from financial institutions, banks etc. This interest incentive will be @5 per cent with a maximum of INR 3 lakh per annum.
4. Purchase preference and price preference will be given to state SSIs in state purchases.

Central Transport Subsidy extended till 2007.

Nothing mentioned in the policy.

Nothing mentioned in the policy.

1. 100 per cent central excise exemption for 10 years on items other than those mentioned in the negative list in the Concessional Industrial Package announced by the Central government and 100 per cent income tax exemption for first 5 years and 30 per cent for next 5 years for the Companies and 25 per cent for others.

2. Capital investment subsidy @15 per cent with a maximum of INR 30 Lakh. (INR 3 million).

Exemption from entry tax on plant & machinery for setting up Industry or undertaking substantial expansion and modernisation.

Rationalisation of land use conversion and development charges and stamp duty concessions to be provided in respect of land in specialised commodity parks, including IT parks.

100 per cent exemption on entertainment tax will be allowed for multiplex projects in the state for a period of three years, and for all new amusement parks and ropeways for five years.

75 per cent of the total expenditure subject to a maximum of INR 2 lakh incurred in obtaining national/internationally approved quality marks such as ISO series certificate etc., shall be reimbursed to the entrepreneurs provided that the reimbursement/grant availed for this from all sources should not exceed the total expenditure on this head.

75 per cent of the cost subject to a maximum of INR 2 lakh shall be made available to the entrepreneurs in the shape of assistance for registering their patents, provided that the total reimbursement/grant availed for this from all sources should not exceed the total expenditure on this head.

Contd...

| <i>...contd...</i> | |
|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Industrial Policy 2001</i> | <i>Industrial Policy 2003</i> |
| Nothing mentioned in the policy. | 50 per cent of the expenses subject to a maximum of INR 1 lakh incurred in installing pollution control equipment shall be reimbursed to the entrepreneurs, provided that the total reimbursement/grant availed for this from all sources should not exceed the total expenditure on this head. |
| Nothing mentioned in the policy. | For educated unemployed youth, financial loan assistance for projects upto INR 2 lakh in case of manufacturing/service industry and projects upto INR 1 lakh in business sector shall be available under the "Prime Minister Rozgar Yojna" with subsidy of 15 per cent of the project cost subject to a maximum of INR 15,000. Age limit has also been relaxed under this scheme from 35 years to 40 years. |
| Nothing mentioned in the policy. | In the case of sick non-SSI units, government will sympathetically consider measures required under revival/rehabilitation package drawn by operating agency/financial institutions/bank. In addition, purchase preference shall be accorded to non-SSI units within the state <i>vis-à-vis</i> units outside the state. |
| Nothing mentioned in the policy. | Matching state subsidy on approved projects of National Horticulture Board (NHB), Agricultural & Processed Food Products Export Development Authority (APEDA), National Medicinal Plant Board (NMPB) subject to a maximum of INR 20 Lakh and subject to a total subsidy not exceeding over 50 per cent of the project cost. |
| NON-FISCAL INCENTIVES | |
| Rationalisation and simplification of labour laws and procedures was initiated. | Labour laws will be simplified so as to create a conducive atmosphere for industrialisation while protecting the interests of the workers. In addition, a system of self-certification and amalgamation of returns will be put in place to substantially decrease the paper work. |
| Nothing mentioned in the policy. | A multipurpose Industrial Promotion, Investment & Infrastructure Development Corporation has been set up with the participation of various banks and financial institutions. |
| Nothing mentioned in the policy. | Provision of single window facilitation in the state to help/cut delays and provide an investor friendly climate. |
| Nothing mentioned in the policy. | Provide and facilitate expeditious land availability for setting Industrial ventures and infrastructure projects. |
| Nothing mentioned in the policy. | Arrangement of finance through a consortium of banks and financial institutions. |

APPENDIX A-8.2

The Vision-Industrial Policy 2001

For creating an environment conducive to the rapid and ecologically sustainable industrial development of the state, the government of Uttarakhand laid down a set of vision with a view to:

- Harnessing industrial resources of the state and putting them to productive use.
- Enhancing the flow of investments into industry and infrastructure.
- Generating additional employment opportunities.
- Raising the per capita income levels and standards of living of the people.
- Ensuring equitable industrial development of all regions of the state.
- Putting the state of Uttarakhand on a high growth path.
- Above all, endeavouring to create an industry-friendly environment in the state with the State government playing the role of a facilitator for industrial development.

The Vision-Industrial Policy 2003

- To create high quality world-class infrastructure facilities in the state and enhance, in particular, connectivity to the National Capital Region (NCR) and other leading markets.
- To provide single window facilitation in the state to expedite project clearances and provide an investor friendly climate.
- To provide and facilitate expeditious land availability for setting industrial ventures and infrastructure projects.
- To promote and encourage private sector participation in the development and management of infrastructure projects such as industrial estates/ areas, growth centres, IIDCs, special economic and commodity zones and parks, theme parks, tourism infrastructure, development of new tourist destinations, airports/helipads/airstrips, roads, generation, transmission and distribution of power, and projects in the area of horticulture, floriculture, biotechnology etc.

- To provide assured, good quality, uninterrupted and affordable power for industries.
- To simplify and rationalise labour laws and procedures in tune with the current day requirements, while ensuring that the workers get their due share in the economic prosperity of the state.
- To promote, in particular, small scale, cottage and khadi and village industries and handicrafts silk and handloom sectors, and assist them in modernisation and technological upgradation and provide the necessary common facilities and backward and forward linkages, including product design and marketing support so as to make them globally competitive and remunerative.
- To address problems of sickness and incipient sickness in industry, particularly SSIs and facilitate required restructuring and rehabilitation, etc. in coordination with the banks and financial institutions.
- To promote industries based on local resources particularly in the areas of agriculture, horticulture, agro and food processing and floriculture.
- To promote planned and scientific exploitation of the mineral resources of the state and maximise value addition within the state.
- To promote leading edge technologies and sunrise industries in the state in the areas of information technology and biotechnology.
- To promote public/private sector involvement in generation of power and strengthening of the transmission and distribution network.
- To promote tourism as a focus area and develop Uttarakhand as a premier global tourism destination.
- To provide special attention for setting up industries in remote areas and to develop and strengthen air, road, rail and other connectivity.
- To develop Uttarakhand as a premier education and research centre by leveraging the presence of world-class research and technical institutes existing in Uttarakhand.

APPENDIX A-8.3

The Economic Base Model[#]

The economic base model or demand model is an outgrowth of the regional product formula developed by John M. Keynes and the formula is:

$$Y = I + C + G + (X - M)$$

Where

| | | |
|---|---|------------------|
| Y | = | Regional Product |
| I | = | Investments |
| C | = | Consumption |
| G | = | Government |
| X | = | Exports |
| M | = | Imports |

This complex formula, which describes economic growth or regional product as the interaction among supply and demand factors, may be simplified to represent a demand-only equation. The demand equation expresses the regional product (Y) in terms of exports (X) and non-exports (S). The equation, all but ignores, the unique and individual contribution of investments, consumption, government, and imports (I, C, G, M)—these are all integrated into a single value represented by S, non-exports. So, the demand equation now turns out to be:

$$Y = X + S$$

The demand equation may be written in terms of any number of variables including income, value-added, sales, payroll and employment.

In our analysis, we have used the employment data and have rewritten the demand equation or economic base model as:

$$E_t = E_b + E_n$$

Where

| | | |
|-------|---|----------------------|
| E_t | = | Total Employment |
| E_b | = | Basic Employment |
| E_n | = | Non-basic Employment |

Economic Base Analysis can be performed by way of several different techniques each of which is based upon general economic base concepts like the assignment of firms (employment) to basic or non-basic sectors. In the present analysis, location quotient technique has been used to identify the basic and non-basic sectors of the districts of Uttarakhand and the basic and non-basic workforce. The location quotient determines which industries within a district export goods and services to consumers outside the district. The location quotient technique (LQ) also allows us to determine the proportion of total industry employment $\{E_t\}$ that is basic $\{E_b\}$ and non-basic $\{E_n\}$. The formula for LQ is:

$$LQ_i = \frac{e_i/e_t}{E_i/E_t}$$

Where

| | | |
|--------|---|------------------------------------------|
| LQ_i | = | Location Quotient for industry (i) |
| e_i | = | District employment in industry (i) |
| e_t | = | District's total employment (t) |
| E_i | = | Uttarakhand's employment in industry (i) |
| E_t | = | Uttarakhand's total employment (t) |

For identifying the basic sector, the following LQ Criteria are used in this analysis:

- (1) If $LQ_i < 1.0$: It suggests that local employment is less than that was expected for a given industry. Therefore that industry is not even meeting local demand for a given good or service. Therefore, all of this employment is considered non-basic by definition.
- (2) If $LQ_i = 1.0$: It suggests that the local employment is exactly sufficient to meet the local demand for a given good or service. Therefore, all of this employment is also considered non-basic because none of these goods or services are exported to non-local areas.
- (3) If $LQ_i > 1.0$: It provides evidence of basic employment for a given industry. When an $LQ_i > 1.0$, the analyst concludes that local employment is greater than expected and it is therefore assumed that this "extra" employment is basic. These extra jobs then must export their goods and services to non-local areas, which, by definition, make them Basic sector employment.

Not all industries in a district are basic; that is, they all do not have an $LQ_i > 1.0$. But, of those industries that do have an $LQ_i > 1.0$, only a fraction of that industry's total workforce produces goods or services for export (basic employment) and the remaining of the workforce produces for the local market (non-basic employment). To calculate that basic proportion of the export industry, the following formula is used:

$$E_b = \frac{LQ_i - 1}{LQ_i} \text{ For } LQ_i > 1$$

Once E_b has been calculated for a basic industry in a particular district, we have multiplied that value to the total number of workers in that basic industry to arrive at the basic employment of the industry in that district.

[#] Refer to Florida State University, Department of Florida State University, Department of Urban and Regional Planning, Planning Methods III: Forecasting.

APPENDIX A-8.4

Status of Unregistered Manufacturing Sectors in 2000-01 at 3-Digit Level of NIC'98

| <i>Sector</i> | <i>Number of Factories</i> | <i>Fixed Capital per Factory (INR lakh)</i> | <i>Workers per Factory</i> | <i>Profit by Total Output (per cent)</i> | <i>GVA per Worker (INR lakh)</i> |
|---------------|----------------------------|---------------------------------------------|----------------------------|------------------------------------------|----------------------------------|
| 151 | 469 | 0.91 | 2 | 9.43 | 0.28 |
| 152 | 517 | 0.55 | 1 | 21.64 | 0.20 |
| 153 | 18874 | 0.62 | 1 | 39.10 | 0.14 |
| 154 | 4083 | 1.62 | 4 | 12.18 | 0.19 |
| 155 | 416 | 1.71 | 2 | 21.74 | 0.03 |
| 160 | 4459 | 0.06 | 1 | 80.86 | 0.07 |
| 171 | 3149 | 0.61 | 2 | 5.31 | 0.06 |
| 172 | 16181 | 0.20 | 2 | 52.61 | 0.05 |
| 173 | 479 | 2.73 | 6 | 14.03 | 0.38 |
| 181 | 22674 | 0.49 | 1 | 46.59 | 0.16 |
| 182 | 20 | 0.74 | 2 | 21.97 | 0.25 |
| 192 | 428 | 0.40 | 2 | 27.93 | 0.18 |
| 201 | 399 | 1.89 | 4 | 21.87 | 0.32 |
| 202 | 24109 | 0.21 | 1 | 37.53 | 0.18 |
| 210 | 514 | 0.53 | 2 | 23.82 | 0.15 |
| 221 | 31 | 7.51 | 2 | 6.86 | 0.83 |
| 222 | 727 | 1.95 | 3 | 24.05 | 0.27 |
| 231 | 18 | 3.43 | 5 | 16.62 | 0.24 |
| 232 | 4 | 22.55 | 8 | 1.73 | 0.27 |
| 241 | 16 | 13.96 | 6 | 1.66 | 3.70 |
| 242 | 276 | 0.42 | 2 | 24.83 | 0.23 |
| 251 | 4 | 19.20 | 7 | 3.59 | 0.43 |
| 252 | 74 | 2.39 | 4 | 23.89 | 0.68 |
| 261 | 741 | 1.01 | 1 | 9.00 | 0.29 |
| 269 | 3608 | 0.68 | 4 | 33.45 | 0.08 |
| 281 | 5747 | 0.65 | 3 | 19.00 | 0.15 |
| 289 | 3696 | 0.48 | 2 | 21.81 | 0.18 |
| 291 | 2 | 18.37 | 4 | 11.68 | 0.36 |
| 292 | 39 | 4.06 | 6 | 20.19 | 0.52 |
| 300 | 10 | 4.15 | 3 | 2.50 | 0.36 |
| 311 | 21 | 0.74 | 3 | 16.21 | 0.45 |
| 312 | 113 | 1.65 | 2 | 42.57 | 0.59 |
| 314 | 53 | 0.78 | 1 | 16.28 | 0.28 |
| 315 | 81 | 1.30 | 5 | 30.52 | 0.14 |
| 319 | 333 | 0.17 | 3 | 55.93 | 0.12 |
| 321 | 31 | 0.65 | 5 | 40.00 | 0.17 |
| 331 | 24 | 2.28 | 6 | 34.97 | 0.22 |
| 342 | 69 | 1.51 | 7 | 53.33 | 0.25 |
| 343 | 14 | 3.50 | 4 | 26.63 | 0.40 |
| 361 | 3594 | 0.66 | 2 | 37.91 | 0.23 |
| 369 | 1859 | 1.27 | 2 | 12.76 | 0.29 |
| 371 | 4221 | 0.40 | 2 | 63.17 | 0.08 |
| 372 | 178 | 0.18 | 2 | 80.36 | 0.12 |

APPENDIX A-8.5

Manufacturing Sector at 3-Digit Level of NIC'98

| <i>Sector Code</i> | <i>Sector Name</i> |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 151 | Production, processing and preservation of meat, fish, fruit vegetables, oils and fats |
| 152 | Manufacture of dairy product |
| 153 | Manufacture of grain mill products, starches and starch products, and prepared animal feeds |
| 154 | Manufacture of other food products |
| 155 | Manufacture of beverages |
| 160 | Manufacture of tobacco products |
| 171 | Spinning, weaving and finishing of textiles |
| 172 | Manufacture of other textiles |
| 173 | Manufacture of knitted and crocheted fabrics and articles |
| 181 | Manufacture of wearing apparel, except fur apparel |
| 182 | Dressing and dyeing of fur; manufacture of articles of fur |
| 192 | Manufacture of footwear |
| 201 | Saw milling and planing of wood |
| 202 | Manufacture of products of wood, cork, straw and plaiting materials |
| 210 | Manufacture of paper and paper product |
| 221 | Publishing |
| 222 | Printing and service activities related to printing |
| 231 | Manufacture of coke oven products |
| 232 | Manufacture of refined petroleum products |
| 241 | Manufacture of basic chemicals |
| 242 | Manufacture of other chemical products |
| 251 | Manufacture of rubber products |
| 252 | Manufacture of plastic products |
| 261 | Manufacture of glass and glass products |
| 269 | Manufacture of non-metallic mineral products n.e.c. |
| 271 | Manufacture of basic iron and steel |
| 273 | Casting of metals |
| 281 | Manufacture of structural metal products, tanks, reservoirs and steam generators |
| 289 | Manufacture of other fabricated metal products; metal working service activities |
| 291 | Manufacture of general purpose machinery |
| 292 | Manufacture of special purpose machinery |
| 300 | Manufacture of office, accounting and computing machinery |
| 311 | Manufacture of electric motors, generators and transformers |
| 312 | Manufacture of electricity distribution and control apparatus |
| 314 | Manufacture of accumulators, primary cells and primary batteries |
| 315 | Manufacture of electric lamps and lighting equipment |
| 319 | Manufacture of other electrical equipment n.e.c. |
| 321 | Manufacture of electronic valves and tubes and other electronic components |
| 331 | Manufacture of medical appliances and instruments and appliances for measuring, checking, testing, navigating and other purposes except optical instruments |
| 333 | Manufacture of watches and clocks |
| 342 | Manufacture of bodies (coach work) for motor vehicles; manufacture of trailers and semi-trailers |
| 343 | Manufacture of parts and accessories for motor vehicles and their engines |
| 361 | Manufacture of furniture |
| 369 | Manufacturing n.e.c. |
| 371 | Recycling of metal waste and scrap |
| 372 | Recycling of non-metal waste and scrap |

APPENDIX A-8.6

Investment Attractiveness Index: Methodology

The assumption in this study is that once Uttarakhand has attracted investment after competing with other states, then the districts within the state would compete among themselves (to attract the investment) on the basis of extent of availability of certain infrastructure facilities and socio-economic factors. The qualitative factors like governance and corruption will not matter much. Moreover, our study also assumes that the government of Uttarakhand will not try to direct the investment of any particular industry to a specific district by offering fiscal incentives like tax holidays. If in reality such a fiscal incentive exists for a particular sector, then the investment decision in that sector is likely to be influenced more by fiscal incentives than the 'Investment Attractiveness Index' across districts. However, the state government may announce special tax holidays for some industries to be more competitive *vis-à-vis* other states and this will not affect the significance of our analysis.

Approach

It is generally difficult to say whether district 'A' is having a better 'Investment Attractiveness (IA)' than district 'B' when IA is defined in terms of a large number of indicators.⁹ Thus, "regionalisation" essentially involves construction of a single composite index, which would ideally represent the chosen set of variables. This rational approach of regionalisation by defining a real valued function over the relevant variables would permit ordering of districts.

A composite index can be defined as a linear combination of variables assigning equal or different weights to the variables. These weights can be determined subjectively or based on some statistical or econometric technique. In many cases, equal weights are used to form the composite index where it is assumed that each and every variable is equally important in explaining the phenomenon. Sometimes, subjective weights are used when the importance of the variables is known a priori and imposed externally.

In the present exercise, principal component analysis (PCA) is used to construct a composite index in such a way that the weights given maximise the sum of the squares of correlation of the indicators with the composite index (refer to Appendix A-8.7). Thus, the weights or factor loading reveal the importance of the

indicators. The application of PCA has been accepted as a landmark in objective regionalisation. The method enables one to determine a vector known as the first Principal Component or Factor, which is linearly dependent on the variables, having the maximum sum of squared correlation with the variables.

The weights or the *loading* are chosen in such a way so that the principal components satisfy two conditions, *viz.*: (a) the principal component is equal to the number of X's and are uncorrelated or orthogonal and (b) the first principal component or P_1 absorbs or accounts for the maximum possible proportion of variation in the set of indicators. This is the reason why it serves as the ideal measure of composite index.

Choice of Variables

The selection of the variables for the study is based on the premise that they are positively correlated to the industrial development level of an area. In other words, the indicators have been selected in such a way that higher values reflect better availability of the infrastructure facilities and socio-economic factors. The list of indicators and the rationale for their choice is explained below.

1. Total literacy per 100: This is a very important indicator of overall social development of a particular district. A high literacy rate would also indicate a high level of awareness and hence important from investment viewpoint.
2. Female literacy per 100: This has been included as a separate indicator because females are a target group in any development effort. A higher female literacy rate would indicate the magnitude and extent of success of development plans in the district.
3. Number of beds in allopathic/dispensary/primary health centres per lakh population: As a part of social amenities, health services are a very important factor. This variable would indicate the extent of availability of medical facilities in the district.
4. Proportion of households with electricity: Electricity is one of the variables that determine the level of development in terms of quality of housing in a particular district. A higher value of this would

9. Indicator and variable have been used interchangeably in this analysis.

- mean a better quality of life and housing in that district.
5. Proportion of households with toilet and drinking water: Presence of toilets and safe drinking water is indicative of a better quality of life and housing facilities. These two amenities are necessary for every household. A high value of this variable would indicate a better quality of housing in a particular district.
 6. Proportion of households with electricity and toilet: This is also an important indicator of quality of life of the available human resources in a district.
 7. Road constructed by public works department per 1000 sq. km area: This gives an indication of road density, which is a good indicator of surface transportation infrastructure.
 8. Proportion of households having telephones: It is an indicator of the quality of communication links in the district.
 9. Access to national highway: This indicator reveals better linkage of a district, which helps in production, as well as the distribution of the industrial products.
 10. Proportion of villages with electricity: The provision of good quality and uninterrupted power to industrial units is one of the most crucial factors for ensuring rapid industrial growth. This sub-indicator gives the extent of availability of power, which is one of the important physical infrastructure.
 11. Proportion of non-agricultural workers: This indicator reveals the employment in secondary and tertiary sectors of a district, which is a reflection of the existing economic activities of the district. It shows the workforce engaged in secondary and tertiary sectors relative to total population.
 12. Degree of urbanisation: This is measured as percentage of urban population to total population of the district. This variable therefore reflects better infrastructure and economic conditions.
 13. Per capita bank credit to industry: This is an important indicator that reflects the comparative status of industrial activities in a district. It shows the availability of credit facilities to the industrial sector. A high value of this variable would be consistent with high investment in the industrial sector.
 14. Proportion of households using cooking gas: The usage of cooking gas among the households reflects the modernisation and advancement and the income level of the households of the district. The higher the value of this variable, the better it is in terms of potential market demand for the industrial products.
 15. Per capita bank deposits: This sub-indicator is a proxy one to the income variable. A high per capita bank deposit indicates a high disposable income at the hands of the people, which, in turn reflects a high level of income.
 16. Proportion of households with cars: This sub-indicator is also a proxy to the income levels of the residents in a district, which in turn determines the market potential of the place. A high value for this sub-indicator reflects higher income levels of the residents of the district.
 17. Proportion of households availing banking facilities: This sub-indicator is a proxy for the level of demand for banking facilities which gives an indication of high purchasing power in the hands of the residents.
 18. Per capita bank credit: This sub-indicator shows the availability of credit facilities in the district as a whole. A high value of the indicator will in general be indicative of the volume and accessibility of credit infrastructure to the general population in the district.
 19. Number of bank branches per lakh population: It reveals the availability of the banking facilities in a district. Better banking facilities help industries and other sectors to perform more efficiently.
 20. Total population: Total population is an important indicator, which indicates the potential market for any product.
 21. Percentage decadal population growth rate: The growth in population allows us to incorporate the increase in population and the resulting change in potential market.
 22. Population density per kilometre: Inclusion of population density brings into the model the issue of correction for the size of the district.
- The selected indicators and their main sources have been tabulated below:

APPENDIX TABLE A-8.6a
Selected Indicators and Associated Information

| <i>Indicators</i> | <i>Sources</i> | <i>Year</i> |
|------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------------------|
| Total literacy per 100 | Uttarakhand Statistical Diary 2002-03 | 2001 |
| Female literacy per 100 | Uttarakhand Statistical Diary 2002-03 | 2001 |
| Number of beds in allopathic/dispensary/primary health centres per lakh population | Uttarakhand Statistical Diary 2002-03 | 2000-01 |
| Proportion of households with electricity | Census 2001-housing, amenities & assets | 2001 |
| Proportion of households with toilet and drinking water | Census 2001-housing, amenities & assets | 2001 |
| Proportion of households with electricity and toilet | Census 2001-housing, amenities & assets | 2001 |
| Road constructed by public works department per 1000 sq. km area | Uttarakhand Statistical Diary 2002-03 | 1999-2000 |
| Proportion of households having telephones | Census 2001-housing, amenities & assets to total households | 2001 |
| Access to national highway | Road Map of Uttarakhand | |
| Percentage of villages with electricity | Uttarakhand Statistical Diary 2002-03 | 2001 |
| Percentage of non-agricultural workers | Census of India-2001, provisional population totals (paper-3) | 2001 |
| Degree of urbanisation | Uttarakhand Statistical Diary 2002-03 | 2001 |
| Per capita bank credit to industry | Banking Statistics, RBI-Basic Statistical Returns | 2001 |
| Proportion of households using cooking gas | Census 2001-housing, amenities & assets | 2001 |
| Per capita bank deposits | CMIE monthly review of Uttarakhand | 2003-04 economy June 2005 |
| Proportion of households with cars | Census 2001-housing, amenities & assets | 2001 |
| Proportion of households availing banking facilities | Census 2001-housing, amenities & assets | 2001 |
| Per capita bank credit | CMIE monthly review of Uttarakhand | 2003-04 economy June 2005 |
| Number of bank branches per lakh population | CMIE monthly review of Uttarakhand | 2003-04 economy June 2005 |
| Total population | Uttarakhand Statistical Diary 2002-03 | 2001 |
| Percentage decadal growth rate of population | Census of India-2001, provisional population totals (paper-1) | 1991-2001 |
| Population density per kilometre | Uttarakhand Statistical Diary 2002-03 | 2001 |

APPENDIX A-8.7

Principal Component Analysis

The Principal Component Analysis is a multivariate choice method. This approach develops a composite index by defining a real valued function over the relevant variables objectively. Given a set of explanatory variable, if we have to select the most important variable or a limited number of variables from the set, Principal Component Analysis helps. The principle of this method lies in the fact that when different characteristics are observed about a set of events, the characteristics with higher variation explains a higher proportion of the variation in the dependent variable compared to a variable with lesser variation in it. Therefore, the issue is one of finding weights to be given to each of the concerned variables. Weight to be given to each of the variables is determined on the principle that the variation in the linear composite of these variables should be the maximum. Once the weight to be given to each of these variables is decided, we can focus on the important variables in order to reduce the noise in the data. A set of assumption has been used in our method of construction of a composite index. These are:

- i. The conditions of 'weak Pareto rule' demand that when a district has values of indicators uniformly higher than those of another district, the former should have a higher ranking than the latter district.
- ii. The condition of 'non-dictatorship' implies that no single indicator should be considered so important as to determine the final ordering, all by itself.
- iii. The condition of 'unrestricted domain' implies that the method should be capable of giving the final ranking for all possible data matrices
- iv. The final condition is that of independence from irrelevant alternatives, which demands that while ranking two districts, the decision must be guided by the values of the indicator for these units alone and not any other irrelevant phenomenon.

Elimination of Scale Bias

Variables chosen are usually measured in different units and generally not additive. Hence, it is necessary to convert them in some standard comparable units such that the initial scale chosen for measuring them do not bias the results. The method we have adopted to achieve this is by standardising the variables in the following way: $(X_i - \bar{X})/s$, where X_i is the observation, \bar{X} the mean of the series and s the standard deviation. The transformed series now would be scale free and would have a mean zero and a standard deviation of unity.

Assigning Weights Objectively

Once the bias of measurement is removed from the observations, the crucial problem that remains is that of assigning appropriate weightages to the selected indicators. If one has sufficient insight into the nature and magnitude of inter-relationships among the variables and their socio-economic implications, he might choose to determine the weights on independent judgement. This way of constructing an index stands exposed to subjectivity. Assigning equal weight (or no weight) would imply assumption of equal correlation of each indicator with the index, which would hardly be a realistic approach. PCA assigns objective weights to the variables considered for constructing the composite index.

Principal Component Analysis

Principal Component Analysis (PCA) is a scientific tool to construct a composite index in such a way that the weights given maximise the sum of the squares of correlation of the indicators with the composite index. Thus, the weights or factor loading reveal the importance of the indicators. The application of PCA has been accepted as a landmark in objective regionalisation. The method enables one to determine a vector known as the first Principal Component or Factor, which is linearly dependent on the variables, having the maximum sum of squared correlation with the variables.

The weights or the "loading" are chosen in such a way so that the principal components satisfy two conditions, viz.: (a) the principal component is equal to the number of X 's and are uncorrelated or orthogonal and (b) the first principal component or P_1 absorbs or accounts for the maximum possible proportion of variation in the set of indicators. This is the reason why it serves as the ideal measure of composite index.

The Method Outlined

Step 1: We start by taking the simple correlation coefficients of the k numbers of indicators. These correlation coefficients may be arranged in a table, which is called the correlation table. The elements of the diagonal would be unity as they are the self-correlated, i.e., the correlation of each X_i with itself ($r_{xi\ xi} = 1$ for all the i 's). The correlation matrix is symmetrical, i.e., the elements of each row are identical to the elements of the corresponding columns, since

$$r_{xi\ xj} = r_{xj\ xi}.$$

Correlation Table of the Set of K Variables

| | X_1 | X_2 | X_3 | X_k | $\sum_i^k r_{xi xj}$ |
|----------------------|----------------------|----------------------|----------------------|----------------------|-------------------------------|
| X_1 | $r_{x1 x1}$ | $r_{x1 x2}$ | .. | $r_{x1 xk}$ | $\sum_i^k r_{x1 xi}$ |
| X_2 | $r_{x2 x1}$ | $r_{x2 x2}$ | .. | $r_{x2 xk}$ | |
| " | .. | .. | .. | .. | |
| " | .. | .. | .. | .. | |
| X_k | .. | .. | .. | .. | |
| " | $r_{xk x1}$ | .. | .. | $r_{xk xk}$ | |
| $\sum_i^k r_{x1 xj}$ | $\sum_i^k r_{xi x1}$ | $\sum_i^k r_{xi x2}$ | $\sum_i^k r_{xi x3}$ | $\sum_i^k r_{xi xk}$ | $\sum_i^k \sum_i^k r_{xi xj}$ |

Step 2: Sum of each column (or row) of the correlation table is computed, obtaining k number of sums of simple correlation coefficient.

$$\sum_i^k r_{xi xj} = \sum_i^k r_{xi xj}$$

Step 3: We compute the sum total of the column (or row) sums-

$$\sum_i^k \sum_j^k r_{xi xj}$$

and we take its square roots.

Step 4: Finally, we obtain the factor loading for the first Principal Component P_1 by dividing each column (or row) sum by the square root of the grand total.

$$a_{ij} = (\sum_i^k r_{xi xj}) / (\sqrt{\sum_i^k \sum_i^k r_{xi xj}})$$

It should be clear that the loading thus obtained are the correlation coefficients of the respective indicator with the composite index.

Step 5: The P_1 or the first Principal Component is constructed in the following way

$$P_1 = a_{11} x_1 + a_{12} x_2 + \dots + a_{1k} x_k$$

Step 6: The sum of the squares of the loading of the Principal Component is called the latent root (or Eigen value) of this component and are denoted by the Greek letter l with the subscript of the Principal Component to which it refers. For example, the latent root of the first Principal Component P_1 is

$$\begin{aligned} l_1 &= [\text{latent root of } P_1] \\ &= \sum_i^k I_1^2 \\ &= I_1^2 + I_2^2 + \dots + I_k^2 \end{aligned}$$

The sum of the latent root of all the Principal Components would be equal to the number of indicators:

$$\sum_i^k l_i = k$$

The importance of the latent root or the eigen value lies in the fact that it expresses the percentage of variation in the set of indicators the Principal Component explains. If for example, $l_1 = 2.797$ and the number of variables are 8, then the P_1 expresses - $l_1 / k = (2.797/8)*100 = 35 \text{ per cent}$ of the variations of the set of 8 variables.

As has been mentioned earlier, the final composite index reflects the 'Investment Attractiveness' of a particular district. However, it should be cautioned that the final composite index computed through PCA is essentially a relative measure. The final composite index of an individual district only shows its relative strength compared to other districts and does not depict its IA in an absolute sense. We have confirmed the statistical validity of inclusion of only the first principal component in our model through statistical test. The model derived 22 principal components, as there are 22 indicators included in it. The strength of each factor in representing the model is computed by the corresponding eigen values. The eigen value is also suggestive of the explanatory capacity of a particular component. Any principal component with an eigen value of 1.0 and above may be considered as an important factor in explaining the model. The first component of our model has an eigen value 12.96. The percentage of variance being explained by the first principal component is around 60 per cent. These facts are indicative of the fact that the first principal component is suitable enough to be used for computing the final composite index.

The PCA analysis used generated objective weights to be assigned to the 22 variables. Table 8.19 reveals the weights (i.e., importance) and relative weights assigned to each variable. Districts having higher values in the indicators, which have higher weights, are likely to get a higher status in terms of IA.

APPENDIX TABLE A-8.7a
Weights (Factor Loading) of the Indicators for Investment Attractiveness Index

| <i>Indicator</i> | <i>Weight</i> | <i>Relative Weight (per cent)</i> |
|----------------------------------------------------------------------------------------------|---------------|---------------------------------------|
| Proportion of households having telephones | 0.27464 | 6.21 |
| Degree of urbanisation | 0.27013 | 6.10 |
| Per capita bank credit | 0.26885 | 6.08 |
| Proportion of households with electricity | 0.26826 | 6.06 |
| Proportion of households with cars | 0.26801 | 6.06 |
| Percentage of non-agricultural workers | 0.26609 | 6.01 |
| Proportion of households with toilet & drinking water | 0.26443 | 5.98 |
| Proportion of households with electricity & toilet | 0.25918 | 5.86 |
| Length of <i>pucca</i> road (kms) constructed by Public Works Department per 1000 sq.km area | 0.24747 | 5.59 |
| Per capita bank deposits | 0.23266 | 5.26 |
| Proportion of households using cooking gas | 0.23052 | 5.21 |
| Population | 0.22041 | 4.98 |
| Percentage of villages with electricity to total populated villages | 0.19079 | 4.31 |
| Population density per kilometre | 0.18849 | 4.26 |
| Percentage decadal growth rate of population | 0.18468 | 4.17 |
| Number of beds in allopathic/dispensary/primary health centres per lakh population | 0.17728 | 4.01 |
| Per capita bank credit to industry | 0.15601 | 3.53 |
| Female literacy per 100 | 0.14198 | 3.21 |
| Access to national highway | 0.12905 | 2.92 |
| Total literacy per 100 | 0.06972 | 1.58 |
| Number of bank branches per lakh population | 0.0692 | 1.56 |
| Proportion of households availing banking facilities | 0.04764 | 1.08 |

Based on these weights, we have combined the indicators linearly to arrive at the final composite index indicating 'Investment Attractiveness'.

APPENDIX A-8.8
PC Analysis: Standardised Values of Indicators

| Indicator | Uttarkashi | Chamoli | Tehri Garhwal | Dehradun | Pauri Garhwal | Rudra-prayag | Haridwar | Pithoragarh | Almora | Nainital | US Nagar | Bageshwar | Champawat |
|---------------------------------------------------------------------------------------|------------|---------|---------------|----------|---------------|--------------|----------|-------------|--------|----------|----------|-----------|-----------|
| 1. Total literacy per 100 | -1.160 | 0.670 | -1.072 | 1.188 | 1.004 | 0.291 | -1.535 | 0.718 | 0.348 | 1.309 | -1.317 | -0.143 | -0.301 |
| 2. Female literacy per 100 | -1.577 | 0.478 | -1.275 | 1.566 | 0.893 | 0.078 | -0.899 | 0.496 | 0.270 | 1.534 | -0.693 | -0.257 | -0.614 |
| 3. Number of beds in allopathic/dispensary/primary health centres per lakh population | 0.008 | -0.381 | -0.534 | 1.723 | 0.150 | 0.106 | -0.949 | -0.308 | -0.294 | 2.466 | -0.904 | -0.512 | -0.571 |
| 4. Proportion of households with electricity | -0.547 | -0.156 | -0.555 | 2.389 | 0.113 | -0.729 | 0.435 | -0.322 | -0.444 | 1.033 | 1.019 | -1.005 | -1.230 |
| 5. Proportion of households with toilet & drinking water | -0.207 | -0.535 | -0.533 | 2.065 | -0.321 | -0.869 | 1.148 | -0.645 | -0.770 | 1.020 | 1.202 | -1.122 | -0.434 |
| 6. Proportion of households with electricity & toilet | -0.184 | -0.534 | -0.601 | 1.994 | -0.338 | -0.924 | 1.141 | -0.539 | -0.784 | 0.874 | 1.423 | -1.090 | -0.440 |
| 7. Roads constructed by public works department | -0.717 | -0.693 | -0.252 | 2.893 | -0.191 | -0.388 | -0.276 | -0.791 | 0.082 | 1.140 | 0.014 | -0.269 | -0.550 |
| 8. Proportion of households having telephones | -0.452 | -0.498 | -0.601 | 2.747 | -0.196 | -0.685 | 0.498 | -0.456 | -0.413 | 0.981 | 0.522 | -1.057 | -0.390 |
| 9. Access to national highway | -1.215 | 0.760 | 0.760 | 0.760 | -1.215 | 0.760 | 0.760 | -1.215 | -1.215 | 0.760 | 0.760 | -1.215 | 0.760 |
| 10. Percentage of villages with electricity | 0.980 | -0.816 | -0.062 | 1.380 | -0.834 | -0.127 | 0.561 | -1.030 | -0.090 | 0.961 | 1.380 | -0.481 | -1.820 |
| 11. Percentage of non-agricultural workers | -0.843 | -0.135 | -0.468 | 2.385 | -0.315 | -0.799 | 1.377 | -0.331 | -0.790 | 0.814 | 0.518 | -0.889 | -0.524 |
| 12. Degree of urbanisation | -0.692 | -0.300 | -0.551 | 2.299 | -0.353 | -1.127 | 0.835 | -0.349 | -0.634 | 1.129 | 0.953 | -0.999 | -0.210 |
| 13. Per capita bank credit to industry | -0.445 | -0.456 | -0.377 | 0.089 | -0.455 | -0.483 | 0.600 | -0.423 | -0.413 | 3.140 | 0.136 | -0.441 | -0.471 |
| 14. Proportion of households using cooking gas | -0.640 | -0.239 | -0.114 | 2.747 | 0.330 | -0.331 | -0.409 | 0.408 | -0.949 | 0.919 | -0.323 | -1.245 | -0.156 |
| 15. Per capita bank deposits | -0.456 | -0.276 | -0.189 | 3.252 | 0.114 | -0.436 | 0.021 | -0.240 | -0.208 | 0.158 | -0.340 | -0.398 | -0.382 |
| 16. Proportion of households with cars | -0.395 | -0.469 | -0.597 | 2.971 | -0.461 | -0.609 | 0.535 | -0.415 | -0.421 | 0.621 | 0.384 | -0.695 | -0.451 |
| 17. Proportion of households availing banking facilities | 0.255 | 1.131 | 0.001 | 1.000 | 1.477 | -0.613 | -1.245 | 1.248 | -1.201 | 0.421 | -1.085 | -0.354 | -1.034 |
| 18. Per capita bank credit | -0.502 | -0.532 | -0.699 | 2.686 | -0.349 | -0.672 | 0.529 | -0.342 | -0.573 | 0.598 | 1.131 | -0.717 | -0.558 |
| 19. Number of bank branches per lakh population | -0.662 | -0.373 | 0.441 | 1.602 | 1.717 | -0.671 | -1.682 | 0.246 | 0.448 | 0.513 | -1.209 | 0.250 | -0.620 |
| 20. Total population | -0.845 | -0.667 | -0.114 | 1.485 | 0.104 | -1.004 | 1.874 | -0.450 | -0.053 | 0.259 | 1.375 | -0.952 | -1.011 |
| 21. Percentage decadal growth rate of population | 0.606 | -0.386 | -0.101 | 0.820 | -1.424 | -0.393 | 0.991 | -0.665 | -1.502 | 1.700 | 1.152 | -0.849 | 0.050 |
| 22. Population density per kilometre | -0.954 | -0.891 | -0.315 | 1.218 | -0.424 | -0.476 | 2.358 | -0.793 | 0.014 | -0.027 | 1.275 | -0.545 | -0.441 |



Chapter 9

Handicrafts

1. Introduction

The handicrafts sector is one of the largest unorganised sectors of the Indian economy and a substantial earner of foreign exchange. It provides employment to over six million people in the country. Most craftsmen in the sector have no formal training and their existing skills are generally acquired from their fathers and forefathers. The situation is, however, fast undergoing a change, with governments at the Centre and the states setting up training schools, largely with the objective of improving the productivity of craftsmen and hence their earnings. In addition, apart from providing training, a number of measures have been initiated, including provision of: (i) improved tools to reduce fatigue and drudgery and improve efficiency, (ii) working capital and raw materials, and (iii) improved designs of their crafts to withstand competition from the modern sector.

Most handicrafts in the handicrafts sector, unlike most other sectors, require little fixed capital but has relatively large working capital requirements. They are largely home-based with little demand on infrastructure, and use mostly acquired skills and locally available materials. Many communities, both rural and urban, engage themselves in traditional crafts to supplement their meagre incomes. This is particularly true of the rural people who use their skills in crafts during hard times like drought, lean harvests and famines. The women generally engage themselves in embroidery, weaving, basket making and similar other crafts during leisure time to supplement household income.

A negative aspect of the handicrafts sector, adversely affecting the livelihood of craftsmen, concerns the keen competition from mass produced goods, steadily replacing the utility items of daily use made by the craftsmen. Indeed there is the danger of artisans losing their

traditional markets, with the possible consequence of a large mass of people would be thrown out of employment. There is also the risk of India losing its rich heritage of some of the finest crafts in the world. The handicrafts have a social and economic significance not only as a means of sustainable livelihood but also from country's viewpoint. For the poor in the country handicrafts is a coping strategy to support themselves and build on their existing assets. As indicated earlier, it is also an important foreign exchange earner. In fact some of the products of handicrafts sector, being individually crafted and unique in character, are in high demand and fetch very high price. Thus, there is also a clear need to not only incorporate the development and promotion of the handicrafts sector in the broader livelihood strategies of weaker and marginalised groups but also from country's larger perspective.

2. The Handicrafts Sector—Meaning and Scope

Despite the importance of handicrafts in India's economic and social life, particularly in the context of the poor, there is no universally accepted definition of the term in India. The foremost problem appears to be a lack of clarity about the role and importance of the sector and the absence of a clear definition of this sector. The handicrafts sector has been variedly construed, and hence accordingly its scope and coverage, as well. Without getting into this aspect further, we provide a flavour of the scope and definition of the term 'handicraft' as conceived and articulated in various documents. The Report of the Task Force on Handicrafts for the Eight Five Year Plan (1989), for example define the term handicrafts as:

Handicrafts are items made by hand, often with the use of simple tools, and are generally artistic and/or traditional in nature. They include objects of utility and objects of decoration (1989).

On the other hand the definition of handicrafts as adopted by UNESCO-UNCTAD/WTO (ITC) at Manila, 6-8 October 1997 is:

Artisanal products are those produced by artisans, either completely by hand or with the help of hand tools or even mechanical means, as long as the direct manual contribution of the artisan remains the most substantial component of the finished product. The special nature of artisanal products derives from their distinctive features, which can be utilitarian, aesthetic, creative, culturally attached, decorative, functional, traditional, religiously and socially symbolic and significant.

A World Bank report classifies products as crafts on the following considerations:

- Manual labour with minimal or no input from machines;
- A substantial level of skill or expertise;
- A significant element of tradition.

The Supreme Court of India has yet another criteria for treating an article as a handicraft. This is as under:

- It must be predominantly made by hand; it does not matter if some machinery is used in the process.
- It must be graced with visual appeal in the nature of ornamentation or inlay work or some similar work lending it an element of artistic improvement; such ornamentation must be of substantial nature and not a mere pretence.

Table 9.1 is an illustrative list of handicrafts and the raw materials to produce them. The table also provides a listing of corresponding skills required in handcrafting operations.

3. Handicrafts in Five Year Plans

This section examines various Plan documents to understand the policy framework and look at the government support for the sector, which has been

TABLE 9.1

Illustration of Handicrafts

| Medium | Skill | Products | End Use |
|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Metal | Casting, engraving, etching, inlay, embossing, repousse, enameling | Brass and copper artware, bronze cast items, iron decorative, kitchen and tableware, wrought iron items, furniture, jewellery | Interior decoration, collectible, fashion accessories |
| Stone | Cutting, shaping, carving, turning inlay carving, engraving, turning, lacquering, painting, inlay | Statues, decorative, jewellery, tableware and kitchenware | Articles of utilities, collectibles |
| Wood | Carving, engraving, turning, lacquering, painting, inlay, marquetry | Statues, furniture toys, decorative, kitchen and tableware | Interior decorations, collectibles, house accessories |
| Cane and bamboo | Cutting, shaping, weaving, coiling, engraving, painting | Baskets, mats, furniture, tableware, toys, panels | Decoratives utilities, house accessories |
| Straw, fibre and grass | Weaving, coiling, tying | Mats, bags, baskets, knick-knacks | Decorative utilities |
| Textiles, yarns of cotton, wool, jute, etc. furling, knitting, painting | Hand printing, tie & dye batik, artistic weaving, embroidery, applique, knotting, tufting, other textiles, garments | Carpets, durries, drug-gets, namdahs, lace and lace goods, embroidered, appliqued and | Interior decoration, fashion accessories, household furnishing, garments |
| Leather | Artistic cobblery, embroidery, applique, embossing, painting | Artistic footwear, bags, purses, garments, saddlery, jewelery, furniture | Personal fashion accessories, Utilities |
| Ivory, bones, horns, shells | Engraving, carving, etching, painting, glazing | Decorative, paintings, statues, jewelery | Home accessories, fashion accessories, collectables |
| Clay and ceramic | Moulding, cutting, etching, painting, glazing | Pottery of artistic shapes and designs | Interior decoration |
| Glass, paper, papier machie, zari, solapith and other local material | Moulding, cutting, etching, painting | Painting, decoratives, jJewelery, tableware, decoratives, utilitarian articles | Decorative utilities |

Source: Export-Import Bank of India, "Indian Handicrafts: A New Direction for Exports", Occasional Paper no. 77, Quiet Publications, March 2000.

essentially through the policy instruments, and through the provision of financial and infrastructure support. It is critical to note that Planning Commission, and the successive Five Year Plans, set the broad policy context for the entire country. Fund allocations to different sectors are made according to programmes/schemes specified in the Plan. State governments fashion their plans on the basis of the overarching framework laid down by the Planning Commission.

The analysis indicates that the Village and Small Industries (VSI) sector mentioned in various Five Year Plans specify the category of traditional industries within this sector. The Plan documents use the term cottage, village and small-scale industry interchangeably, and handicrafts are seen as a product of this category.

The artisan sector is generally viewed more as a part of the welfare sector to be propped up by subsidies and grants rather than as a part of the core economic sector. However, important beginnings have been made with the setting up of a number of boards and corporations.

Each state has its own handicrafts policy. The willingness of various states to assist handicrafts producers and products depends upon the extent to which crafts represent a viable existing or potential export resource and the cultural prominence of those handicrafts across the country. The Union government provides consultation, funds, grants and loans to encourage the states to boost the production and sale of their handicrafts.

The Industrial Policy Resolution of 1948, enunciated prior to the launching of the First Five Year Plan (1951-1956), was the first pronouncement of the Union government on India's industrial policy. The Resolution stressed the need for strengthening and expanding agriculture and industrial production, and laid special emphasis on the production of capital equipment, of goods and of those commodities, which could augment foreign exchange and earnings. Simultaneously, the Resolution recognised that the cottage and small scale sector had an important role to play in the national economy, especially in terms of efficient utilisation of local resources to achieve self-sufficiency in consumer goods such as food, clothing and agricultural implements.

The main arguments advanced in support of the cottage and small-scale sectors are that:

- For every Indian rupee of value added in this sector, the capital required is roughly one-third of that needed in the large industry.

- The employment of one person in large industry requires approximately six to ten times more investment in a large scale sector than in the small scale sector.
- For a large and overpopulated country like India, only the small scale can provide opportunities of work and income all over the country.
- It can ensure more equitable distribution of national income.

The Resolution recognised that suitable steps would have to be taken to protect the cottage and small scale industries against competition from large-scale industry. The directions outlined in the Industrial Policy Resolution of 1948 were incorporated in the First Five Year Plan. The Plan envisaged the need for a common production programme, which would involve the reservation of spheres of production exclusively for the cottage and village industries. This led to imposition of a cess/levy on large scale industry, curtailing expansion of large scale industry and preferential supply of raw materials to decentralised industries.

In the Second Plan (1956-1960), it was felt that all previous measures would have to be supplemented, by common marketing arrangement through cooperative organisations, in which the state may participate. The Third, Fourth and Fifth Plans continued to stress the importance of decentralised industries in expanding employment opportunities. In 1977, there was a discernible shift in favour of the village and small-scale industries sector. The basic tenet of the new policy was that 'whatever could be produced in the small sector must necessarily be so produced'. The basic premise was that expansion in the list of items reserved for production by the village and small-scale industries sector, curbs on the expansion of urban industries. This was complimented by generous financial outlays by the government to the sector.

The Sixth and the Seventh Five Year Plans were supportive of the foregoing measures and the latter regarded promotion of the village and small scale industries sector as one element in the overall strategy to improve the economic situation of communities throughout India. The Plan recommended that appropriate steps be taken to ensure adequate supply of inputs including credit, capital and raw materials. Also, better working conditions, welfare measures and security of employment for the artisans were placed on the agenda for the first time.

The Eighth Five Year Plan laid emphasis on the generation of adequate employment to achieve the 'near full employment level by the turn of this century'. The Plan also stressed the need to augment export earnings from the handicrafts sector, as also the need for a comprehensive database, which could be used for planning and monitoring. A network of support organisations was created to assist artisans in the six sub-sectors that come under the category of traditional industries. These included the Khadi and Village Industries Commission (KVIC); All India Handlooms and Handicrafts Board (AIHHB); Office of Development Commissioner (Handlooms); Office of Development Commissioner (Handicrafts); Central Silk Board; and Coir Board. The primary task of these organisations is to assist artisans and agencies working with artisans, with inputs such as marketing, credit, training and design and product development. The primary task of the AIHHB is to make handicrafts an effective instrument of reducing unemployment and under employment among artisans.

A review of various plans reveals that schemes up to the end of the Seventh Plan were not been able to provide assistance to large sections of craftspeople, for instance, production-related inputs such as the marketing of their products remained out of the reach of the artisans. They relied largely on private tradesmen, acting as intermediaries between the craftsperson and the market. The artisans thus got very little return for their labour.

Even though the sub-sectors in the Eighth Five Year were set up for support, the promotion of rural industries experienced numerous problems. The Government of India itself had pointed out as early as 1988 about the lack of coordination both at the grassroots and at the national level, because of the multiplicity of different departments/organisations in spite of the various coordinating agencies that already existed at the state and Central level. A lack of clarity and difference in inter-ministerial perceptions between the various agencies has further compounded the problem. In spite of the schemes that exist for them, craftspeople are unable to benefit as they lack the assets as well as strong institutions working in their favour.

The Ninth Five Year Plan saw the launching of a new scheme Ambedkar Hastshilp Vikas Yojana during its last year for:

- Empowerment of artisans by making them active entrepreneurs-cum-primary stakeholders in the process of development and bringing them to a visible platform for easy access to domestic and overseas markets.

- Effective collective participation of all members involved in the production and marketing process for optimal growth in human resources, production, business and income.
- Organisation of artisans into community-based enterprises, e.g., self-help groups/cooperative societies, etc.

The Ninth Plan also saw an all round growth in the handicrafts sector as indicated by considerable increase in production, rise in exports and expanding employment base in the sector.

As far as the Tenth Five year Plan is concerned, it has attempted to address the equity concerns along with a broad framework of development based on 'investment-growth model'. As part of its concern for social security and welfare of artisans, schemes like work shed-cum-housing, health package for artisans, group insurance etc., were initiated, and are being continued in the Tenth Plan. Indeed a zero based budgeting exercise was carried out and out of 27 schemes in the Ninth Plan period, only 8 schemes are being taken up in the Tenth Plan. The schemes were either regrouped or merged or weeded out. The various schemes of Ninth Plan have been merged/regrouped in the new schemes under the following heads:

- Baba Saheb Ambedkar Hastshilp Vikas Yojana
- Design and Technical Upgradation
- Marketing Support and Services
- Export Promotion
- Research & Development
- Human Resource Development
- Infrastructure Projects—Handicraft Bhawan/Janpath/RD&TDCs/O/oDC(HC) and field offices, etc.
- Financial assistance to Central PSUs/SHDCs/Apex Societies

Tenth Five Year Plan Initiatives:

- To enhance India's share of handicrafts in global market.
- Presentation of cultural heritage through documentation and R&D.
- Adoption of integrated artisan centric approach.

3.1 Handicrafts on the eve of Tenth Plan

The developmental schemes under implementation in the handicrafts sub-sector cover various areas like training, design development, technology upgradation,

market promotion, exhibitions and publicity, exports, etc. Training is being provided to artisans for upgrading the skills of existing craftsmen as well as to unskilled ones with a view to expanding employment and the production base of crafts for economic growth and reviving languishing crafts. Several studies have shown that 70 to 80 per cent of the trainees get gainful employment (Tenth Five Year Plan, Volume 1, Planning Commission, Government of India).

Out of 196 departmental basic training centres and 100 advanced training centres providing training for carpet weaving, 141 centres have been closed. To help the artisans in Jammu & Kashmir, training centres in the state would be continued during the Tenth Plan. For post-weaving operations like washing and finishing of carpets, seven centres are providing training to artisans. Training is being provided to artisans for crafts like hand printed textiles, art metalware, cane and bamboo, woodwares, etc., in various training centres set-up at important clusters of these crafts.

Regional Design and Technical Development Centres (RDTDCs) are providing design and technical guidance in different crafts to artisans at Bangalore, Kolkata and Guwahati. Various design workshops and other activities are carried out at these centres to make these crafts a success in the contemporary market, and help in preserving traditional beauty of the crafts on the basis of strong ethnic designs. Besides these RDTDCs, Development Centre for Musical Instruments at Chennai, Cane and Bamboo Development Institute at Agartala, Institute of Carpet Technology at Bhadohi and Metal Handicrafts Centre at Moradabad are undertaking research and design, developing technology, improving tools and equipment, developing new designs, prototypes, etc.

The Metal Handicrafts Service Centre (MHSC) at Moradabad provides common facilities for silver plating, powder coating, lacquering, testing of metals and upgradation of skills of artisans. There are three departmental training centres, two at Chennapatna and one at Tirupati (in Andhra Pradesh) to provide training in lacquerware craft. The Cane and Bamboo Development Institute at Agartala is working on development of proper techniques for treatment and preservation of cane and bamboo handicrafts by using suitable chemicals, lacquer, etc., to protect them from insects, fungus, etc. Other organisations like Central/state corporations, apex societies and voluntary organisations are provided financial assistance to provide training in various crafts to: (i) increase the production base of those crafts with high market demand, (ii) upgradation of skills, and (iii) to

revive languishing crafts. An Apprenticeship Training Scheme is being implemented and around 2,500 trainees are provided training by master craftsmen.

The Scheme of Market Meets has been modified to have a better and meaningful interaction with artisans, NGOs, state governments, exporters and traders. Marketing inputs are provided through local level marketing workshops, national level *melas*, product promotion programmes, craft *bazaars*, local fairs and festivals, mini-handicraft expos and national expos. Ample opportunities are provided to artisans to market their products directly to customers and get remunerative prices.

Under the scheme of setting up urban *haats*, 18 *haats* were to be set-up during the Ninth Plan period. So far, eight *haats* at Agra, Ahmedabad, Bhubaneswar, Ranchi, Karnal, Jammu, Tirupati and Kolkata have been approved. This programme would be continued during the Tenth Plan period and *haats* would be set-up at prime market locations and places of tourist interest.

Export promotion efforts of the office of Development Commissioner (Handicrafts) and Export Promotion Council for Handicrafts (EPCH) include participation in international fairs, organising buyer-seller meets and sponsoring sales/technical cum study teams to various countries.

Exports from handicrafts generally includes craft items of *zari* and *zari* goods, art metalware, woodware, hand printed textiles and scarves and embroidered and crocheted goods. Total exports of handicrafts during the Ninth Plan period were around INR 41,470 crore. By the end of the ongoing Tenth Plan (2006-07), production in the handicrafts sector is expected to be INR 47,204 crore with an export target of INR 17,000 crore. Further, by 2006-07, the handicrafts sector is expected to employ an estimated 6.77 million persons.

As already pointed out, we do not currently have a strong, comprehensive database for handicrafts, thus figures of production and employment in handicrafts are derived from the figures of handicraft exports. The Tenth Plan has underlined the need for strengthening the database for handicraft units, along with a reporting mechanism/estimates for the production and employment of handicrafts.

4. Handicrafts in India—Current Status

This section provides an idea about the contribution of the handicrafts sector to the economy in terms of its net contribution to the economy, especially through handicraft exports and in terms of its contribution to employment.

According to the Director General of Commercial Intelligence and Statistics Craft, exports in India were 16 per cent of total exports, in 1972-1983. During the period 1960-1984, craft exports contributed nearly INR 9000 crore in foreign exchange. In comparison, the Union government provided financial assistance of nearly INR 1,400 crore. During the period 1992-93 to 2000-01, the export of handicrafts went up by almost four times. It is expected that by 2006-07, it would touch INR 47,000 crore. In spite of the high percentage of people employed in this sector and considerable export earnings, most artisans in the handicraft sector still live in abject poverty.

Despite the fact that handicrafts sector in India has existed from time immemorial, as indicated earlier there is no system as yet to provide a precise estimates of production and employment in the sector. Therefore, indirect methods are employed to build estimates of production. The current estimates are indirectly arrived based on certain assumptions about the relationship between exports and production of handicrafts in the country (see Table 9.2).

TABLE 9.2

Sub-sector-wise Assumptions about the Ratio of Production to Exports

| Sub-sector | Domestic Consumption (Per cent of the Total Production) | Exports (Per cent of Total Production) |
|---------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------|
| Art metal ware | 30 | 70 |
| Woodwares | 80 | 20 |
| Hand printed textiles | 50 | 50 |
| Embroidered and crocheted goods | 30 | 70 |
| Shawls as artwares | 75 | 25 |
| Zari and zari goods | 85 | 15 |
| Imitation jewellery | 50 | 50 |
| Misc. Handicrafts | 50 | 50 |
| Hand knotted carpets and other floor coverings | 10 | 90 |

Source: Author's Estimates.

The data furnished by the sample surveys of unorganised manufacturing sector conducted by the National Sample Survey Organisation during its 45th and 51st rounds (for the periods 1989-90 and 1994-95) as well as the NCAER survey of handicrafts sector have helped in arriving at some kind of crude estimates of production. Table 9.3 provides an idea of the recent growth of handicrafts sector.

TABLE 9.3

Handicrafts in India: Production, Exports and Employment

| Year | Production (INR crore) | Employment (in million persons) | Exports (INR crore) |
|------------------------------|---------------------------|------------------------------------|------------------------|
| 1997-98 | 10411 | 5.292 | 6458 |
| 1998-99 | 12175 | 5.424 | 7072 |
| 1999-2000 | 13916 | 5.560 | 8060 |
| 2000-01 | 16340 | 5.700 | 9271 |
| 2001-02 (anticipated) | 18677 | 5.841 | 10610 |
| 2002-03 (target) | 22765 | 6.016 | 12732 |
| 2006-07 (terminal target) | 47204 | 6.770 | 17000 |

Source: NSSO Rounds 45th and 51st; NCAER (1995). *Survey of Handicrafts*.

A perusal of the above table would clearly indicate the growth of handicrafts sector in the country. During the Ninth Plan period both production and exports have shown substantial growth. Also by the close of Ninth Plan, an estimated 5.84 million persons were provided employment, although a World Bank estimate has put the number of craft workers at 9-10 million including the part time workers. The crafts account for nearly 15-20 per cent of India's manufacturing workforce and contribute almost 8 per cent of GDP in manufacturing. According to the sub-group on handicrafts for the Xth Plan, handicrafts contributed about one-fourth of the GDP of unregistered manufacturing sector in the country, and about 7.5 per cent of the total manufacturing sector GDP. Much of the progress in the sector is the result of investments made by the Union and state governments, as well as by the private sector, as well as very specific initiatives taken by the Union and state governments. It is estimated that the private investment during the Ninth Plan was almost INR 3000 crore, nearly ten times the resources provided to the sector by the Union government. Much of the private sector investment in the handicrafts was on carpets (almost 50 per cent). The exports in the Tenth Plan are targeted at INR 96,000 crore compared to an export of INR 41,470 crore during the Ninth Plan period.

As indicated earlier, in the handicrafts sector it is the working capital needs that results in seeking credit by the artisans. The data in Table 9.4 based on the findings of the survey on credit needs by the National Council of Applied Economic Research clearly confirms this assertion.

Another interesting feature of the growth of the handicrafts sector is a substantial increase in the domestic and export markets during the Ninth Plan period as is evident from Table 9.5.

TABLE 9.4

Craftwise Working Capital and Fixed Capital Requirements

| <i>Craft</i> | <i>Fixed Capital (per cent)</i> | <i>Working Capital (per cent)</i> |
|---------------------|-------------------------------------|---------------------------------------|
| Hand knotted carpet | 16.70 | 84.30 |
| Art metal ware | 27.80 | 27.20 |
| Wood work | 9.00 | 90.10 |
| Textile hand print | 10.10 | 86.90 |
| Imitation jewellery | 40.10 | 50.90 |
| Zari thread | 30.80 | 60.20 |
| Toys & dolls | 24.20 | 75.80 |
| Zari embroidery | 6.40 | 93.60 |
| Leather crafts | 44.20 | 55.80 |
| Laces | 12.20 | 87.80 |
| Cane and bamboo | 20.00 | 79.40 |
| Embroidery | 6.90 | 93.10 |

Source: NCAER (1995). *Survey of Handicrafts*.

TABLE 9.5

Growth in Domestic and Export Markets (INR Crore)

| <i>Production</i> | | <i>1997-98</i> | <i>1998-99</i> | <i>1999-2000</i> | <i>2000-01</i> |
|-------------------|-------------|----------------|----------------|------------------|----------------|
| Domestic | Handicrafts | 4353.18 | 4901.67 | 5642.33 | 6838.43 |
| | Carpets | 182.77 | 201.40 | 213.60 | 231.51 |
| | Total | 4535.95 | 5103.07 | 5855.93 | 7069.94 |
| Exports | Handicrafts | 4174.39 | 5058.40 | 5923.60 | 6955.35 |
| | Carpets | 1661.58 | 2013.97 | 2136.03 | 2315.15 |
| | Total | 5835.97 | 7072.37 | 8059.63 | 9270.50 |

Source: Author's Estimates.

The above estimates of domestic market are based on certain assumptions (see Table 9.2 above) in regard to the relative shares of domestic consumption and exports; these ratios being different for various sub-sectors of the handicrafts sector. Thus, overall the domestic market has shown an increase of 14 per cent over the period. On the other hand over the same period, exports grew by 14.71 per cent.

Table 9.6 provides an idea about the trends in production of handicrafts for some of the major handicraft items in the country. It is seen from the table that production of most crafts has gone up. However, in certain sub-sectors the growth has been phenomenal. Some of these are woodware, embroidered and crocheted goods, and *zari* and *zari* goods.

Table 9.7 gives information in regard to production of major handicrafts, including carpets for purposes of exports.

TABLE 9.6

Statement Showing Item-wise (Major Groups) Production of Handicrafts including Carpets during the Year 1997-98 to 2000-01 for Domestic Markets (INR Crores)

| <i>Item</i> | <i>1997-98</i> | <i>1998-99</i> | <i>1999-00</i> | <i>2000-01</i> |
|-----------------------------------|----------------|----------------|----------------|----------------|
| Art metal ware | 520.54 | 567.50 | 641.65 | 762.04 |
| Woodware | 887.28 | 1144.16 | 1395.80 | 1737.76 |
| Hand printed textiles and scarves | 838.24 | 1033.98 | 1158.05 | 1276.75 |
| Embroidered and crocheted goods | 424.61 | 496.82 | 679.01 | 842.04 |
| Shawl as artware | 51.24 | 82.62 | 64.50 | 81.60 |
| Zari and zari goods | 398.59 | 424.72 | 473.28 | 806.48 |
| Imitation jewellery | 98.03 | 104.10 | 113.64 | 121.68 |
| Misc. handicrafts | 902.32 | 1057.57 | 1116.40 | 1210.08 |
| Sub-total handicrafts | 4353.18 | 4901.67 | 5642.33 | 6838.43 |
| Carpets | 182.77 | 201.40 | 213.60 | 231.51 |
| Total | 4535.95 | 5103.07 | 5855.93 | 7069.94 |

Source: Author's Estimates.

TABLE 9.7

Statement showing Item-wise (Major Groups) Production of Handicrafts including Carpets during the Year 1997-98 to 2000-01 for Exports (INR Crores)

| <i>Item</i> | <i>1997-98</i> | <i>1998-99</i> | <i>1999-2000</i> | <i>2000-01</i> |
|-----------------------------------|----------------|----------------|------------------|----------------|
| Art metal ware | 1214.60 | 1324.16 | 1497.18 | 1778.10 |
| Woodware | 221.62 | 286.04 | 348.95 | 434.44 |
| Hand printed textiles and scarves | 838.24 | 1033.98 | 1185.05 | 1276.75 |
| Embroidered and crocheted goods | 990.75 | 1159.42 | 1584.36 | 1964.78 |
| Shawl as artware | 17.08 | 18.18 | 21.50 | 27.20 |
| Zari and zari goods | 70.34 | 74.95 | 83.52 | 142.32 |
| Imitation jewellery | 98.03 | 104.10 | 113.64 | 121.68 |
| Misc. handicrafts | 902.32 | 1057.57 | 1116.40 | 1210.08 |
| Sub-total handicrafts | 4353.18 | 5058.40 | 5923.60 | 6955.35 |
| Carpets | 1661.58 | 2013.97 | 2136.03 | 2315.15 |
| Total | 6014.76 | 7072.37 | 8059.63 | 9270.50 |

Source: Author's Estimates.

A close look at the figures listed in the above table shows that during the Ninth Plan the production of handicrafts for export purposes showed an increase of almost 50 per cent, somewhat lower than the production of handicrafts for the domestic market. The pattern of production in respect of various handicraft sub-groups is almost identical; the only significant difference is in respect of carpets where in absolute terms there is a substantial increase in production of carpets for the export market.

The following table gives an idea in regard the share of India's handicrafts. The figures in the table clearly demonstrate India's weakness in the export sector.

TABLE 9.8
Share of World Trade

| Share in World Trade | 1993 | 1997 |
|------------------------------------------------------------------|------|------|
| World trade (billion \$) | 3.55 | 4.13 |
| Share of 4 countries, per cent [China, Iran, Pakistan, India] | 67 | 66 |
| Share of India in world trade [per cent] | 17 | 16 |
| Share of India in 4 countries' export [per cent] | 25 | 24 |

Source: UN Trade Statistics.

The discussion so far has shown the high employment potential of handicraft sector in the country. It has also brought out clearly the role of handicrafts sector in exports. There is still so much more in the sector and it is reasonable to assume that much more is possible provided the states in the country are able to provide an enabling environment, including the states agreeing to provide the right type of enabling environment.

5. Issues and Challenges for the Handicrafts Sector

There are number of factors for the tardy progress of the handicrafts sector in the country. These range from the lack of capital to invest in raw materials to a scarcity of raw materials and their availability at reasonable rates, from the absence of direct marketing outlets to difficulty of access to urban areas that are now the main markets for craft products, from production problems to a lack of guidance in product design and development based on an understanding of the craft, the producer and the market—the constraints are many and varied. Some of these problems are briefly indicated below. It must, however, be noted that this is not to undermine the many initiatives taken by both Union and state governments. But clearly many of these initiatives were half-heartedly conceived and implemented.

Markets: Handicrafts sector has been an integral part of the village life in India. But production for home consumption is radically different from production for a commercial market. Given changing and competitive markets, getting the product right is what determines success or failure of a particular craft project. The traditional craft, however beautiful, needs sensitive adaptation, proper quality control, correct sizing and

accurate costing, if it is to succeed in the market. Thus, for craftsmen to sustain on their own what they need, apart from training, design and product development, easy access to credit and cheaper raw material, are the marketing avenues with the least number of intermediaries. Besides one should in this context recognise the utter poverty of artisans, who given their limited money power, are unable to reach the far off and difficult markets.

Wages and Capital: Other issues of concern are related to inadequate access to credit for both working and fixed capital, problems with raw material supplies, fluctuating rates of raw material and inadequate infrastructure. The importance of these constraints varies from product to product. With the exception of a few utilitarian products made from easily available local materials, the lack of a regular supply of raw materials remains a basic constraint to craft production. Besides, fluctuating prices of both inputs and outputs adversely affect the production schedule of most artisans.

Earnings or wages of artisans engaged in the handicrafts sector are generally very low. In addition, uncertainties in obtaining work on a regular basis accentuates the problem of livelihood of most artisans. These uncertainties can also affect self employed artisans when they are unable to get raw materials or working capital or when demand for their product vanishes.

Artisans engaged in the handicrafts sector need a continuous flow of employment through which they can earn enough in terms of cash and kind to meet their needs. In other words, they need full employment. This underlines the need to foster a strong link between the market and the artisan through his product. Even though the state governments have opened various centres for the sale of finished products, these do not ensure sales high enough to sustain craft people even say for three to six months.

Working Capital: As mentioned earlier, working capital is yet another critical input for artisans. Indeed shortage of working capital, sometimes even for a short period, can cripple a handicraft unit completely. Thus, to ensure fuller employment of workers and production schedule, there is a clear need to ensure that working capital is made available at the right time and of an appropriate magnitude.

Technology: Lack of technological development in the handicrafts sector has worked against it, and has given an edge to the factory sector in terms of efficiency and quality of output. Modern technology has enabled

machines to imitate and emulate even the most intricate designs that were once the exclusive domain of the artisans, developed and perfected over centuries and passed down from generation to generation. Any form of innovation implies an element of risk and investment of capital. Given that most Indian artisans live on the margin of subsistence, they have virtually no reserves to invest in technological innovation (physical capital).

6. Handicraft Industry in Uttarakhand

This section provides an overview of the handicrafts sector in Uttarakhand. The analysis is based on the NCAER data collected during 1995-96. While admittedly this information is dated, there is hardly any other data set for the purpose. Besides, over the period the broad picture may not have changed very much.

Table 9.9 gives the distribution of the number of handicraft units and the number of artisans in different districts of Uttarakhand. The table shows that on average, there are about 5 artisans in a unit. Also the crafts are concentrated largely in Almora, Pithoragarh and Uttarkashi where nearly 57 per cent of the units and about 54 per cent of the artisans are located. It is also seen that the size of the unit, as indicated by the number of artisans, is relatively larger in Pauri Garhwal and Haridwar (6.3 artisans per unit) and low in Uttarkashi (3.9 per cent) and Chamoli (4.7 per cent).

TABLE 9.9

District-wise Number of Handicrafts Units and Artisans in Uttarakhand

| Sl. No. | District | No. of Units | Artisans | Units in Percentage | Percentage of Artisans | |
|---------|---------------|--------------|----------|---------------------|------------------------|----------|
| | | | | | Per Unit | Per Unit |
| 1 | Almora | 2259 | 12291 | 27.08 | 28.70 | 5.4 |
| 2 | Chamoli | 481 | 2272 | 5.77 | 5.30 | 4.7 |
| 3 | Dehradun | 615 | 3562 | 7.37 | 8.32 | 5.8 |
| 4 | Haridwar | 230 | 1448 | 2.76 | 3.38 | 6.3 |
| 5 | Nainital | 709 | 3739 | 8.50 | 1.66 | 5.3 |
| 6 | Pauri Garhwal | 679 | 4245 | 8.14 | 13.75 | 6.3 |
| 7 | Pithoragarh | 1198 | 5889 | 14.36 | 13.75 | 4.9 |
| 8 | Tehri Garhwal | 763 | 3842 | 9.15 | 8.97 | 5.04 |
| 9 | Uttarkashi | 1407 | 5545 | 16.87 | 12.95 | 3.9 |
| | Total | 8341 | 42833 | 100 | 96.76 | 47.64 |

Source: Author's estimation based on NCAER (1995). *Survey of Handicrafts*.

Analysing now the social status, we find from Table 9.10 that most units are run by people belonging to SC/ST and OBC. Only in the districts of Almora, Pauri Garhwal and Tehri Garhwal, there are artisans from

classes other than these (between 40 to 50 per cent), indicating that handicraft units largely support the poor and disadvantaged people.

TABLE 9.10

Handicraft Artisans Classified by Social Status in Uttarakhand (Percentage)

| Sl. No. | Districts | SC | ST | OBC | Others |
|---------|---------------|-------|-------|-------|--------|
| 1. | Almora | 40.37 | 15.1 | 3.28 | 41.26 |
| 2. | Chamoli | 2.08 | 97.3 | 0 | 0.62 |
| 3. | Dehradun | 12.36 | 42.76 | 40.98 | 3.9 |
| 4. | Haridwar | 0 | 0.43 | 99.57 | 0 |
| 5. | Nainital | 6.91 | 0.56 | 84.77 | 7.76 |
| 6. | Pauri Garhwal | 24.3 | 7.22 | 22.09 | 46.39 |
| 7. | Pithoragarh | 18.7 | 70.62 | 5.09 | 5.59 |
| 8. | Tehri Garhwal | 33.29 | 0.26 | 13.11 | 53.34 |
| 9. | Uttarkashi | 57.71 | 19.55 | 0.64 | 22.1 |

Source: NCAER (1995). *Survey of Handicrafts*.

Table 9.11 gives details of the artisans' dependence upon handicrafts for their livelihood. Except in Haridwar where the dependence is high, in other districts the concentrations is around 21-40 per cent and 41-60 per cent. Clearly, many artisans are involved in other activities as well, since income from handicrafts is not enough to meet the needs of their households.

TABLE 9.11

Distribution of Households by Level of Dependency on Income from Handicrafts in Uttarakhand

| Sl. No | Districts | Share of Handicraft Income in Total Income (per cent) | | | | | | Total |
|--------|---------------|-------------------------------------------------------|-------|-------|-------|-------|------|-------|
| | | 20 | 21-40 | 41-60 | 61-80 | 81-99 | 100 | |
| 1. | Almora | 15 | 28.6 | 26.9 | 17.7 | 3.3 | 8.5 | 100 |
| 2. | Chamoli | 32.2 | 48.4 | 10 | 0.4 | 0.4 | 8.5 | 100 |
| 3. | Dehradun | 17.2 | 45.9 | 25.2 | 7.8 | 3.6 | 0.3 | 100 |
| 4. | Haridwar | 1.3 | 2.6 | 6.1 | 3.9 | 7 | 79.1 | 100 |
| 5. | Nainital | 1.1 | 18.2 | 34.7 | 11.3 | 1.6 | 33.1 | 100 |
| 6. | Pauri Garhwal | 11.3 | 32.4 | 21.9 | 11.3 | 0.6 | 22.4 | 100 |
| 7. | Pithoragarh | 9 | 30.6 | 42.4 | 13.6 | 1.4 | 3 | 100 |
| 8. | Tehri Garhwal | 23.7 | 18.6 | 14.3 | 36.8 | 6.3 | 0.3 | 100 |
| 9. | Uttarkashi | 6.3 | 9 | 38 | 15.8 | 0.9 | 30 | 100 |

Source: NCAER (1995). *Survey of Handicrafts*.

Table 9.12, which gives the share of household income derived from different handicrafts in various districts, suggests that households engaged in textile-based handicraft derive almost 40-50 per cent of their income from this activity alone.

TABLE 9.12
Share of Income from Handicrafts in Total Households Income in Uttarakhand

| District | Carpet | Other Floor Covering | Other Textile | All Textile | Cane & Bamboo | Wood | Metal | Stone | Straw Grass, Fibre & Leaf | Leather | Glass | Clay & Ceramics | Ivory Bone, Horn & Shell | Misc. | All Major Crafts |
|---------------|--------|----------------------|---------------|-------------|---------------|------|-------|-------|---------------------------|---------|-------|-----------------|--------------------------|-------|------------------|
| Almora | 44.8 | 40.8 | 20.7 | 40.6 | 49.9 | 66.9 | 66.5 | 20 | 33.8 | 39 | 0 | 0 | 0 | 0 | 41.1 |
| Chamoli | 26.2 | 0 | 21.1 | 26.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26.2 |
| Dehradun | 23.1 | 20 | 36.9 | 32.8 | 22.3 | 50.5 | 0 | 0 | 44.8 | 0 | 0 | 49.7 | 0 | 0 | 36.9 |
| Haridwar | 94.4 | 87.9 | 0 | 93.3 | 100 | 92.5 | 0 | 0 | 0 | 0 | 0 | 81.6 | 0 | 0 | 89.2 |
| Nainital | 0 | 72.9 | 74.3 | 74.1 | 65.5 | 49.3 | 12.5 | 0 | 55.1 | 0 | 0 | 67.8 | 0 | 0 | 63.8 |
| Pauri Garhwal | 0 | 0 | 44.9 | 44.9 | 51.6 | 76.6 | 71.6 | 0 | 44.1 | 0 | 0 | 0 | 0 | 0 | 45.6 |
| Pithoragarh | 38 | 0 | 43.3 | 38.3 | 0 | 0 | 94.5 | 0 | 37.5 | 100 | 47.1 | 38.4 | 0 | 0 | 38.7 |
| Tehri Garhwal | 56.8 | 72.4 | 0 | 60.1 | 42.9 | 70.7 | 74.4 | 0 | 35.4 | 0 | 0 | 0 | 0 | 0 | 43.9 |
| Uttarkashi | 50.8 | 56.5 | 63.8 | 53.7 | 77.8 | 85.6 | 37.9 | 0 | 51.3 | 88 | 0 | 74.1 | 0 | 0 | 58.4 |

Source: Authors's Estimates based on NCAER (1995). *Survey of Handicrafts*.

Summarising the salient features emerging from the preceding tables:

- Textile-related activities dominate. Within this group, hand-knitted woollen carpet-making is the main activity, concentrated in Almora, Chamoli and Pithoragarh.
- Other important activities are those based on cane and bamboo and straw, grass, fibre and leaf. Metal, wood and clay and ceramic based handicrafts come after.
- Cane and bamboo crafts are located in Almora, Nainital and Tehri Garhwal. Almora again has concentration of wood, metal and straw, grass, fibre and leaf-based crafts.

Table 9.13 gives details about the estimated production, cost, sales and value added by handicrafts in the various districts by type of crafts. It shows Almora having maximum production in value terms followed by Dehradun, Uttarkashi, Nainital and Pithoragarh. Apart from Pauri Garhwal and Tehri Garhwal, all other districts show high share of textiles in total production. The trends are similar in respect of sale of handicrafts. A heartening feature is that most of the production is sold out, leaving little inventory. Even here, prominent crafts after textiles are cane and bamboo-based crafts, wood-based crafts and straw, grass, fibre and leaf-based crafts. These, along with textiles, provide the maximum value addition.

Table 9.14 contains some critical indicators for the handicrafts sector in various districts of Uttarakhand. The

most important feature is the wide gap between the credit requirements and the credit actually availed. Second, the total contribution of the handicraft sector in terms of value of production is only around INR 20 crore. (Clearly this may be more with prices having risen over the period). Third, if one looks at the household income derived from handicrafts, the last column of the table shows wide inter-district variations, ranging from around 26 per cent in Chamoli to nearly 90 per cent in Haridwar. Further, nearly half of the value of production is devoted to input costs. And last but not the least, the per capita income of the artisan household is a mere INR 11 to INR 26 per day, assuming 240 working days a year. Clearly, this is not adequate for meeting even the minimum needs.

Table 9.15 which presents a distribution of handicrafts in various districts of Uttarakhand clearly shows the domination of textile-related activities with hand-knit woollen carpets as the other important handicraft, especially in the districts of Almora, Chamoli and Pithoragarh. Other activities based on cane and bamboo, and straw, grass, fibre and leaf are also fairly significant in the state. As far as cane and bamboo-based handicrafts are concerned, they are largely concentrated in Almora, Nainital and Tehri Garhwal.

Table 9.16 provides an idea about the distribution of artisans engaged in the handicrafts sector in various districts and type of handicrafts in Uttarakhand. It would be seen from the table that a large number of artisans are engaged in textile-based activities, with such handicrafts based on such raw materials as straw, grass, fibre and

TABLE 9.13
District-wise Estimate of Production, Cost, Sale and Value Addition in Handicraft Section in Uttarakhand

| District | Carpet | Other Floor Covering | Other Textile | All Textile | Cane & Bamboo | Wood | Metal | Stone | Straw Grass, Fibre & Leaf | Leather | Glass | Clay & Ceramics | Ivory Bone, Horn & Shell | Misc. | All Major Crafts |
|---------------|--------|----------------------|---------------|-------------|---------------|------|-------|-------|---------------------------|---------|-------|-----------------|--------------------------|-------|------------------|
| Almora | | | | | | | | | | | | | | | |
| P | 145.9 | 35.1 | 42.3 | 223.2 | 49.4 | 28.8 | 13.5 | 0.1 | 126.5 | 0.7 | 0 | 0 | 0 | 0 | 442.3 |
| C | 82.8 | 22.3 | 16.7 | 121.8 | 17.6 | 15.3 | 9.5 | 0.1 | 68.8 | 0.7 | 0 | 0 | 0 | 0 | 233.5 |
| S | 142.2 | 34.9 | 42.1 | 219.2 | 49.4 | 28.1 | 13.4 | 0.1 | 123.4 | 0.7 | 0 | 0 | 0 | 0 | 434.2 |
| VA | 43.3 | 36.4 | 60.5 | 45.4 | 64.4 | 46.8 | 29.6 | 45.2 | 45.6 | 37.5 | 0 | 0 | 0 | 0 | 47.2 |
| Chamoli | | | | | | | | | | | | | | | |
| P | 94.6 | 0 | 0.2 | 94.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 94.8 |
| C | 39.3 | 0 | 0.1 | 39.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39.4 |
| S | 81.7 | 0 | 0.2 | 81.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 81.8 |
| VA | 58.5 | 0 | 55.6 | 58.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 58.5 |
| Dehradun | | | | | | | | | | | | | | | |
| P | 125.9 | 1.1 | 164.8 | 291.8 | 6.1 | 32.4 | 0 | 0 | 3.5 | 0 | 0 | 9.3 | 0 | 0 | 343 |
| C | 94.4 | 0.6 | 65.5 | 160.5 | 2.5 | 17.3 | 0 | 0 | 1.4 | 0 | 0 | 3 | 0 | 0 | 184.7 |
| S | 125.9 | 1.1 | 163.9 | 290.9 | 6 | 32.1 | 0 | 0 | 3.5 | 0 | 0 | 8.6 | 0 | 0 | 341.1 |
| VA | 25 | 47.1 | 60.2 | 45 | 58.5 | 46.6 | 0 | 0 | 60.8 | 0 | 0 | 67.8 | 0 | 0 | 46.1 |
| Haridwar | | | | | | | | | | | | | | | |
| P | 28.1 | 11.7 | 0 | 39.8 | 2.3 | 5.6 | 0 | 0 | 0 | 0 | 0 | 26.4 | 0 | 0 | 74 |
| C | 13.7 | 6.2 | 0 | 19.8 | 1.1 | 2.8 | 0 | 0 | 0 | 0 | 0 | 6.6 | 0 | 0 | 30.3 |
| S | 27.6 | 11.5 | 0 | 39.1 | 2.3 | 5.6 | 0 | 0 | 0 | 0 | 0 | 21.2 | 0 | 0 | 68.1 |
| VA | 51.4 | 47.1 | 0 | 50.1 | 52.2 | 50 | 0 | 0 | 0 | 0 | 0 | 75.1 | 0 | 0 | 59.1 |
| Nainital | | | | | | | | | | | | | | | |
| P | 0 | 14.5 | 134 | 148.5 | 18.3 | 45 | 0.5 | 0 | 40.4 | 0 | 0 | 10.7 | 0 | 0 | 263.3 |
| C | 0 | 7.7 | 85 | 92.7 | 7.2 | 23.7 | 0.2 | 0 | 20.4 | 0 | 0 | 4.7 | 0 | 0 | 149 |
| S | 0 | 14.2 | 132.2 | 146.4 | 15.9 | 45 | 0.5 | 0 | 38.6 | 0 | 0 | 10.6 | 0 | 0 | 257 |
| VA | 0 | 47.1 | 36.5 | 37.6 | 60.5 | 47.3 | 47.3 | 0 | 49.4 | 0 | 0 | 56.4 | 0 | 0 | 43.4 |
| Pauri Garhwal | | | | | | | | | | | | | | | |
| P | 0 | 0 | 19.8 | 19.8 | 5.4 | 6.9 | 2.6 | 0 | 55.6 | 0 | 0 | 0 | 0 | 0 | 90.6 |
| C | 0 | 0 | 11.2 | 11.2 | 3.1 | 4.7 | 1.9 | 0 | 32.2 | 0 | 0 | 0 | 0 | 0 | 53.1 |
| S | 0 | 0 | 19.8 | 19.8 | 5.4 | 6.9 | 2.6 | 0 | 55.9 | 0 | 0 | 0 | 0 | 0 | 90.6 |
| VA | 0 | 0 | 43.6 | 43.6 | 42.3 | 31.7 | 28 | 0 | 42.4 | 0 | 0 | 0 | 0 | 0 | 41.4 |
| Pithogarth | | | | | | | | | | | | | | | |
| P | 201.7 | 0 | 30 | 231.7 | 0 | 0 | 2.5 | 0 | 1 | 0.3 | 0.4 | 3.7 | 0 | 0 | 239.6 |
| C | 89 | 0 | 11.9 | 101 | 0 | 0 | 1.3 | 0 | 0.6 | 0.1 | 0.2 | 3 | 0 | 0 | 106.1 |
| S | 199.8 | 0 | 29.9 | 229.7 | 0 | 0 | 2.5 | 0 | 1 | 0.3 | 0.4 | 3.7 | 0 | 0 | 237.6 |
| VA | 55.9 | 0 | 60.2 | 56.4 | 0 | 0 | 47.3 | 0 | 40 | 70 | 58.4 | 20 | 0 | 0 | 55.7 |
| Tehri Garhwal | | | | | | | | | | | | | | | |
| P | 14.6 | 4.1 | 0.6 | 19.3 | 47.9 | 24.1 | 9.3 | 0 | 89.1 | 0 | 0 | 0 | 0 | 0 | 189.7 |
| C | 6.9 | 2.1 | 0.2 | 9.2 | 18.4 | 12 | 4.7 | 0 | 37.2 | 0 | 0 | 0 | 0 | 0 | 81.5 |
| S | 14.6 | 4 | 0.6 | 19.2 | 47.9 | 24.1 | 9.3 | 0 | 89.1 | 0 | 0 | 0 | 0 | 0 | 189.6 |
| VA | 53 | 47.1 | 66.7 | 52.2 | 61.6 | 50.2 | 50 | 0 | 58.2 | 0 | 0 | 0 | 0 | 0 | 57 |
| Uttarkashi | | | | | | | | | | | | | | | |
| P | 125.4 | 12 | 35.8 | 173.1 | 6.7 | 52.1 | 2.8 | 0 | 57.9 | 0.4 | 0 | 0.6 | 0 | 0 | 293.7 |
| C | 53.5 | 6.5 | 17.2 | 77.1 | 2.4 | 22.8 | 1.3 | 0 | 23.3 | 0.2 | 0 | 0.2 | 0 | 0 | 127.4 |
| S | 125.3 | 12 | 35.8 | 173 | 6.7 | 52.1 | 2.8 | 0 | 57.9 | 0.4 | 0 | 0.6 | 0 | 0 | 193.6 |
| VA | 57.4 | 45.7 | 52 | 55.4 | 64.1 | 56.3 | 51.9 | 0 | 59.7 | 52.3 | 0 | 62.5 | 0 | 0 | 56.6 |

Note: Units P = Production INR lakh; VA = Value Addition in per cent; C = Cost INR lakh VA (Production-cost/Production); S = Sales INR lakh.

Source: Authors's Estimates based on NCAER (1995). Survey of Handicrafts.

TABLE 9.14
District-wise Details of Selected Parameters in Uttarakhand

| District | Total Units | Total Artisans | Per Unit Value (INR) | | | | Average Size of Workforce | Estimated Value (INR lakhs) | | | Value Addition (per cent) | Annual Income | | Craft Income as per cent HH Income |
|---------------|-------------|----------------|----------------------|-----------|-----------------|------------------|---------------------------|-----------------------------|-------|-------|---------------------------|---------------|-------------|------------------------------------|
| | | | Assets | Liability | Credit Required | Credit Available | | Production | Cost | Sale | | Per HH (INR) | Per Ca (Rs) | |
| Almora | 2259 | 12291 | 2297 | 361 | 7426 | 94 | 5.4 | 442.3 | 233.5 | 434.2 | 47.2 | 19028 | 3155 | 41.1 |
| Chamoli | 461 | 2272 | 2160 | 0 | 21262 | 0 | 4.7 | 94.8 | 39.4 | 81.8 | 58.5 | 33211 | 6172 | 26.2 |
| Dehradun | 615 | 3562 | 725 | 0 | 13385 | 0 | 5.8 | 543 | 184.7 | 341.1 | 46.1 | 15481 | 2351 | 36.9 |
| Haridwar | 230 | 1448 | 1063 | 0 | 34878 | 0 | 6.3 | 74 | 30 | 68.1 | 59.1 | 28718 | 4352 | 89.2 |
| Nainital | 709 | 3739 | 2616 | 0 | 12745 | 2 | 5.3 | 263.3 | 149 | 257 | 43.4 | 23611 | 3748 | 63.8 |
| Pauri Garhwal | 671 | 4245 | 480 | 258 | 3524 | 0 | 6.3 | 90.8 | 53.1 | 90.6 | 41.4 | 17831 | 2663 | 45.6 |
| Pithoragarh | 1198 | 5889 | 2105 | 24 | 17868 | 45 | 4.9 | 239.6 | 106.1 | 237.6 | 55.7 | 25244 | 4691 | 38.7 |
| Tehri Garhwal | 763 | 3842 | 1382 | 831 | 13193 | 429 | 5 | 189.7 | 81.5 | 189.6 | 57 | 17602 | 3157 | 43.9 |
| Uttarkashi | 1407 | 5545 | 2632 | 0 | 7703 | 53 | 3.9 | 293.7 | 127.4 | 293.6 | 56.6 | 20314 | 3940 | 58.4 |

Source: Authors's Estimates based on NCAER (1995). Survey of Handicrafts.

TABLE 9.15
District-wise Percentage of Handicrafts Units by Specific Crafts in Uttarakhand

| Handicrafts | | Almora | Chamoli | Dehradun | Haridwar | Nainital | Pauri Garhwal | Pithoragarh | Tehri Garhwal | Uttarkashi |
|-----------------|----------------------------------------------------------|--------|---------|----------|----------|----------|---------------|-------------|---------------|------------|
| Textile | Carpet | | | | | | | | | |
| | Woollen carpet by hand | 32.93 | 99.59 | 12.85 | 28.70 | | | 91.07 | 3.41 | 38.73 |
| | Other textile | | | | | | | | | |
| | Cotton carpet by hand | 0.04 | | 0.16 | | | | | | 1.28 |
| | Durries and rugs by hand | 6.51 | | | 10.87 | 5.64 | | | 1.70 | 0.64 |
| | Shawls by hand as art ware | | 0.21 | | | | | | | 0.07 |
| | Sub-total | 6.55 | 0.21 | | 10.87 | 5.64 | | | | 1.99 |
| | Printing of cloth by hand | | | 0.33 | | 10.72 | | | 0.13 | |
| | Bleach/dye/print silk tex | | | | | 6.35 | | | | 0.07 |
| | Embroidery work by hand | 1.64 | | 0.16 | | 0.42 | | 0.33 | | 12.86 |
| | Zari work by hand | 0.27 | | | | | | 5.59 | | 0.36 |
| | Jute/hemp rope and cordage | 1.90 | | 53.33 | | 19.32 | 27.84 | 0.17 | | |
| | Sub-total | 3.81 | | 53.82 | | 36.81 | 27.84 | 6.09 | | 13.29 |
| | All textiles total | 43.29 | | 66.83 | | 39.57 | 42.45 | 27.84 | 97.16 | 5.24 |
| Cane and bamboo | | | | | | | | | | |
| | Other container and products | 13.41 | | 9.11 | 5.22 | 9.17 | 5.74 | | 32.77 | 2.84 |
| Wood | | | | | | | | | | |
| | Toys and decoration pieces | | | | | 19.46 | | | | |
| Metal | | | | | | | | | | |
| | Furniture and fixture | 4.47 | | 11.87 | 8.70 | 0.28 | 1.91 | | | 17.34 |
| Metal | | | | | | | | | | |
| | Other precious metal jewellery brass and copper art ware | 2.66 | | | | 0.14 | 1.62 | 0.83 | 2.10 | 0.71 |
| Stone | | | | | | | | | | |
| | Stone art ware (statue etc.) | 0.04 | | | | | | | | |
| Leather | | | | | | | | | | |
| | straw, grass, fibre and leaf | | | | | | | | | |
| | leaf-based articles | 20.10 | | | | 0.42 | | | | 0.14 |
| | other products n.e.c. | 15.94 | | 3.25 | | 22.99 | 62.89 | 1.00 | 50.20 | 24.59 |
| Leather | | | | | | | | | | |
| | Total | 36.03 | | 3.25 | | 23.41 | 62.89 | 1.00 | 50.20 | 24.73 |
| Leather | | | | | | | | | | |
| | Artistic chappal by hand | 0.09 | | | | | | 0.17 | | 0.14 |
| Glass | | | | | | | | | | |
| | clay and ceramics | | | 8.94 | 46.52 | 5.08 | | 0.67 | | 0.21 |
| Glass | | | | | | | | | | |
| | earthen and plaster statues | | | | | | | | | |
| Glass | | | | | | | | | | |
| | Other glassware n.e.c. | | | | | | | 0.17 | | |

Source: Authors's Estimates based on NCAER (1995). Survey of Handicrafts.

leaf, cane and bamboo, and wood also offering employment to large number of artisans. Overall, it is fair to conclude that most handicrafts in the state use local raw materials, using mostly local skills, and depending on tourist traffic for most of its demand. The last is evident from the fact that the districts where handicrafts related activities are concentrated are also the districts with maximum tourist traffic.

7. Important Handicrafts of Uttarakhand: Attributes and Problems

Essentially, the state has the dominance of traditional and tribal handicrafts, using mostly local raw materials. A large part of the production is for domestic consumption and for sale to the tourists visiting the state, some part of the production is exported as well. Given the fact that the

TABLE 9.16
District-wise Distribution of Handicrafts Artisans (per cent) by Specific Crafts in Uttarakhand

| Handicrafts | | Almora | Chamoli | Dehradun | Haridwar | Nainital | Pauri Garhwal | Pithoragarh | Tehri Garhwal | Uttarkashi |
|-----------------|---------------------------------------------|--------|---------|----------|----------|----------|---------------|-------------|---------------|------------|
| Textile | Carpet | | | | | | | | | |
| | Woollen carpet by hand | 31.16 | 49.89 | 13.25 | 33.63 | | | 92.21 | 5.15 | 49.86 |
| | Other textiles | | | | | | | | | |
| | Cotton carpet by hand | 0.07 | | 0.42 | | | | | | 1.91 |
| | Durries and rugs by hand | 7.31 | | | 10.77 | 5.16 | | | 1.41 | 0.67 |
| | Shawls by hand as artware | | 0.11 | | | | | | | 0.13 |
| | Sub-total | 7.39 | 50 | 0.42 | 10.77 | 5.16 | | | 1.41 | 2.71 |
| | Printing of cloth by hand | | | 3.23 | | 11.26 | | | 0.49 | |
| | Bleach/dye/print silk tex | | | | | 5.19 | | | | 0.05 |
| | Embroidery work by hand | 1.64 | | 0.39 | | 0.35 | | 0.19 | | 9.45 |
| | Zari work by hand | 0.24 | | | | | | 5.64 | | 0.09 |
| | Jute/hemp rope and cordage | 2.07 | | 50.28 | | 19.34 | 28.57 | 0.12 | | |
| | Sub-total | 3.94 | | 53.90 | | 36.13 | 28.57 | 5.94 | 0.49 | 9.59 |
| | All textiles total | 42.49 | | 67.57 | 44.41 | 41.29 | 28.57 | 98.15 | 7.05 | 62.16 |
| Cane and bamboo | Other container and products | 15.20 | | 9.74 | 5.18 | 7.25 | 6.45 | | 32.35 | 2.45 |
| | | | | | | | | | | |
| Wood | Toys and decoration pieces | | | | | 0.11 | | | | |
| | Furniture and fixture | 3.56 | | 11.01 | 10.43 | 24.39 | 3.11 | | 6.53 | 8.08 |
| Metal | Other precious metal jewellery | | | | | | | | 1.80 | |
| | Brass and copper artware | 2.85 | | | | 0.16 | 0.99 | 0.54 | 0.62 | 0.76 |
| Stone | Stone artware (statue etc.) | 0.01 | | | | | | | | |
| | Straw, grass, fibre and leaf based articles | 20.81 | | | | 0.62 | | 0.53 | | 0.16 |
| | Other products n.e.c. | 15.01 | | 2.41 | | 21.34 | 60.87 | | 51.64 | 25.93 |
| | Total | 35.82 | | 2.41 | | 21.96 | 60.87 | 0.53 | 51.64 | 26.10 |
| Leather | Artistic <i>chappals</i> by hand | 0.07 | | | | | | 0.07 | | 0.16 |
| | Clay and ceramics | | | | | | | | | |
| | Earthen and plaster statue | | | 9.26 | 39.99 | 4.84 | | | | 0.29 |
| Glass | Other glassware n.e.c. | | | | | | | 0.08 | | |

Source: Authors's Estimates based on NCAER (1995). *Survey of Handicrafts*.

state of Uttarakhand was recently carved out of Uttar Pradesh, there is a dearth of information at the moment and whatever is available, it is at best a crude estimate of production and exports figures. It is however clear that the state has large potential for handicraft exports as the state has a rich tradition of individually crafted products which can have large demand from the affluent people both from within the country and from outside the country as well.

This is however possible only when some basic problems of raw material, marketing, design, tools, etc., are overcome. For example, copper-based handicrafts which used the raw material from the mines of Kharai Patti are no longer in a position to access these mines as they are now depleted. Thus, these units rely largely on the local market which procure raw materials from Delhi. While market is no problem, raw material availability combined with existing design and tools stand in the way of copper-based handicrafts. In other crafts, it is not so much the problem of raw materials as of the market and credit, especially for working capital.

And hence, for the survival of the craft industry several measures are needed. These are described in the following paragraphs. However, before proceeding further, it may be mentioned that over the period, some new crafts have appeared. For instance, fibre sector, being dependent on renewable material, can emerge as one possible sector whose sustainability may almost be certain. Skilled manpower concerned with fibre extraction and rope making are fairly evenly distributed across all the districts in the state. Locally available fibre may be used to make fancy products and traditional crafts for income generating activity. Paper flowers, block printing, pine bark jewellery, artistic candles, gem cutting and leather-based activities are other potential areas for promotion. But all this would require training, evolving new designs, development of new tools, access to working capital and raw materials, etc. These are areas requiring focused attention and support.

8. Promoting Handicrafts: Areas for Specific Action

8.1 Technologies that Meet Local Needs

There is a growing demand for medicines, dyes and aromatic oils from botanic oil sources. Appropriate agrotechnologies have to be developed to enable the large-scale cultivation of these plants. Low-cost and efficient extraction implements, networking with the user industry for collection of the extracts and methods for utilising the plant waste have also to be addressed simultaneously.

A number of rural handicrafts i.e., wooden toys and artefacts have lost their overseas markets as a result of widespread concern over the use of chemical (toxic) dyes and paints. Helping the artisans develop vegetable colouring alternatives and labeling these as safe can help rebuild a market for these traditional products. Schemes initiated to promote biotechnology in rural areas should have a marketing perspective at the conceptual stage. The lack of such an approach has led to the failure of several programmes initiated by the government to train rural persons as artisans in products that have a sizeable export market.

Some years ago the All India Handicraft Board initiated a programme for training rural people in the art of weaving carpets. Despite the fact that a substantial demand for hand-knotted carpets from India exists, those produced under this programme could not be sold even in the local market since the products lacked the finish or the colors that the market demanded. Programmes of assistance should be so designed as to take into the account the fact that the needs of the beneficiaries who require inputs based on prevalent market conditions regarding colours, sizes, shelf-life, non-toxic materials, etc.

So far technological development has not fully catered to the needs of *shilpkaras* and new innovations have not matched local needs, thus depriving both artisans and patrons of handicrafts of emerging technologies.

8.1.1 Design and Innovation

There is tremendous scope for focus in the area of design development and advisory services. For instance, in the field of design, new products can be developed such as the Kumaon Pashmina in association with Handicraft Board and/or the IIT's Textile Technology Department, or any other such institution. Other products like bio-Holi colours (Development Alternatives) and leather products (Tilonia) are a good example of what some NGOs have been able to achieve. In collaboration with IIT, Delhi or the FRI, Dehradun, various kinds of natural dyes could be evolved for use in carpet, wool and other textiles.

Thus, the textile industry can be upgraded by increasing its commercialisation and focusing on its utility value. Design inputs and innovation can be used to decorate coasters, place mats, wall hangings. These are being produced but a more competitive product can be made through intervention of design and technology at all levels. The same could be done with traditional tribal jewellery using design inputs from other states. This

could be accomplished through assistance in organising design workshops through designer and RDn (Regional Designs) & TDCs (Technical Development Centres) for educating craftsmen on new products/designs as per market demand. Assistance could be given through Technology Transfer Centre by organising training workshops in the use of improved tools and technology.

Upgradation of design of manufacturing technology, and inputs into other craft-related products such as water mills, wheat grinders, compost unit, leather tannery from dead animals, etc., would revitalise them. It is important to take these products out of the field of tradition and into the area of maximum utility. Blankets and shawls could be exposed to imported design inputs to improve the existing design and finish.

Bed spreads and cushion covers can be made out of them after combining with some sort of fabric/linen. Combination of fibres can be tried out, variety of dyes (preferably vegetable) can be tried. Vegetable dyes being non-toxic and good for the skin, are highly preferred these days.¹ This issue is gaining importance as most of the western markets are rejecting textiles using chemical dyes. In the last four years, the Indian Government has also responded to pressures from environmentalists and banned the use of azo and benzene dyes. Many crafts could be promoted through developing a 'souvenir industry' considering its export potential. Like folk ornaments having no problems of raw materials and market demand can be extensively publicised for the export market as well.

8.1.2 Skill Upgradation and Training

An important input in the final shape of an article or product is the skill level of the artisan. As indicated earlier, most artisans engaged in the handicrafts sector in India have no formal training and their skills are mostly acquired from the elders. This does not permit them to easily adapt themselves to new designs or new methods of production. Hence, there is a clear need to upgrade the existing skills of artisans. Skill training is important both in craft, agriculture and tools for domestic consumption. Specifically, water mills for agricultural purposes is one of the latest aspects of rural technology that proves that scientific developments come up not only in the laboratories but also exploiting the natural resources. Tools for domestic consumption can also be designed for the market like water filter, grinding machines, *mudva* tools, etc. The Chinese success is a good case in point.

Professionalism in the handicraft sector could be introduced by giving proper vocational training to the artisans. Awareness could be generated regarding the introduction of new technology or upgrading the traditional one through various workshops and polytechnic programmes.

The socio-economic realities faced by women—social restrictions and taboos, lack of resources, numerous household responsibilities, disadvantage in gaining access to education and training make it essential that long term back-up facilities be provided at the doorstep, like with a Women's Technology Park (WTP). By making an inventory of existing initiatives in the direction of technological empowerment of women, the WTP will avoid duplication of efforts. The Technology Park exclusively for women will provide the right impetus to researchers, scientists and technologists to design tools and implements keeping in view the ergonomic characteristics of women.

The Expert Committee on Science and Technology for Women has given the suggestion to launch Technology Parks exclusively for women on the same lines of Rural Technology Park whose foundation was successfully laid down by Society for Rural Industrialisation (SRI), Ranchi, in October 1995 with support from the Department of Science and Technology.

The success of WTPs can be gauged from the record of the two WTPs facilitated by the Department of Science & Technology: one for the mountain region at Mehuwall village near Dehradun and the other for the West Coast region at Shivalli village, Manipal, Karnataka.²

8.2 Infrastructure Requirement for the Prominent Craft Centres

Most of the handicraft centres in Uttarakhand are scattered in remote areas with no connecting road to the market places. Thus, because of high cost of transportation, the cost of production and sale prices of the items rise. This suggests the need for improving the connectivity of the production centres with the sources of raw materials and market hubs.

It would be useful to undertake the development of handicraft-based industries in close coordination with the development of the souvenir industry in the tourism sector. Indeed, it would be beneficial for the handicraft sector that the state has a Crafts Design Centre and an Uttarakhand *Haat*.

1. TRIFED.

2. Sharma, 1999.

8.3 Requirement and Availability of Raw Material

All major crafts like copperware, woollen products, ringal and other forest-based activities are facing problems of procurement of raw material, thereby stunting their growth and employment generation capacity. This applies to both inputs obtained from outside the state but also for those using indigenous raw material.

Most artisans are poor with little working capital to purchase raw material, tools, etc. They borrow or buy money and tools from local traders and other artisans. Most of them are in multiple debt and a major part of their earnings goes in repayment of principal and interest.

Originally, the copperware artisans were getting extracted copper from nearby mines located at Khareti Patti (Bageshwar), Champavat and Nagraso (Chamoli). After such extraction was banned, state agencies opened a few raw material depots. Even these were closed down because of proximity of UP State Brassware Corporation. Currently, private traders are the only sources of raw material for the craftspeople.

The Bhotia tribe procured wool from local sheep owners and from Tibet till 1962 i.e., till the Indo-China War. After the passes to Tibet were closed, the state government tried to get Tibetan wool via Nepal. It also setup sheep production centres. None of these factors were of much help. Bikaner in Rajasthan and Ludhiana in Punjab are the new raw wool supplying centres.

The artisans who need ringal, bamboo, grass and other forest products are also facing restrictions imposed by the Department of Forest under their forest conservation programme. It has made supply of raw material to artisans difficult and time consuming. The original and age-old traditional sources of raw material *viz.*, copper, lead, graphite, sulphur, gypsum, bauxite (iron ore), limestone, soapstone have dwindled mainly due to inadequate infrastructure facilities on one hand and environmental safeguards on the other. The traditional small-scale and cottage industries based on local resources base have been stunted by depletion of resources and inadequate promotional policy and market support. This plays a significant role in a particular craft dying out and the depletion of skill of traditional craftspersons. This has fuelled migration from villages to urban areas and from hills to plains leading to three-dimensional problems *viz.*, absence from their livelihood, abandonment of parental property and spending hard-earned money on daily life

(housing, transport, travel, medical, ceremonies, legal conflicts, even electioneering).

8.4 Summary

Depots such as wool banks in crafts-concentrated areas could be established to ensure uninterrupted supply of quality raw material to artisans in required quantity at appropriate rates. The state forest department may be asked to provide forest-based raw material such as ringal, bamboo, grass etc., to artisans at concessional rates and in sufficient quantity. Fuel too is a problem, since the 1996 Supreme Court ban on tree felling.³

To keep pace with the changing consumer tastes, there is a need for constant research and development of new designs. The Board has set up regional design centres, but there is a need to review their working and introduce changes to make them more effective and useful.

In addressing the problems of the craftspeople of Uttarakhand, we find that the major constraints are lack of raw material, availability of credit, market outlets for their products, lack of training facilities, inadequate promotional policies and depletion of resources. To lift the spirit of the artisans, there is an urgent need for the government and NGOs to tackle the issues efficiently. We suggest the state government play a protective and supportive role by providing greater facilities. It must also encourage women's empowerment through technology and social support.

9. The Economics of Handicrafts: Exports and Earnings

As we had indicated earlier, handicrafts sector is a leading foreign exchange earner, thus, playing an important role in the economy of the country. As far as Uttarakhand's exports are concerned, the data on total handicrafts exports is difficult to find. But at present, it is still insignificant. To improve exports, a number of measures need to be taken. One important step taken in this respect is the role played by the current Exim Policy (2002-2007) to give a special thrust to handicrafts exports from India. It says "The word 'exports' brings to our mind sophisticated articles, urban centres and privileged few at the upper crest of the society. But it is the small scale sector which forms 50 per cent of our exports." Therefore, with a view to strengthen and improve exports special focus needs to be given to the cottage sector and handicrafts in the state.

3. SRUTI (Society for Rural, Urban and Tribal Initiative), 1995.

10. A Policy Support Network

A new state should not only learn from the mistakes of the predecessor state—in this case, the state of Uttar Pradesh from where it has been carved out—but should also benefit from the shared experience of the other Himalayan regions. Beginning afresh with a clean slate can provide Uttarakhand with the opportunity to sidestep some of the predictable mistakes in planning and prioritisation, and also to leapfrog to new technological platforms in communications and other related infrastructures. The distinct socio-cultural identity of Uttarakhand has to be preserved, but the people have to guard against possible insular tendencies for the greater common good.

The first imperative is that there should be a definite and unambiguous statement of objectives. Second, all policies should be devised and schemes framed keeping these objectives very clearly and centrally in view. The evaluation of a policy or the review of a scheme must always be with reference to the basic objectives. Unless the path itself is not clearly shown, the adjustment of details will be fruitless.

Land Use Survey

There is a need for a detailed land use survey of the region before launching any immediate development plans. Globalisation has pushed through legal and policy changes that commodify natural resources like land, water and bio diversity and pave the way for corporate takeover of these resources. Such laws and policies deny people their rights to natural resources and thus, exclude them from their survival base. Some believe that this violates the spirit of the Constitution. Environmentalists believe that the tribal people in different regions are being displaced forcibly as the state connives with corporations to take over their lands. These are attitudes to be considered in the planning processes of the new state and it's here that the challenge lies.

Since handicraft needs low investment, it also provides low earnings to the people engaged in that activity. Irrespective of this, handicraft has been universally considered an important and integral source for providing increasing employment opportunities in the rural areas. Because incomes are low, almost all members of a handicraft household contribute. Often, they start working at an early age with school-going children working during their time off from school. And there is no retirement from this activity unless the worker is incapacitated or too old to practice his skills or unless he loses interest in the work.

NCAER data reveal that over 53 per cent of the family members are either fully or partly engaged in various economic activities including handicrafts. But any improvement in their lot will depend upon factors such as group facilities available, items of production and procurement of raw materials, resource mapping of material availability, human skill available, transportation subsidies, providing working capital, literacy levels, etc.

Crafts Villages

There is a need to develop crafts villages as vibrant training centres as well as marketing outlets for tourists both from within the country and from outside the country. This would be a most affordable way of conserving and developing dying crafts and putting it to new use.

These crafts villages would serve as tourist destinations. of another kind. For such villages, for example, wood of the desired variety can be provided by the Uttarakhand Forest Development Corporation. Most of the villages are on well-known routes like Tons Valley, Yamuna Valley, etc. Locations of *haats* could be considered in the four natural river system inter lands that run through the region. These are in Pithoragarh district, Almora/Nainital district with the *mandi* possibly located in the Kosi river valley, Pauri Garhwal/Chamoli district with the *mandi* on the Alaknanda river, Yamuna river valley. Steps may be initiated to provide a unique identity to the Uttarakhand products, documentation and publicity.

Industry Finance and Marketing

In the case of handicrafts, in particular, availability of market information is a serious constraint on production. Hence, a number of initiatives are possible. Given the hilly nature of Uttarakhand overall development of industry in Uttarakhand may focus on producing high-cost and low-volume products. Eventually this would mean that the network of small processing plants should be established at different nerve centres of the marketing ability of the agricultural/horticultural production. Here, value addition can take place, which will help equitable distribution of benefits to the grower instead of the middleman.

Further, Uttarakhand appears as an appropriate region for eco-friendly and agro-based industry. All traditional wool-based and cotton industry needs to be restored. For this purpose, it would be desirable to revive livestock, sheep breeding, etc. Precision industries like electronic watch, toys etc., and other assembly items should be considered. Initial outsourcing fabric and creation of piece

goods to be sold in capital market, both in domestic and export market. Various training schemes must be initiated for textile and garment technology in the existing institutes offering vocational courses. Women oriented technology must be focused upon for the development of the region. Harnessing micro-hydel power and utilising non-conventional energy should be accorded the utmost priority. The new state must keep ahead of innovation and change in technology by encouraging premiere education and research institutes to build bases in Uttarakhand. In this context, the state is likely to have readymade resources in the form of the Forest Research Institute at Dehradun, Universities and the Engineering Institute at Roorkee, which has a status of an IIT.

We must remember that in an era of rapidly expanding telecommunications and information networks, the whole concept of industry and workplace is changing to a more flexible and decentralised one. Telecommunication facilities and emerging work methods allow organisations to be arranged in a distributed fashion. Consequently, there is much less need to cluster communications around a central core. Decentralised growth and development is the order of the day. It is within these new parameters that finance and marketing of the crafts sector must be planned.

The abolition of local taxes on handicrafts products of state. In this context the state government may take up the matter of reopening of the trade centre at Gunji on Indo-Tibet border. Finance on easy terms and on lower rate of interest and availability of adequate marketing channels with update marketing information and feed back date of consumer taste/choice within and outside the country.

Formation of a Handicraft Development Corporation for forging improved market linkages. It would also oversee the bridging of the gap between the market and environment and linking it to human needs, resources and availability of raw materials. It should provide proper coordination with entrepreneurs, marketers, exporters. Some of these steps are: up-to-date information must be facilitated to the stockholder; assistance in organising market analysis programmes; assistance in organising market lines; nomination of artisans for participation in exhibitions, expos, crafts *bazaars* etc.; assistance in promotion of crafts of one place in other markets within the country through exhibitions; assistance in launching and test marketing of new products; assistance in

operation and updating of data on handicrafts also the creation of a portal for effective buyer-seller linkage and e-commerce. Other measures would include assistance for establishing permanent marketing outlets like emporia and urban *haats*; preparation of area directory and directory of important crafts; preparation of directory of capable manufacturers; setting up of craft development centres and common facility service centres for providing technical support and infrastructure for quality production.

A most pressing need of artisans is working capital. But credit delivery through public channels takes so long, that by the time it materialises, it is diverted to consumption needs. This often leads to blacklisting of the artisans by the banks. The banks insist on asking the artisan to furnish evidence of land owned, house, nature and quantum of products sold.⁴

The artisans can no longer produce their traditional goods at prices that the poor rural consumer can afford. The question is whether the artisans can find a slot in this market or do they have to look elsewhere at markets for export. Identification of consumer base is very important.⁵

The primary incentive to craftsmen in improving their lot is marketing—whether this be within the country or outside. Public sector management must clearly realise—and can be made to realise—that it exists for the craftsmen and not for itself. It must consciously, in its emporia, promote authentic Indian handicrafts, and must to the greatest possible extent, buy directly from the craftsmen or their organisations.

For the marketing of handicrafts, actions should be taken to develop outlets in tourist centres and provide increased access to markets outside the state. Actions should also be taken to promote the brand image of products of Uttarakhand handicrafts. The website displaying updated information on craft products of the state should be immediately launched.

Most of the crafts have demand locally but not outside. They have not been able to venture out of their local markets. Like woollen carpets, though having good potential in export market, has shelved itself in the local market only.

Up to now, all the copper mines in the particular location have been exploited and the copper handicraft units obtain the required material from the local market of Almora.

4. Ibid.

5. Ibid.

New Crafts

A number of initiatives could be taken to develop new crafts in the state. Some suggestions, in this context, are given below:

Development of new crafts such as pine wool and fibre technology. The quality of fibres could be improved and new fibres can also be used. Value addition can be made to handcrafted articles like handmade paper, copper utensils, baskets, traditional jewellery in silver and gold. To these can be added ceramic items with a Uttarakhand brand of design using the Central Glass and Ceramic Institute and MITI for collaboration. Rawain area, Uttarkashi and Yamuna Valley have perhaps the finest examples of wood temples, dedicated to local deities. Wooden models of these temples can be made which can be developed as a valuable craft with good income potential. The craftspeople could be identified and their talents put to more profitable use. Miniature reproduction of the wooden temples of Rawain—Yamuna Valleys could prove to be a major draw. The Garhwal School of Painting was made famous by late Barrister Mukundi Lal of Kotdwara. Dr. Mathpal's work of the Kumaon School of Painting needs further patronage.⁶

The skills available to execute these new products are painting, weaving, woodwork, stone carving, statute moulds, carpet making, basket weaving, copperware, paper and driftwood. These traditional items that have caught attention can be developed with design innovation. These are the Tharu baskets, scroll copper holders, mats, sketches in Aipan reproduced on trays/tablemats/coasters etc., carpets with design innovation, wooden models of temples, woollen items, walking sticks, paper flowers, string (*soothli*) craft and the unique jewellery of Dharchula for imitation jewellery. Instead of statues of mythological characters, which are outdated, new designs and decorative items could be developed. Utility items like Uttarakhand's very old and common *gutchcha* used by women as a multi-purpose tool-carrying article should be emphasised.

Wild flowers can be showcased in a glass with preservatives for decorative purpose. Essence of flowers can be developed as a cosmetic item. Flower motifs and its blocks can be used for weaving technology. The IICD, Jaipur can help to design motifs. Handmade papers and recycled papers can be used for making various utility and decorative items. Indian currency can be made out of such paper. Bead making and glass-ware can be introduced

after clay analysis. Leather technology can be introduced to the Ambedkar village.

A unique genetic resource of the hills is herbs. Their neglect is nothing short of a crime. According to one estimate, out of the original 2,500 varieties of herbs found in the state, only 400 are left. As in the case of fodder, government departments have experimental plots of some varieties of herbs, even condiments. In other words, the expertise exists with the government departments at the field level.

Utilisation of fibres can also be an economically viable programme in the hills. It offers employment and provides additional income to a large number of people while not requiring large inputs. The entire mechanism needs a systematic approach: Identification of different fibre-yielding plants in mountain region, availability of such plants, diverse utility of various fibres, design development and marketing.⁷ Some trainees have started their own units and are working on order basis/own production units. The craft has a good potential in both local and international markets. Due care and intervention in the area of technology development, infrastructural facilities and market avenues by concerned agencies will help.

Human Resources: Women

The fact that Uttarakhand's most effective and leading workforce is made up of women is well documented. This is visible in every walk of life, from agriculture to small industry. Uttarakhandi women have spearheaded the Chipko movement and the agitation for statehood. A money-order economy, coupled with an alarming increase in alcoholism and other social disfunctionalities has put an enormous strain on the womenfolk of Uttarakhand.

The education and empowerment of women is the only route to an educated and empowered state. The craft sector should focus upon self-employment of women and generate self-employment schemes. Local knowledge-based education in afforestation, water supply and sanitation projects and opportunities for self-employment in the form of cottage/home industry should be created.

Women will provide not only technological solutions to the problems faced by women but also inspire in them cooperative spirit that could be channeled for sustainable development as well as for genomic conservation of natural resources.

Women normally reject technology in which they are involved as passive recipients. Technology adoption by

6. A Monograph on Uttarakhand Handicrafts, Mr. R.S. Tolia.

7. Compendium of Papers – National Consultation of S&T for Women, A Millennium Dialogue, 1999.

women is much faster if their needs and knowledge are incorporated right at the research phase and dissemination stage.

Women in hilly areas bear the major burden of household work. They are involved in providing water, food and other care. The responsibility of collecting fuel and fodder is also theirs. But these have been no technological upgradation and innovation geared towards reducing the drudgery associated with these chores. Technological capacity building is fundamental to the development of society, as apart from raising incomes it also contributes to the building of assets in the form of skills and knowledge that enrich the social and cultural wealth of the country.

The role of technology in promoting human welfare and development is not an issue for debate anymore. But choice of technology that leads to gender discrimination is still a live issue. The need of the hour today is to make a study of the different activities in which rural women in an area are engaged in, with a view to assessing the status of need based technologies in rural areas that can promote their empowerment. Policies for rural women should be devised in a manner such that they meet the practical and strategic needs of women after taking into consideration the topography of the area and other socio-cultural factors.

A meaningful development plan for women and for the region should essentially cover needs and aspirations of women with the objective of making them self-reliant.⁸

Role of NGOs

In the endeavour to promote the small scale handicraft sector, the government can only play an enabling role. However, given the dispersed and caste-oriented structure of the artisan population, it is important to define the forms of organisation and mobilisation. Experience suggests that cooperatives have been the most effective method of organisation of village-based and small-scale industries. So, the state must play an active role in getting the NGOs in to give a fillip to the process of organisation of artisans into self-help groups (SHGs).

Awareness and Publicity

Could the artisan sector be propped up by government schemes for loans, subsidies and other bureaucratic help? Yes, of course. After all, all major industries get loans and

subsidies. Agriculture gets cheap electricity. Why not the artisans?

But, for the artisans to take full advantage of such schemes, publicity is important. The chief problem is that the artisans are not aware of various government schemes to help them. Even when they are aware of something, they cannot cope with the red tape and corruption. Steps should be taken to popularise craft products over the state ministry/department website and through other modern techniques of publicity. Media can also be used to disseminate information to artisans about the schemes in operation and the availability of facilities, finance and markets. Loans and subsidies must be a part of a definite program to provide the artisans about the schemes in operation and the availability of facilities, finance and markets. Loans and subsidies must be a part of a definite program to provide the artisans with working capital or consumption capital, though they need not continue indefinitely.⁹

There is also a need to develop promotional material like catalogue, CDs and websites to promote tribal handicrafts¹⁰ in particular.

Preservation of Some Crafts

Many rare but useful crafts have eroded away with time. Only a few artisans who practise them still because there is no support for this craft on account of the shift in economy. Some such crafts should be listed and declared "protected" and measures should be adopted to revive them through an alternative way of development in the hills.

Developing Brand Equity

To achieve the objective of boosting the handicrafts sector only a synergistic approach can yield results. This could come from the purposeful sharing of a common vision by all the concerned partners. Foremost would be developing of a brand image based on a vision. But what can be this vision? In what can it lie? A state that is deficient in craft skills and has difficult means of communications cannot compete with the crafts of other states such as Rajasthan and Gujarat. Therefore, a Unique Selling Point has to be discovered which rests on the holistic view of what the state has to offer. Could it lie in the scenic view, gurgling rivers and clean environment that lend themselves to a concept of ecology and sustainability?

8. Joshi, 1999.

9. SRUTI, 1995.

10. TRIFED.

So, it is important to find a USP for Uttarakhand handicrafts, which in turn can be linked to the USP of the state. If it has to rest on the pivot ecology then all partners must emphasise that point. The success of this method is amply demonstrated in the case of another famous mountain-state of the world, Switzerland. Towards this common vision all efforts must be directed, be it by the state government, state corporations, financial institutions, voluntary/non-government organisations, etc.

The measure of biodegradability is a good message particularly for the export market where skills unique to the state may be absent. To take an example, the use of baskets made by an NGO for distribution of *prasad* at Kedarnath Temple instead of the polythene or paper bags. The crafts produced through weaving, carving in stone and wood, and through metallurgy should equally send out this message. For each and every product, the unique selling point should be built up with proper marketing and selling techniques. If ecology is the message, then all the materials used could be bio-degradable and contribute towards a healthy planet. Least polluting industries need to be set up near an adequate water supply system.

A logo for the state could be devised and an appropriate slogan such as “Uttarakhand Green” or whatever using state trees and flowers such as the brush or rhododendron. These could be done with the help of the Institute of Craft, Jaipur or NID, Ahmedabad or NIFT. This logo could be put on a variety of products as has been done in the case of Koala bear of Australia or the monal bird of Himachal Pradesh. These items can be

given a brand image and publicised with the help of the tourism ministry and various export houses. In the current international context, many of the international and national buying houses promote and package such products.

11. Summary and Conclusion

What we have tried to argue is that in promoting Uttarakhand’s handicraft industry, it is necessary to develop a brand image for Uttarakhand products to develop some value added for their products. In this, the state has a major role to play in providing enabling facilities and long-term research studies. It also has an important role to play in fostering the development of a network of NGOs in the state.

No development model can function in isolation. An informed and engaged political leadership and an effective bureaucracy need the support of an aware and civic minded electorate. The new state of Uttarakhand needs a resource base of dedicated people who can contribute ideas, agendas and perspectives from their particular areas of expertise. These custodians of culture, environment and enlightened governance must also watch over the lawful and effective implementation of the development agenda. Those sections of Uttarakhand society who are living or settled outside India, but continue to cherish their home state, must also be mobilised in realising the ideal of dynamic and prosperous state which continues to maintain its tradition of tolerance, diversity and humanism.¹¹

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Chapter 10

Tourism

1. Introduction

1.1 World Tourism

Tourism has emerged as one of the most important instruments to boost economic development in many of the countries across the globe. According to the World Travel and Tourism Council (WTTC), travel and tourism's contribution to the world economy by the direct industry impact is expected to be 3.8 per cent of total GDP and the combined direct and indirect impact of the travel and tourism is expected to total 10.6 per cent in 2005. The global travel and tourism industry is expected to produce 2.1 million new jobs in 2005 over its 2004 level to total 74.2 million jobs or 2.8 per cent of total world employment. The broader perspective of the travel and tourism economy (direct and indirect) is expected to create more than 6.5 million new jobs for the world economy for a total of 221.6 million jobs dependent on travel and tourism or 8.3 per cent of total employment.

1.2 Tourism in India

Even though traditionally tourism was given a low priority in the national plans, in India too, tourism is becoming an important contributor to the economy, not only directly but also through its linkages to the other sectors like horticulture, agriculture, poultry, handicrafts and construction. The year 2004-05 saw tourism emerging as one of the major sectors for growth of Indian economy. During 2004, there was a healthy growth of 23.5 per cent in the foreign tourist arrivals and India crossed the magic figure of 3 million foreign tourists for the first time (*Source: Newsletter, Federation of Hotels and Restaurants Association of India*). The foreign exchange earnings increased from INR 16,429 crore to 21,828 crore up to December 2004 recording a growth of 32.9 per cent. Tourism is now the third largest net foreign exchange

earner for the country. (Appendix A-10.1 gives the month wise details of the foreign tourist arrivals and foreign exchange earnings). In addition to foreign tourists, there is a perceptible increase in domestic tourists as well. Besides being an important foreign exchange earner, tourism industry also provides employment to millions of people in India both directly and indirectly (through its linkage with other sectors of the economy.) It is estimated that total direct employment in the tourism sector is around 20 million. Table 10.1 shows the foreign tourists arrivals and foreign exchange earnings for the years from 2002 to 2004.

| | 2002 | 2003 | 2004 | Percentage Change | |
|-------------------------------------------|----------|----------|-----------|-------------------|---------|
| | | | | 2003/02 | 2004/03 |
| Foreign Tourist Arrivals (in numbers) | 2384364 | 2726214 | 3367980* | 14.3 | 23.5 |
| Foreign Exchange Earnings (In INR Crores) | 14195.00 | 16429.00 | 21828.25* | 15.7 | 32.9 |

Note: * Provisional
Source: Ministry of Tourism, GoI

The growth of Indian tourism has withstood global shocks such as the September 11 terrorist attacks in the United States, the outbreak of severe acute respiratory syndrome in East Asia and the Iraq war. Even the disastrous tsunami didn't affect India's tourism industry. The disaster was expected to have a negative impact on India's tourism in terms of large-scale cancellations of tourists to India but nothing of that sort happened.

There could be several reasons for the buoyancy in the Indian tourism industry that is thriving due to an increase in foreign tourist arrivals and greater than before travel by Indians to domestic and overseas destinations. The visitors are pouring in from all over the world. Domestic tourists are also fueling the industry's revival. The upward trend observed in the growth rate of Indian economy has raised middle class incomes, prompting more people to spend money on vacations abroad or at home. Aggressive advertising campaign 'Incredible India' by the government has also had contribution in changing India's image among the overseas travellers. One of the major beneficiaries this year is Kashmir, where a cease fire between India and Pakistan has reduced violence, if not completely, at least enough to help revive the state's sagging tourism industry.

Recently, Indian government adopted a multi-pronged approach for promotion of tourism, which includes new mechanism for speedy implementation of tourism projects, development of integrated tourism circuits and rural destinations, special capacity building in the unorganised hospitality sector and new marketing strategy. A nation-wide campaign, for creating awareness about the effects of tourism and preservation of our rich heritage and culture, cleanliness and warm hospitality through a process of training and orientation was launched during 2004-05. It has also taken several other initiatives to promote Indian tourism industry and increased the plan allocation for tourism i.e. from Rs. 325 crore in 2003-04 to INR 500 crore in 2004-05. Road shows in key source markets of Europe, Incredible India campaign on prominent TV channels and in magazines across the world were among the few steps taken to advertise Indian tourism. In addition a task force was set up to promote India as prominent health tourism destination.

However, in order to attract more visitors, India still needs to upgrade its airports, roads and other infrastructure to global standards. Even with the recent surge, tourist arrivals are just a mere percentage of those in such popular Asian destinations like Bangkok and Thailand.

1.3 Tourism in Uttarakhand

Lying in the north of the vast and bountiful expanse of India, and cradled in the awesome beauty and calm serenity of the stately Himalayas, Uttarakhand, the Devbhumi (Land of the Gods) has attracted tourists and pilgrims since time immemorial. Sacred pilgrimages of different religions including Haridwar and the world

famous *char dham* or the four Hindu pilgrimage destinations of Shri Badrinath, Kedarnath, Gangotri, Yamunotri; the sacred Sikh pilgrimages of Hemkund, Lokpal, Nanakmatta and Meetha Reetha Sahib; and Piran Kaliyar have drawn pilgrims and seekers of spiritual fulfilment to Uttarakhand since ancient times. The rich cultural traditions, the rare natural beauty and the cool and invigorating climate of this land of origin of the Holy Ganga and the Yamuna rivers have been its main attractions.

The relatively small population and low population density help to provide a clean and wholesome environment, while the relatively high rate of literacy indicates that human resources conducive to tourism development are available in adequate measure.

Tourism for the state, since its creation, has become much more than just natural bounties from the angle of the external observer and visitors to the state. Tourism is now viewed as one of the key sectors of economic growth and development in the state both from the point of view of income and employment generation as well as a source of revenue for the state. The Uttarakhand government, realising the potential tourism holds for the state, has taken concrete steps to promote and develop tourism in the state. A forward looking tourism policy, which clearly recognises the strengths, weaknesses and potential of tourism in the state, was announced by the state government. The plan allocation to tourism was also raised from Rs. 31.23 crore in 2001-02 to Rs. 53.24 crore in 2004-05 which is around 10 per cent of the total allocation to tourism in the country. The rest of the chapter gives a detailed discussion of tourism in the state. Comparison with Himachal Pradesh has also been done to bring out the preferences of tourists between Uttarakhand and HP which are alike in their terrain. Both are hilly states and competitors to each other as far as tourism is concerned.

2. Tourist Arrivals in Uttarakhand

As mentioned earlier, the total foreign tourist arrivals to India crossed the 3 million mark in 2004. Of these only about 74761 foreign tourists visited Uttarakhand, which is a share of 2.2 per cent. In comparison to this, about 1.5 lakh foreign tourists visited Himachal Pradesh, which is a share of about 4.54 per cent. In 2005, the foreign tourist arrival was 92744 which is 24 per cent more than the previous year. But as far as the domestic tourists are concerned, Uttarakhand is way ahead of HP. While Uttarakhand had 13.8 mn domestic visitors, Himachal Pradesh had only around 5 mn domestic tourists. The

pilgrimage destinations in the state attract the domestic tourists. But the state lags behind the others in terms of foreign visitors and has to take steps to increase the number of foreign tourists as well.

The total number of visitors to Uttarakhand in 2004 was 13.9 mn of which the number of Indians was 13.8 mn (99.46 per cent) and foreigners was 0.07 mn (0.54 per cent). This was an increase of around 2.7 mn (24.3 per cent) from the year 2000 when the total number of tourists was 11.2 mn. Of these, 99.52 per cent were Indian tourists and the rest 0.48 per cent were foreigners. Over the last five years, the volume has been growing at an average rate of 5.7 per cent per annum. There has not been much change in the share of the Indian and foreign tourists. The foreign tourist arrivals have increased at an average annual rate of 8.73 per cent and Indian tourists at an average annual rate of 5.75 per cent. The growth rate of tourist arrivals over 2000 has been highest for foreign tourists at 38.62 per cent. In comparison to 2003, the year 2004 has witnessed a 7 per cent increase in total tourists and 18 per cent increase in foreign tourists. The following table shows the tourist arrivals category-wise for all years from 2000 to 2004. Detailed tourist arrivals destination-wise are given in the Appendix A-10.2.

TABLE 10.2
Category of Tourists

| Category | 2000 | 2001 | 2002 | 2003 | 2004 |
|------------------|-------|-------|-------|-------|-------|
| Indian tourists | 11.15 | 10.54 | 11.65 | 12.92 | 13.83 |
| Foreign tourists | 0.05 | 0.05 | 0.05 | 0.06 | 0.07 |
| Total | 11.20 | 10.60 | 11.70 | 12.99 | 13.90 |

Source: Ministry of Tourism, GoI

2.1 Dynamics of Tourist Arrivals in Uttarakhand

There has not been much change in the arrival pattern of tourists to the various destinations in Uttarakhand. Table 10.3 shows the ranking of the tourist arrivals to the various destinations. The maximum number of tourist arrivals has been to Haridwar in 2000 as well as 2004. The trend has not changed over the years. Haridwar has been the most preferred destination of the Indian tourists. The most preferred destination of the foreign tourists is Dehradun. One reason for this could be the airport facility at Dehradun, which makes it a stopover point for them. The prospects of health tourism are also the highest in Dehradun, which attracts the foreign tourists. The number of Indian tourists to Haridwar in 2000 was 5.31 mn (47.6 per cent of the total tourists to Uttarakhand) which increased to 6.28 mn (45 per cent) in 2004 which implies a

growth rate of around 18 per cent. The growth rate of the total number of tourists to this destination is the same as for the Indian tourists—an increase from 5.32 mn (47.5 per cent) in 2000 to 6.29 (45 per cent) in 2004. Even though the number of foreign tourists to this place is not as high, the growth rate has been the maximum for the foreign tourists, from 7659 (14 per cent) in 2000 to 11012 (14.7 per cent) in 2004—an increase of about 44 per cent. The preference of Indian tourists for this destination could be attributed to the fact that Haridwar is a major pilgrimage destination and has a number of temples and ashrams apart from the Holy Ganges, which the Hindu's consider to be the most auspicious river in India.

The next most preferred destination of Indian tourists, as of 2004, is Mussoorie. The second most preferred destination amongst the foreign tourists is Haridwar for all years from 2000.

The least preferred destination for all the years has been Valley of Flowers in Chamoli district. This is due to the difficulty in reaching this destination. The nearest point upto which transport can be provided is Govindghat on the main Badrinath highway after which, a trek of around 20 kms is taken to reach the edge of the valley. The valley itself is 10 kms long and about 2 kms wide in conical shape, with the river Pushpavati flowing through it. The valley ranges between 3352 and 3658 metres in altitude. Improving connectivity to this beautiful place could possibly increase the number of tourists.

The Table 10.3 shows the share of a destination in the total tourist arrivals and the ranking based on those shares for 2000 and 2004. The detailed ranking of all the destinations for which data is available is given in the Appendix A-10.3. The data has been sorted according to the rank in 2004.

The top ten fastest growing destinations in terms of the tourist arrivals based on average growth rates of all the years are as shown in Table 10.4.

The rankings for Indian tourists and total tourists is the same due to the fact that as much as 99 per cent of the total tourists are Indian. Phoolon Ki Ghati has experienced the maximum growth in terms of tourist arrivals. For foreign tourists, Kotdwar has experienced the maximum growth rate. Kotdwar, in Pauri Garhwal, is one of the rail terminuses for the region. Swargashram in Pauri is developing fast as a tourist destination and the route to Swargashram is via Kotdwar. Of late, Chila sanctuary has also been attracting a lot of tourists. Due to the growing popularity of these destinations, Kotdwar, which is the connecting point to these, has been experiencing the maximum growth.

TABLE 10.3

Share and Ranking of a Destination in Total Tourist Arrivals

| S. No. | Tourist Site | Share of the Destination in Total Tourists | | Ranks based on Share | |
|--------------|---------------------------------------------|--------------------------------------------|------------|----------------------|------|
| | | 2000 | 2004 | 2000 | 2004 |
| 1. | Haridwar | 47.53 | 45.27 | 1 | 1 |
| 2. | Mussoorie | 7.59 | 7.39 | 2 | 2 |
| 3. | Dehradun | 4.1 | 7.37 | 4 | 3 |
| 4. | Tehri Janpad | 3.53 | 4.31 | 6 | 4 |
| 5. | Uttarakshi (excl Gangotri, Yamunotri) | 2.36 | 3.9 | 11 | 5 |
| 6. | Badrinath | 6.21 | 3.6 | 3 | 6 |
| 7. | Rudraprayag Janpad (excl Kedarnath) | 2.17 | 3.56 | 12 | 7 |
| 8. | Nainital | 2.9 | 3.48 | 8 | 8 |
| 9. | Joshimath (incl Ghaganriyam and Govindghat) | 3.64 | 3.26 | 5 | 9 |
| 10. | Rishikesh | 2.12 | 2.37 | 13 | 10 |
| 11. | Kotdwar (incl Chila and Swargasharm) | 0.89 | 2.04 | 17 | 11 |
| 12. | Hemkund Sahib | 2.92 | 2.01 | 7 | 12 |
| 13. | Kedarnath | 2.68 | 1.99 | 9 | 13 |
| 14. | Srinagar | 0.97 | 1.26 | 16 | 14 |
| 15. | Gangotri | 1.86 | 1.16 | 14 | 15 |
| 16. | Pithoragarh Janpad | 0.58 | 1.11 | 21 | 16 |
| 17. | Gopeshwar | 2.49 | 1.09 | 10 | 17 |
| 18. | Yamunotri | 0.79 | 0.74 | 18 | 18 |
| 19. | Corbett National Park | 0.55 | 0.72 | 24 | 19 |
| 20. | Almora | 0.61 | 0.61 | 19 | 20 |
| 21. | Kausani (incl Bageshwar) | 0.61 | 0.54 | 20 | 21 |
| 22. | Pauri | 1.02 | 0.53 | 15 | 22 |
| 23. | Ranikhet | 0.57 | 0.51 | 22 | 23 |
| 24. | Udham Singh Nagar Janpad | 0.55 | 0.49 | 23 | 24 |
| 25. | Kathgodam | 0.37 | 0.32 | 25 | 25 |
| 26. | Champavat | 0.3 | 0.29 | 26 | 26 |
| 27. | Auli | 0.08 | 0.05 | 27 | 27 |
| 28. | Phoolon Ki Ghata | 0.01 | 0.04 | 28 | 28 |
| Total | | 100 | 100 | | |

Source: Ministry of Tourism, GoI

TABLE 10.4

Ranking on Destinations based on the Growth Rate of Tourist Arrivals

| Rank | Indian Tourists | Foreign Tourists | Total Tourists |
|------|---------------------------------------|--------------------------------------|-------------------------------------------|
| 1. | Phoolon Ki Ghata | Kotdwar (incl Chila and Swargashram) | Phoolon Ki Ghata |
| 2. | Kotdwar (incl Chila Swargashram) | Phoolon Ki Ghata | Kotdwar (incl and Chila and Swargashram) |
| 3. | Pithoragarh Janpad | Srinagar | Pithoragarh Janpad |
| 4. | Dehradun | Uddhamsingh Nagar Janpad | Dehradun |
| 5. | Uttarakshi (excl Gangotri, Yamunotri) | Champavat Janpad | Uttarakshi (excl Gangotri, Yamunotri) |
| 6. | Rudraprayag Janpad Kedarnath) | Pithoragarh Janpad | Rudraprayag (excl Janpad (excl Kedarnath) |
| 7. | Corbett National Park | Rudraprayag Janpad (excl Kedarnath) | Corbett National Park |
| 8. | Srinagar Park | Corbett National | Srinagar |
| 9. | Tehri Janpad | Haridwar | Tehri Janpad |
| 10. | Nainital | Nainital | Nainital |

Source: Author's Compilation.

3. Tourism Circuits in Uttarakhand

The most visited tourist circuit in the state is the Char Dham yatra. Statistics relating to tourists who have visited *Char Dham* in Uttarakhand since 1998 is as given below:

TABLE 10.5

Tourist Arrivals on the *Char Dham* Circuit (in Million)

| | 1998 | 2000 | 2002 | 2004 |
|-----------|------|------|------|------|
| Badrinath | 0.35 | 0.69 | 0.44 | 0.50 |
| Kedarnath | 0.08 | 0.30 | 0.16 | 0.27 |
| Gangotri | 0.23 | 0.20 | 0.11 | 0.16 |
| Yamunotri | 0.08 | 0.08 | 0.05 | 0.10 |

Source: Ministry of Tourism, GoI

This is the next preferred tourist circuit and this is followed by Pauri-Khirsu-Landsowne and Almora-Munsyari-Pithoragarh. Tourists in Uttarakhand do not prefer guided tours and the maximum number of tourists are individual tourists especially to places like Mussoorie, Nainital and Jim Corbett. Guided tours or package tours, if at all used, are for the *Char Dham* yatra and Rajaji National Park.

3.1 District-wise Analysis

As far as the districts are concerned, once again Haridwar receives the maximum number of tourists because of the Indians visiting this religious place. This is the same in 2000 and 2004. For the foreign tourists, Dehradun remains the most preferred district. Dehradun as a district is the second most preferred destination of the Indian tourists. Dehradun has many tourist places of interest both religious as well as destinations known for their natural beauty. Some of them are Mussoorie, Rishikesh, Rajaji National Park, Sir George Everest House etc. Champavat district has been the least preferred district in Uttarakhand for all the years from 2000. There are not too many well-known tourist destinations in the district except for Meetha Reetha Saheb. Bageshwar and Pithoragarh districts have had the maximum increase in the tourist arrivals. Table 10.6 and Figure 10.1 show the share of the tourists to the district along with their ranking (in brackets) in 2000 and 2004.

3.2 Tourist Attractions in Uttarakhand

Pilgrimage has traditionally been a major segment of tourism in Uttarakhand. However, Uttarakhand also has enormous resources for cultural, adventure, wildlife, nature, health and leisure tourism and a wide variety of entertainment and sporting activities, which attract the modern tourist.

Pilgrimage

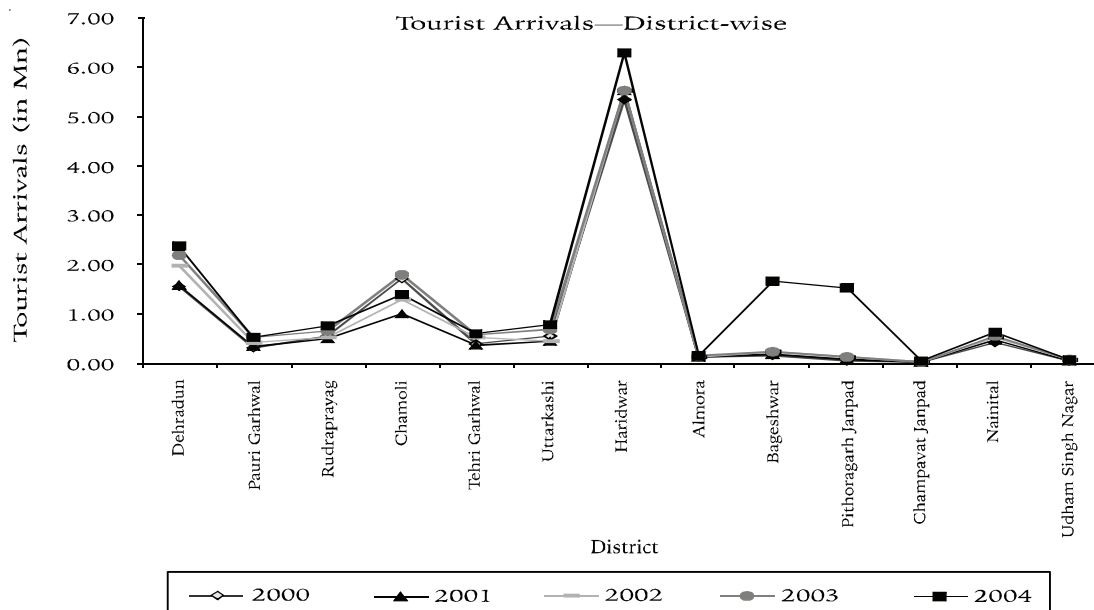
Uttarakhand has important places of pilgrimage of different religions. Among these Badrinath, Kedarnath, Yamunotri, Gangotri, Haridwar, Hemkund Lokpal, Nanakmatta, Meetha-Reetha Sahib, Piran Kaliyar, Punyagiri are some of the best known. Many important religious *yatras*, of which Nanda Devi Raj Jat and Kailash Mansarovar Yatra are the most popular. There are several other places of pilgrimage like Panchbadri, Panchkedar, Panchprayag, Patal Bhuvaneshwar etc., which need to be developed on a priority basis.

TABLE 10.6
Share and Ranking of Districts in Total Tourist Arrivals

| S. No. | District | 2000 | | | 2004 | | |
|--------------|-------------------|---------------|---------------|---------------|---------------|---------------------------|---------------|
| | | Indian | Foreign | Total | Indian | Foreign | Total |
| 1 | Dehradun | 13.71 (3) | 35.77 (1) | 13.82 (3) | 17.07 (2) | 27.52 (1) | 17.13 (2) |
| 2 | Pauri Garhwal | 2.89 (8) | 0.78 (11) | 2.88 (8) | 3.78 (8) | 13.16 (4) | 3.83 (8) |
| 3 | Rudraprayag | 4.87 (5) | 1.06 (9) | 4.85 (5) | 5.56 (5) | 3.14 (7) | 5.55 (5) |
| 4 | Chamoli | 15.39 (2) | 5.53 (6) | 15.35 (2) | 10.09 (3) | 2.44 (8) | 10.05 (3) |
| 5 | Tehri Garhwal | 3.49 (7) | 13.57 (4) | 3.53 (7) | 4.27 (7) | 11.64 (5) | 4.31 (7) |
| 6 | Uttarkashi | 5.03 (4) | 2.18 (8) | 5.01 (4) | 5.81 (4) | 2.02 (9) | 5.79 (4) |
| 7 | Haridwar | 47.69 (1) | 14.20 (3) | 47.53 (1) | 45.44 (1) | 14.73 (3) | 45.27 (1) |
| 8 | Almora | 1.14 (9) | 8.30 (5) | 1.18 (9) | 1.09 (10) | 6.34 (6) | 1.12 (9) |
| 9 | Bageshwar | 0.61 (10) | 1.34 (7) | 0.61 (10) | 0.54 (11) | 0.49 ^a (10) | 0.54 (11) |
| 10 | Pithoragarh | 0.57 (11) | 0.93 (10) | 0.58 (11) | 1.11 (9) | 1.30 (11) | 1.11 (10) |
| 11 | Champavat | 0.30 (13) | 0.15 (13) | 0.30 (13) | 0.29 (13) | 0.22 (13) | 0.29 (13) |
| 12 | Nainital | 3.76 (6) | 16.03 (2) | 3.82 (6) | 4.46 (6) | 16.73 (2) | 4.52 (6) |
| 13 | Udham Singh Nagar | 0.55 (12) | 0.16 (12) | 0.55 (12) | 0.49 (12) | 0.29 (12) | 0.49 (12) |
| Total | | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

Source: Author's Compilation.

FIGURE 10.1
District-wise Tourist Arrival



The four places—Yamunotri, Gangotri, Badrinath and Kedarnath—collectively form the *Char Dham* Yatra. Through these sacred shrines flows the holy river, Ganga. The four *dhams* receive their holy waters in the form of four streams—Yamuna (in Yamunotri), Bhagirathi (in Gangotri), Mandakini (in Kedarnath) and Alaknanda (in Badrinath). Traditionally the *yatra* (journey) is done from west to the east, starting from Yamunotri, proceeding to Gangotri and finally to Kedarnath and Badrinath.

An allocation of Rs. 180.88 crore by the public sector and Rs. 31.58 crore by the private sector has been made for the development of tourist routes on the *char dham yatra*. There have been suggestions regarding the development of facilities like availability of drinking water, bathing *ghats* and parking facility for buses and development of the routes to reach the *dhams*. The plan envisages providing support facilities along the routes of the *dhams*.

Cultural Tourism

Uttarakhand has a rich and vibrant cultural heritage. Fairs and festivals are an integral part of the social and cultural life of people in Uttarakhand. These not only encourage the strengthening of social ties across various castes, religions and sections of the society but also showcase the cultural diversity of the state. There are innumerable local fairs and festivals like Kumbh Mela (Haridwar), Jhanda Mela (Dehradun), Surkanda Devi Mela (Tehri), Magh Mela (Uttarkashi), Nanda Devi Mela

(Nainital), Chaiti Mela (Udham Singh Nagar), Purnagiri Mela (Champawat), Piran Kaliyar Mela (Haridwar), Joljivi Mela (Pithoragarh) and Uttarayani Mela (Bageshwar); which are indicative of the immense potential for cultural tourism in Uttarakhand.

Of all the fairs and festivals held here, the one that attracts the most tourists is the Kumbh Mela. The Kumbh Mela is held once in 12 years. People gather in huge numbers to take a dip in the holy Ganges during this time.

Natural Beauty

The Queen of the Hills—Mussoorie, the Lake District of India—Nainital, Kausani, Pauri, Lansdowne, Ranikhet, Almora, Pithoragarh, Munyari and many more attractive tourist destinations are parts of Uttarakhand. The clean, fresh and invigorating environment makes Uttarakhand a preferred destination to relax and unwind. From the modern facilities at Mussoorie and Nainital to the untouched, pristine beauty of its snow-clad peaks, rivers and forests, Uttarakhand provides all that a tourist could possibly seek for amusement and leisure.

In its efforts to develop new tourist destinations, the UTDB has brought out a plan to develop the areas near the Tehri dam as tourist destinations. There has been an allocation of Rs. 1.75 crore for this project under the public sector and Rs. 94.80 crores under the private sector. The plan provides details regarding the overall development of the region, provision of road/rail/air

transport, accommodation facilities, package tours, investment, publicity and marketing of the tourist destination, development of cultural tourism, eco-tourism, amusement tourism, leisure tourism, village tourism, adventure tourism, water sports, aero sports etc. The master plan also has a proposal to develop water sports, game complex, cable car project, amusement theme park, complex with modern facilities, tourist lodge, five-star hotel, shopping complex etc., in the region.

Adventure Tourism

Uttarakhand is a paradise for adventure sports. The sheer variety ranging from mountaineering (Bhagirathi, Chowkhamba, Nanda Devi, Kamet, Pindari, Sahastratal, Milam, Kafni, Khatling, Gaumukh), trekking, skiing (Auli, Dayara Bugyal, Munsyari, Mundali), skating, water sports (in all the lakes and rivers in Uttarakhand) to aero sports like hang gliding, para gliding (Pithoragarh, Jolly Grant, Pauri) make Uttarakhand one of the most attractive destinations for adventure sports not only in India but the world over.

The plan to develop the Dayara Bugyal Ski resort in Uttarkashi district has already been approved by the UTDB. The investment allocated by the public sector for this project is Rs 10.77 crore and by the private sector is Rs 26.91 crore. The master plan for this includes establishment of a ski/hill resort in Dayara Bugyal, construction of a rope-way from Warsu village to Dayara Bugyal. There is also a proposal to develop infrastructure facilities on the Dayara Bugyal-Warsu-Raithal route and to build a path for trekkers on the Warsu Raithal village route.

In addition to developing the ski-resorts on a large scale, there are also master plans to develop infrastructure facilities on the trekking routes in the state. The allocation for this from the public sector has been Rs. 4.11 crore. This plan has identified 27 trekking routes and has also provided details regarding the following: Level of natural beauty, importance of historic/heritage places, available food/accommodation facilities, wildlife and fruits, flowers, entry points for the trekking routes, safety related facilities, status of the routes, check points on the routes etc. The classification of the routes has also been done. The current status regarding the following has also been analysed and recommendations have also been made regarding the same.

Wildlife Tourism

Along with the world famous Corbett National Park, Uttarakhand has several other breathtaking destinations

for wildlife tourism. These include the Rajaji National Park, Govind Pashu Vihar, Asan Barrage, Chilla and Saptarishi Ashram, the last four being a delight for bird watchers.

Eco-tourism

Uttarakhand has a rare diversity of flora and fauna. This makes it an ideal area for developing eco-tourism, projects and activities like jungle safaris, trekking on mountain and forest trails, nature walks, catch and release angling for Mahaseer and other fish species. All these activities have to be conducted in a manner that promotes awareness of environment and helps maintain the fragile ecological balance. In fact, all the future tourism projects in Uttarakhand are eco-tourism projects.

The UTDB and the state government have already approved two eco-tourism projects and work on them has also started. One of them is the George Everest Park Estate in Mussoorie and the other is the Jim Corbett Country Park. The plan is to convert these to eco-tourism destinations. Public investment of Rs. 1.75 crore and private investment of Rs. 19.01 crores has been allocated for the George Everest Estate in Mussoorie. The plan gives the details regarding the Park Estate and Khanij Nagar. There is a suggestion to convert the Sir George Everest House to a museum and to develop it into a camping site. The plan is to develop the area to make provisions for trekking, nature walks, rock climbing, hang gliding, bird watching, watching wild life, horse riding, para gliding and other outdoor activities.

The other plan was to establish the Jim Corbett Country as a eco-tourism destination. Rs. 519.60 crore of private allocation has been made for the same. The plan has divided the development of facilities at this location into 6 zones—orchard; leisure zone; therapeutic and golf; free access; residential hospitality; agri business and infrastructure and common facilities. And guidelines have been provided for the development of tourist attractions in these locations.

Health Tourism

In today's modern world, spirituality is being defined as wellness, healing and rejuvenation in the global context. Uttarakhand beckons as the perfect destination for cleansing the system of the toxicity of stress in societies. The essence of the age-old knowledge systems of yoga and *ayurveda* and the new age healing systems like *reiki* are available and accessible in innumerable health centres ranging from top-end spas and middling health resorts to the traditional ashrams.

Rishikesh is being developed as the hub for yoga and meditation centres where a world centre for yoga and meditation has been established. An international yoga festival had been organised here by Uttarakhand Tourism in cooperation with Parmarth Niketan during March 2004 where more than 150 delegates from Australia, Canada, South Africa, France, Holland, Ireland, Israel, Malaysia, Nepal, Russia, Singapore, South Korea, Sweden, Switzerland, Thailand, England, USA, Zambia and India participated. It is now planned to make the Yoga Festival an annual event.

Uttarakhand is home to a number of spa facilities, the most famous of them being the Ananda Spa near Rishikesh. This has become a world class Destination Spa. Once the residence of Maharaja of Tehri-Garhwal, it is dedicated to today's traveller, who is looking for innovative ways to restore and rejuvenate his energies. Ananda in The Himalayas has been voted as the Best Overseas Spa Retreat and the World's Number 1 Spa at the Conde Nast Traveller Readers Spa Awards-2005. In addition to superlative reviews in publications like *Harpers and Queens*, *Harpers Bazaar*, *New York Times* and *International Herald Tribune*, it is also the only spa in India to be awarded the prestigious 5 wave certificate by BISA (British International Spa Association).

4. Profile of the Tourists: Survey Results

A domestic tourism survey was carried out by NCAER in 2002 in the major tourist destinations of the country for the tourism satellite account. For Uttarakhand, four major tourist destinations of the state were surveyed. These were Haridwar, Badrinath and Kedarnath, Nainital and Mussorie. Four tourists' destinations of Himachal Pradesh were also surveyed. These were Nainadevi/Chintpurni, Shimla, Kullu-Manali, Bilaspur. Nainadevi/Chintpurni are pilgrimage destinations. Shimla and Kullu Manali are hill stations known for their natural beauty.

Key Findings of the Survey

Table 10.7 highlights the key findings of the survey for Uttarakhand and Himachal Pradesh.

1. *State of Origin*: Tourists made majority of the trips to Uttarakhand from Delhi (23.7 per cent) followed by Uttar Pradesh (16.5 per cent) and Haryana (11.3 per cent). Ten per cent of the tourists were from Uttarakhand itself. Tourists made majority of the trips to Himachal Pradesh from Punjab (51.8 per cent). Tourists from Himachal Pradesh (15.6 per cent) made the next highest number of trips followed by Uttar Pradesh (12 per cent).

TABLE 10.7
Comparison of Characteristics of Tourists to Uttarakhand and Himachal Pradesh

| S. No. | Category | Uttarakhand | Himachal Pradesh | India |
|--------|-----------------------------------------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------|
| 1. | Total number of tourists in 2004 (in mn) | 13.87 | 5.15 | |
| 2. | Domestic tourists in 2004 (in mn) | 13.8 | 5 | |
| 3. | Foreign tourists (in mn) | 0.07 | 0.15 | |
| 7. | Total trips made to the various destinations* | 911948 | 1176358 | 230,000,000 |
| 8. | Total no. of trips made by urban households* | 382,279 | 298,729 | 61,000,000 |
| 9. | Total no. of trips made by rural households * | 529668 | 877629 | 169,000,000 |
| 10. | State from which maximum visitors came* | 1. Delhi 2. UP | 1. Punjab 2. HP | |
| 11. | Purpose of visit (major purpose)* | Religious and pilgrimage | Religious and pilgrimage | Social purposes (visiting friends, birth & death, marriage) |
| 12. | Factor for choosing the destination | Nature | Climate | |
| 13. | Major source of information* | Recommendation of friends & relatives | Recommendation of friends & relatives | |
| 14. | Occupation* | 1. Cultivators 2. Salaried | 1. Business 2. Salaried | 1. Cultivators 2. Salaried |
| 15. | Income category (annual income) to which the maximum tourists belong* | 50,000-1,00,000 | 50,000-1,00,000 | Middle income |
| 16. | Education* | Graduates | Secondary | |
| 17. | Major mode of transport* | Railway | Bus services | Bus |
| 18. | Most preferred Place of stay* | 1. Hotels 2. Dharamshalas | 1. Hotels 2. Private guest houses | |

Note: * Information collected from Domestic Tourism Survey, NCAER (2002).

Source: NCAER (2002). *Domestic Tourism Survey for Tourism Satellite Account*.

TABLE 10.8A
State of Origin of Tourists to Uttarakhand

| <i>State of Origin of the Tourists</i> | <i>Percentage of Tourists to Uttarakhand</i> |
|----------------------------------------|----------------------------------------------|
| Delhi | 23.71 |
| Uttar Pradesh | 16.54 |
| Haryana | 11.36 |
| Uttarakhand | 10.27 |
| West Bengal | 6.49 |
| Gujarat | 4.95 |
| Karnataka | 4.93 |
| Punjab | 2.50 |
| Maharashtra | 2.33 |
| Madhya Pradesh | 1.88 |
| Rajasthan | 1.60 |
| Bihar | 1.31 |
| Chandigarh | 0.82 |
| Himachal Pradesh | 0.45 |
| Kerala | 0.29 |
| Tamil Nadu | 0.14 |
| Orissa | 0.02 |

Source: NCAER (2002). *Domestic Tourism Survey for Tourism Satellite Account.*

TABLE 10.8B
State of Origin of Tourists to Himachal Pradesh

| <i>State of Origin of the Tourists</i> | <i>Percentage of Tourists to HP</i> |
|----------------------------------------|-------------------------------------|
| Punjab | 51.87 |
| Himachal Pradesh | 15.68 |
| Uttar Pradesh | 12.14 |
| Chhattisgarh | 10.55 |
| Gujarat | 5.33 |
| Haryana | 1.57 |
| Jammu | 0.64 |
| West Bengal | 0.57 |
| Chandigarh | 0.46 |
| Tamil Nadu | 0.37 |
| Jharkhand | 0.35 |
| Bihar | 0.24 |
| Madhya Pradesh | 0.15 |
| Orissa | 0.07 |

Source: NCAER (2002). *Domestic Tourism Survey for Tourism Satellite Account.*

The zone-wise trips to Uttarakhand and Himachal Pradesh have also been computed. The zones are divided as follows: Northern zone comprising Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab, Rajasthan, Delhi and Chandigarh; Southern zone comprising Andhra Pradesh, Karnataka, Kerala, Tamil Nadu and Pondicherry; Central zone with the

states of Chhattisgarh, Uttarakhand, Uttar Pradesh and Madhya Pradesh; Eastern zone comprising of Bihar, Jharkhand, Orissa, Sikkim and West Bengal. And the Western zone comprising of the states of Goa, Gujarat, Maharashtra, Daman and Diu and Dadra and Nagar Haveli. The following table presents the zone-wise distribution of the trips. The figures indicate that Northern zone has major contribution for both states, followed by Central zone. Tourists from northern and central zone prefer Himachal Pradesh, whereas for Uttarakhand, the other three zones also have some contribution.

TABLE 10.9
Percentage Distribution of Trips by Zones

| <i>Zones</i> | <i>Uttarakhand</i> | <i>Himachal Pradesh</i> |
|---------------|--------------------|-------------------------|
| Northern zone | 42.06 | 70.22 |
| Southern zone | 5.37 | 0.37 |
| Eastern zone | 16.20 | 0.99 |
| Western zone | 7.29 | 5.57 |
| Central zone | 29.08 | 22.84 |

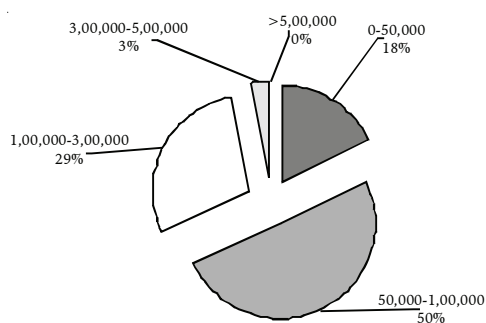
Source: NCAER (2002). *Domestic Tourism Survey for Tourism Satellite Account.*

- Age Group:* Majority of the trips to Uttarakhand were made by tourists where the age group of the head of the family was 46-50, probably due to the pilgrimage locations in the state. Majority of the trips to Himachal Pradesh were made by tourists where the head of the family belonged to the age group 41-45.
- Education:* As far as the education profile of the tourists to Uttarakhand is concerned, 22.94 per cent of them were graduates, 21.70 per cent had a secondary level of education, 21.38 per cent had primary level of education. Almost 22 per cent of those who visited Uttarakhand were illiterates. 14.5 per cent of those who visited HP were graduates, around 52 per cent had a secondary level of education and 17 per cent had primary level of education. Eleven per cent of those who visited HP were illiterates.
- Occupation:* 32.5 per cent of the tourists surveyed in Uttarakhand were cultivators followed by the salaried class, which stood at 26 per cent. This indicates the scope that the state has for attracting tourists from the service class. Around 23 per cent of the tourists surveyed in Himachal Pradesh were from the business class followed by the salaried class, which stood at 20 per cent.

5. *Income Level:* A sizeable section (50 per cent) of those who visited Uttarakhand had an annual income between Rs. 50,000 to Rs. 1,00,000. Around 29 per cent of the tourists had an income between Rs. 1,00,000 to Rs. 3,00,000. Only 0.31 per cent of the tourists were in the higher income group of an annual income of more than Rs. 5,00,000 per annum (Figure 10.2).

FIGURE 10.2

Distribution of Tourists According to their Income Level



Source: NCAER Survey, 2002

The total number of trips made by tourists with an income of less than Rs. 1,00,000 per year was 67 per cent for both Uttarakhand and HP. In Himachal Pradesh, around 27 per cent of the tourists had an income between Rs. 1,00,000 to Rs. 3,00,000 and only 0.10 per cent of the tourists were in the higher income group of more than Rs. 5,00,000 per annum.

6. *Purpose:* As many as 72 per cent of the trips to Uttarakhand were made for religious and pilgrimage purpose. The percentage of trips for leisure/holiday was only around 27 per cent. Thus, the state can do much to promote nature tourism, eco-tourism and adventure tourism. In comparison, around 65 per cent of the trips to HP were made for religious and pilgrimage purpose and around 35 per cent of the trips were for leisure/holiday.

One reason why the religious tourism is more than the leisure tourism is the fact that the cost per trip for religious tourism is much less than that for leisure tourism. The survey results show that the total expenditure for all the households for all the trips made during the survey period for a religious visit was Rs. 1,50,896 and the same for leisure/nature tourism was Rs. 2,34,483 for Uttarakhand. The same results for Himachal Pradesh were Rs.

96,507 for religious trips and Rs. 1,27,204 for leisure trips. The average expenditure per trip for religious tourists in Uttarakhand was Rs. 862 and for leisure tourists was Rs. 2392. The same for Himachal Pradesh was Rs. 599 for religious trips and Rs. 1042 for leisure trips. The following table summarises these results:

TABLE 10.10

Expenditure Per Trip to Uttarakhand and Himachal Pradesh

(in Rs)

| State | Uttarakhand | | Himachal Pradesh | |
|------------------------------|-------------|----------|------------------|----------|
| | Religious | Leisure | Religious | Leisure |
| Total expenditure | 1,50,896 | 2,34,483 | 96,507 | 1,27,204 |
| Average expenditure per trip | 862 | 2392 | 599 | 1042 |

Source: NCAER (2002). Domestic Tourism Survey for Tourism Satellite Account.

7. *Ranking of Attractions:* Pilgrimage certainly was the most important factor to attract tourists in Uttarakhand. But natural beauty and climatic conditions mainly influenced the tourists whose purpose of visit was leisure/holiday. The tourists rated climate as the most important factor for choosing HP as a preferred destination. The second most important reason cited was nature.

TABLE 10.11

Factors for Choosing the Destination

| Factor for Choosing Uttarakhand | Uttarakhand | Himachal Pradesh |
|---------------------------------|-------------|------------------|
| Climate | 28.73 | 34.80 |
| Nature | 34.43 | 33.96 |
| Resorts around lakes etc. | 10.39 | 3.34 |
| Historical sites | 5.11 | 10.39 |
| Sport | 8.16 | 5.37 |
| Package | 7.80 | 3.27 |
| Others | 5.38 | 8.88 |

Source: NCAER (2002). Domestic Tourism Survey for Tourism Satellite Account.

Tourists visiting Uttarakhand were interested in the activities like sightseeing, enjoying festivals and also visiting historic sites. However, most of the tourists took up some sort of shopping and majority purchased items like clothes, processed food and durable goods. Tourists visiting HP were interested in the activities like shopping, sightseeing, enjoying festivals and also visiting historic sites and friends.

8. *Source of Information:* The main source of information (76 per cent) about these destinations was the 'recommendation of friends/relatives' in Uttarakhand. Media (TV, newspaper, magazine) (11 per cent) played only a marginal role. As regards the destinations in Himachal Pradesh, once again the main source of information (42 per cent) about these destinations was the 'recommendation of friends/relatives'. Media (TV, newspaper, magazine) (34 per cent) played a much bigger role in highlighting the destinations of HP than in Uttarakhand. This indicates that a lot has to be done through the media to promote tourism in the state.
9. *Perception of the Tourists:* Tourists who visited Uttarakhand rated it average in almost all local aspects viz., cleanliness of public areas, health services, transport facilities, restaurants, entertainment/nightlife, archeological and historical resources, safety, people's friendliness, accommodation facilities etc. They gave a slightly higher rating to the value for money and natural environment. Around 54 per cent of the domestic tourists who visited Uttarakhand were very satisfied with their visit. Even though the proportion of domestic tourists visiting Himachal Pradesh was very low, those who visited it were very satisfied (63 per cent) with their visit.
10. *Accommodation:* For accommodation, people preferred hotels and *dharamshalas* to other alternatives like private and government guesthouses in Uttarakhand. The percentage of trips made by tourists who stayed in hotels was 28 per cent and those in *dharamshalas* were 33 per cent. Whereas in Himachal Pradesh, people preferred hotels and private guest houses to other alternatives like *dharamshalas* and government guesthouses.
11. *Mode of Arrival:* Railways were used as the mode of transportation in 37 per cent of the total trips whereas buses were used in 40 per cent cases. Whereas, in Himachal Pradesh, buses were used as mode of transportation in 62 per cent of the total trips whereas railways were used in 18.5 per cent cases. In general, tourists did not take the services of any tour operators or guides.

In Uttarakhand, although people stayed in hotels and *dharamshalas* in big numbers, they spent substantial amount of money on food (which included breakfast,

lunch and dinner) in hotels, railway stations and bus stands other than the expenditure on the hotel itself.

5. Tourism Budget

Expenditure on schemes for tourism development and promotion of tourism in Uttarakhand has progressively increased over the years. In the current Five Year Plan, approximately INR 8,600 lakhs have been spent, which is more than ten times the amount spent during 1980-1985. But, clearly, even this has not been enough to develop and fully exploit the vast tourism potential of Uttarakhand.

The main objective initially was to fully develop the vast tourism potential of Uttarakhand in a planned and integrated manner. Top priority was given to augment the infrastructure facilities (construction of roads, hotels, providing connectivity etc.) for tourists and to mobilise resources for this purpose. This can be seen from the detailed outlay of the state government to tourism and the actual expenditure. In 2001-02, the maximum provision INR 934.41 lakhs was for infrastructure development which amounted to 30 per cent of the total expenditure that year. Around 30.78 per cent of the total expenditure in 2002-03 was for the provision of infrastructure facilities and around 36 per cent in 2004-05. As far as the budget provisions are concerned, the change in the provisions has been in line with the outlay and off late, maximum share of the budget provision is being allocated to the development of new tourist destinations. During 2004-05, the maximum allocation has been for developing new tourist routes and destinations and the lesser known destinations. The share of the allocation earmarked for this purpose was around 51.6 per cent of the total allocation in the Xth Plan.

The following Table 10.12 shows the actual expenditure by the Uttarakhand government on the different categories during all years from 2001-02. The outlays and budget provisions are provided in the Appendix A-10.4.

6. Tourism Infrastructure Index and Tourism Potential

Principal component analysis (PCA) is a scientific tool to construct a composite index in such a way that the weights given maximise the sum of the squares of correlation of the indicators with the composite index. PCA was used to build a composite index of the districts on the basis of the availability of tourist infrastructure facilities and the tourism potential the district has in terms of the number of major tourist destinations in the

TABLE 10.12
Actual Expenditure by Uttarakhand Government

| | | (in Rs. Lakh) | | | |
|--------------|---------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| S.No. | Activity | Actual Expenditure 2001-02 | Actual Expenditure 2002-03 | Actual Expenditure 2003-04 | Actual Expenditure 2004-05 |
| 1. | Tourism development | 178.44 | 134.96 | 340.39 | 473.45 |
| 2. | Promotion/advertisement | 108.3 | 251.56 | 494.4 | 364.24 |
| 3. | Beautification and provision of facilities | 339.92 | 420.64 | 448.71 | 1371.83 |
| 4. | Development of new tourist routes/destinations/ lesser known destinations | | 109.03 | 581.19 | 892.67 |
| 5. | Infrastructure development (construction and development of residential, hotels/accommodation, road/air/rail) | 249.06 | 553.27 | 621.48 | 636.91 |
| 6. | Repairs and maintenance/renovation | | 16.09 | 20.00 | 10.00 |
| 7. | Eco-tourism | | | | |
| 8. | Adventure tourism | 104.38 | 16.15 | 68.4 | 17.0 |
| 9. | Other construction works | | | | |
| 10. | Human resource development schemes | | 151.85 | 109.95 | - |
| 11. | Establishment of tourist centres/ tourism development board | | 20.94 | 29.76 | 322.28 |
| 12. | Employment generation | 217.2 | 123.03 | 409.45 | 429.24 |
| 13. | Others | | | | 87.46 |
| Total | | 1191.30 | 1797.52 | 3123.73 | 4605.08 |

Source: Various Budget Documents, Government of Uttarakhand.

state. Various indicators were appropriately selected to represent the tourism infrastructure in the districts and the tourism potential. These indicators have been selected in such a way that higher values reflect better availability of the tourism infrastructure facilities. These indicators were given weights using PCA and were combined to form an index for the particular district. Two indices, one for tourism infrastructure and another for the tourism potential were developed. These were then plotted with the tourist arrivals to enable comparison and to identify areas where the potential existed but there was a need to tap it by providing adequate infrastructure. An important point to be noted here is that the composite index computed through PCA is essentially a relative measure. The index of an individual district only shows its relative strength compared to other districts and does not depict its tourism infrastructure or potential in an absolute sense.

The variables used to measure the tourist infrastructure in the district are:

1. Length of *pucca* road (kms) constructed by Public Works Department per 1000 sq. km. area (1999-2000): This is one of the most important measure of infrastructure facilities in a district. This variable measures the accessibility of a district. Without proper accessibility, tourism cannot be developed in

a region, especially in hilly states like Uttarakhand, road connectivity is very important. The data for this variable was collected from Uttarakhand Statistical Diary 2002-03 for the year 1999-2000.

2. Number of hotels and *dharamshalas*: This was one of the important indicators to measure the tourist infrastructure in a district. It estimates the availability of accommodation facilities in the district, which is very important for any tourist destination. The data for this variable was collected from the Uttarakhand Government Tourism Development Board office in Dehradun.
3. Rail connectivity: This indicator was also included to measure the accessibility of a district. This indicator looked at whether the district had at least one railway station. This may not be as important an indicator as road connectivity given the hilly terrain of this state. But it still measures the accessibility of the district, and better the accessibility, better would be the tourism infrastructure. The data for this was collected from the district gazetteer of Uttarakhand and was supplemented by the railway map of Uttarakhand.
4. Proportion of households with electricity to total households in 2001: This measures the

development of a district. Unless the basic infrastructure facilities like electricity are present, the tourist infrastructure can't be properly developed. This variable has been used as a proxy for the availability of electricity in the tourist places of interest. The source for this data was Census 2001—housing, amenities and assets for the year 2001.

5. Total literacy per 100: The variable has been used as a proxy for the level of awareness among people in the district. The source for this data was Uttarakhand Statistical Diary 2002-03 for the year 2001.
6. Number of bank branches per lakh population: This variable has been taken as a proxy for the income levels in a district. The source of this data was CMIE monthly review of Uttarakhand economy, June 2005 for the year 2003-04.
7. Number of telephones per 100 population: This variable is again one of the important infrastructure facilities that should be available for the development of any tourist centre, as unless the communication facilities are properly available, a district cannot be developed as a tourist centre.

The indicators used for tourism potential were:

1. Number of religious places: This is used to show the tourist attractions in the district especially in a state like Uttarakhand where the purpose of most of the tourists is pilgrimage. The data for this variable was collected from the Uttarakhand government website.
2. Number of places for nature and excursion: This is again used to indicate the tourist attractions in the district. The data for this variable was collected from the Uttarakhand government website.
3. Number of places for adventure: The data for this variable was collected from the Uttarakhand government website.

The variables chosen are usually measured in different units and generally not additive. Hence, it is necessary to convert them to some standard comparable units such that the initial scale chosen for measuring them does not bias the results. Thus standardisation of the variables is done to remove this bias in the following manner: $(X_i - \bar{X})/s$, where X_i is the observation, \bar{X} the mean of the series and s the standard deviation. The transformed series now would be scale free and would have a mean zero and a standard deviation of unity.

Results

The strength of each variable in representing the model is computed by the corresponding eigenvalues. The eigenvalue is also suggestive of the explanatory capacity of a particular component. Any principal component with an eigenvalue of 1.0 and above may be considered as an important factor in explaining the model. The first component of tourism infrastructure has an eigenvalue of 4.43 and assigns weights appropriately, this component has been used for the analysis. The percentage of variance being explained by the first principal component is around 63 per cent. These facts are indicative of the fact that the first principal component is suitable enough to be used for computing the final composite index of tourism infrastructure.

Similarly for the tourism potential, the eigenvalue of the first component is 1.20 and that of the second is 1.06. Here we have used the factor loadings as shows by the second principal component. Both the components approximately explain the same amount of variance. And since the first component assigns negative weights to one of the variable, we use the weights given by the second component.

The weights generated by PCA for the seven variables used to indicate the tourism infrastructure in a district are given in Table 10.13. The model has assigned maximum weightage to the number of telephones per 100 population followed by the proportion of households with electricity and road connectivity.

TABLE 10.13
Weights (Factor Loadings) of the Indicators for
Tourism Infrastructure

| Variable | Weight | Relative Weight (per cent) |
|---------------------------------------------------------------|---------|----------------------------|
| Pucca road per 1000 sq. km area | 0.43626 | 16.8 |
| Number of hotels and <i>dharamshalas</i> | 0.38334 | 14.8 |
| Rail connectivity | 0.30829 | 11.9 |
| Proportion of households with electricity to total households | 0.43889 | 16.9 |
| Educational institutions | 0.31944 | 12.3 |
| Number of bank branches per lakh population | 0.25061 | 9.7 |
| Number of telephones per 100 population | 0.45850 | 17.7 |

Source: Author's Compilation.

As far as the tourism potential is concerned, Table 10.14 reveals that the maximum weightage has been given to the number of places for adventure tourism by the model followed by number of religious places in a district.

TABLE 10.14

Weights to Components of Tourism Potential

| Variable | Weight | Relative Weight (per cent) |
|-------------------------------------------|---------|----------------------------|
| Number of religious places | 0.67236 | 46.72 |
| Number of places for nature and excursion | 0.02697 | 1.87 |
| Number of places for adventure | 0.73974 | 51.40 |

Source: Author's Compilation.

These weights are then used to combine the variables linearly to arrive at an index for each district. This has been done for both the tourism infrastructure and tourism potential. The ranking of the districts based on the tourism infrastructure is shown in Table 10.15.

TABLE 10.15

Ranking of Districts of Uttarakhand

| S. No. | Tourism Infrastructure Index | Tourism Potential |
|--------|------------------------------|-------------------|
| 1. | Dehradun | Dehradun |
| 2. | Nainital | Pauri Garhwal |
| 3. | Pauri Garhwal | Pithoragarh |
| 4. | Haridwar | Rudraprayag |
| 5. | Udham Singh Nagar | Bageshwar |
| 6. | Almora | Chamoli |
| 7. | Tehri Garhwal | Uttarkashi |
| 8. | Pithoragarh | Champawat |
| 9. | Chamoli | Haridwar |
| 10. | Uttarkashi | Nainital |
| 11. | Champawat | Almora |
| 12. | Rudraprayag | Udham Singh Nagar |
| 13. | Bageshwar | Tehri Garhwal |

Source: Author's Compilation.

The Table 10.15 reveals that Dehradun has the best infrastructure that a tourist destination should have. It also ranks the topmost on the tourist potential. Nainital and Pauri Garhwal rank below Dehradun as far as tourism infrastructure is concerned. Uttarkashi, which has the maximum number of tourist places along with Pauri Garhwal, comes way below in the ranking of tourist infrastructure indicating that a lot needs to be done here. Bageshwar, which is at the last rank in tourism infrastructure ranks fifth in tourism potential, which again indicates high scope of promoting tourism here. There has been improvement in this district as indicated by the tourist arrival. This district ranked 9th in tourist arrivals in 2000 has risen to the third position by 2004. But scope for improvement still exists.

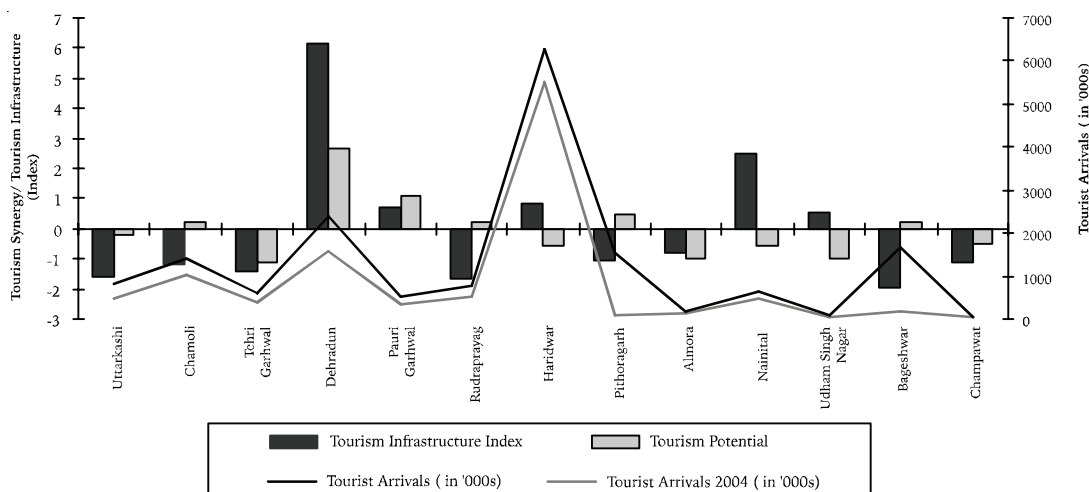
Pauri Garhwal ranks second as far as the tourism potential is concerned. But the tourist arrivals to this place have gone down since 2004. It indicates that though it might have good infrastructure as compared to the other districts, it is losing out to the other districts despite having a good potential. Pithoragarh which ranks third as far as potential is concerned has a much lower rank in infrastructure. Pithoragarh has improved a lot as far as the tourist arrivals are concerned. But it can attain a much higher rank by improving its infrastructure.

The indices of tourism infrastructure and potential were plotted with the tourist arrivals to indicate the districts where the government has to concentrate on improving the infrastructure (Figure 10.3).

The above graph clearly depicts the districts where the potential exists but the infrastructure is poor. Chamoli, Rudraprayag, Pithoragarh, Bageshwar have good potential

FIGURE 10.3

Tourism Infrastructure, Tourism Potential and Tourist Arrivals across Districts



but the infrastructure in these districts holds a lot of scope for improvement. Bageshwar and Pithoragarh have shown improvement in terms of an increase in the number of tourists to these places. On an average there has been an increase in the tourist arrivals to all the districts except for Almora and Champawat where there has not been any change in the number of tourist arrivals. This implies that these districts do not have any share in the increased number of tourists. Dehradun, Haridwar, Nainital and Pauri Garhwal have good infrastructure but the potential in these districts is less in terms of the number of tourist places.

7. Economic Impact of Tourism in Uttarakhand

Tourism impacts the economy of the state receiving the tourists directly and indirectly through the additional demand for various goods and services generated by the extent and manner in which the tourists incur expenditure while on their visit. The expenditure incurred by the tourists leads to higher demand on the outputs of various sectors constituting tourism like hotels and restaurants, transport and other tourist-related services, which represent the direct effect. In addition to this direct effect, demand for the output of the other sectors with strong linkages to tourism like various food products, trade, communications etc., as well as the sectors linked to these, is also effected. This constitutes the indirect effect of tourism. This higher activity brought about by tourism, directly and indirectly, leads to additional employment and incomes to the households in turn leading to higher consumption levels of goods and services further augmenting the demand in various sectors. This constitutes the induced effects. Thus, increased tourism expenditure would lead to a series of expanded activity all over the economy through ripple effects. Any increase in the final demand for the output of tourism would eventually have a multiplier effect on the overall output of the economy. This is called the output multiplier.

The direct, indirect and induced effects of tourism on the total output would also lead to increased incomes and employment. The impact on income and employment depends on the income/output and employment/output ratios in the different sectors. The factors by which the tourism expenditure would get multiplied to yield incomes and levels of employment are called the income and employment multipliers respectively. The income and employment multipliers are calculated by multiplying the income/output ratio and employment/output ratio respectively to the output multiplier.

Data Used

The basis for the input-output analysis is the input-output table brought out by the Central Statistical Organisation. The original 115 by 115 sector input-output table has been reduced to a 26 by 26 sector table for the purpose of our analysis for operational convenience without the loss of any relevant information. The income output ratios have been derived from the input-output table, using gross value added as a proxy for incomes and gross value of output as output. For calculating the employment output ratios, employment data was obtained from the 55th round of National Sample Survey Organisation (NSSO) household survey on Employment Unemployment—1999-2000 and the gross value of output was used from the input-output table.

It is important to mention here that the input-output table is available only at the all-India level and the input-output tables are not available at the state level. Therefore, the all India input-output table has been used for Uttarakhand as well. Expenditure data used in the study was collected through a primary survey carried out by NCAER during 2002-03.

Measurement of the Multipliers

Tourism is not classified as a single industry in the standard industrial classification, but is a multi-sector activity. To assess the direct, indirect and induced impacts of tourism on the economy, the corresponding impacts of the various components of the tourism sector, like hotels and restaurants, food, trade, transport etc., have to be appropriately weighted. These weights are the proportions of expenditure on various component sectors out of the total expenditure on tourism and are derived from the patterns of tourism expenditure by commodity. The tourist expenditures are taken to represent the final demand for a sector. The primary survey collected expenditure data on the items on which the tourists normally incur expenditure in terms of the actual commodities and services and not exactly according to the classification in the input-output table. So the commodities for which the data was available were mapped onto the classified commodities as given in the input-output table.

As mentioned earlier, the domestic tourists account for more than 98 per cent of the total tourists to Uttarakhand. So only the benefits arising out of the expenditure by the domestic tourists has been considered. Domestic day tourists also contribute to enhanced expenditure but to a much lesser extent than the tourists do and the absence of reliable data on the number of day

tourists precludes an assessment of the overall impact of their visit. The pattern of the expenditure in Uttarakhand is as given in the following table:

TABLE 10.16
Expenditure Pattern of Tourists to Uttarakhand

| Sector Code | Sector Name | Percentage of Expenditure to Total |
|-------------|---------------------------------|------------------------------------|
| 17 | Other crops | 0.00 |
| 18 | Milk and milk products | 0.00 |
| 38 | Miscellaneous food products | 9.82 |
| 39 | Beverages | 0.96 |
| 40 | Tobacco products | 0.61 |
| 49 | Miscellaneous textile products | 10.74 |
| 51 | Wood and wood products | 0.00 |
| 52 | Paper, paper prods. & newsprint | 0.44 |
| 53 | Printing and publishing | 0.00 |
| 55 | Leather and leather products | 0.92 |
| 58 | Petroleum products | 0.00 |
| 65 | Drugs and medicines | 0.36 |
| 66 | Soaps, cosmetics & glycerin | 1.72 |
| 68 | Other chemicals | 0.00 |
| 77 | Miscellaneous metal products | 0.00 |
| 84 | Electrical industrial machinery | 0.00 |
| 86 | Batteries | 0.00 |
| 87 | Electrical appliances | 0.38 |
| 98 | Miscellaneous manufacturing | 0.97 |
| 103 | Railway transport services | 4.76 |
| 104 | Other transport services | 6.21 |
| 106 | Communication | 0.00 |
| 107 | Trade | 2.59 |
| 108 | Hotels and restaurants | 59.55 |
| 114 | Other services | 0.00 |
| | Others | 0.00 |

Source: NCAER (2002). Domestic Tourism Survey.

The backward and forward linkages of the tourism sector and the sectors, which constitute the tourism sector, have also been computed. The backward linkages refer to the input-providers to the specified industry and forward linkages refer to the downstream industries that use the output of the specified industry as inputs in producing their own goods and services.

Output Multipliers

If the final demand for the product of any sector increases, the output required of that sector increases as also the output of almost all the other sectors because of linkages. Input-output analysis facilitates the assessment of this impact of increased final demand in a sector on the output of various other sectors and in the economy as a whole. Three types of output coefficients can be

computed: direct, direct+indirect and induced. The direct output coefficient is calculated as the sum of the elements in the column corresponding to that particular sector. In case of tourism, a weighted average of the output coefficients of the sectors represented in the tourism expenditure vector would give the sector's overall direct output coefficient. The direct+indirect effects are computed by using the Leontief Inverse. The sum of the columns corresponding to a sectors gives the direct + indirect output multiplier for that sector while the weighted average with the tourism expenditure vector gives the direct and indirect output multiplier for the tourism sector as a whole.

The output coefficients of the sectors related to tourism and tourism sector are as given below:

TABLE 10.17
Output Coefficients of Tourism and Related Sectors

| | | Direct | Direct + Indirect |
|-----|---------------------------------|-------------|-------------------|
| 17 | Other crops | 0.17 | 1.28 |
| 18 | Milk and milk products | 0.18 | 1.25 |
| 38 | Miscellaneous food products | 0.87 | 2.42 |
| 39 | Beverages | 0.59 | 2.02 |
| 40 | Tobacco products | 0.59 | 2.05 |
| 49 | Miscellaneous textile products | 0.65 | 2.08 |
| 51 | Wood and wood products | 0.49 | 1.83 |
| 52 | Paper, paper prods. & newsprint | 0.73 | 2.35 |
| 53 | Printing and publishing | 0.55 | 2.11 |
| 55 | Leather and leather products | 0.76 | 2.44 |
| 58 | Petroleum products | 0.80 | 2.31 |
| 65 | Drugs and medicines | 0.65 | 2.22 |
| 66 | Soaps, cosmetics & glycerin | 0.63 | 2.13 |
| 68 | Other chemicals | 0.72 | 2.16 |
| 77 | Miscellaneous metal products | 0.68 | 2.13 |
| 84 | Electrical industrial machinery | 0.72 | 2.20 |
| 86 | Batteries | 0.67 | 2.12 |
| 87 | Electrical appliances | 0.64 | 2.12 |
| 98 | Miscellaneous manufacturing | 0.70 | 2.16 |
| 103 | Railway transport services | 0.51 | 1.86 |
| 104 | Other transport services | 0.52 | 1.96 |
| 106 | Communication | 0.14 | 1.23 |
| 107 | Trade | 0.20 | 1.35 |
| 108 | Hotels and restaurants | 0.65 | 2.06 |
| 114 | Other services | 0.48 | 1.84 |
| | Others | 0.37 | 1.62 |
| | Tourism | 0.65 | 2.07 |

Source: Author's Compilation.

The direct output multiplier of tourism sector in Uttarakhand is 0.65. The direct+indirect multiplier is

2.07. This implies that for every unit increase in demand for tourism, i.e., every rupee of tourism expenditure, results in an output of Rs. 0.65 in the tourism sector itself, Rs. 2.07 in the total output in the economy.

Income and Employment Multipliers

The income and employment multipliers are calculated from the output multipliers. The output multipliers, as calculated above, are multiplied with the income-output ratio to get the income multiplier and with the labour-output ratio to get the employment multiplier. The income-output ratio is computed from the input-output table as the ratio of the gross value added to the gross value of output. Gross value added is used as a proxy for incomes and gross value of output for output. This ratio is then multiplied with the corresponding output multipliers to get the income multiplier for that particular sector. Similarly, employment multiplier is calculated by multiplying the labour-output ratio with the corresponding output multipliers. These multipliers have been derived as weighted averages of the multipliers for the component sectors, the weights being the tourist expenditure on the various components.

Table 10.18 presents the direct and indirect income and employment multipliers for the 26 sectors considered falling under the tourism sector. The sum of the income and employment multipliers of all these sectors gives the tourism sector multipliers.

The direct and indirect income multiplier for tourism is 0.736. This implies that every rupee of tourism expenditure results in an income of Rs. 0.736 in the economy taking into account the direct and indirect effects. Similarly, the direct and indirect employment multiplier for the tourism sector is 1.126. This means that 1.126 jobs are created for INR one lakh of tourism expenditure.

8. Tourism Policy

The unlimited tourism potential of Uttarakhand had not been fully realised in the absence of a planned and coordinated strategy of tourism development. Inadequate capital investment in tourism infrastructure and limited private sector participation have been substantially responsible for this. Therefore, to address the prevailing problems a tourism policy of Uttarakhand was brought out in 2001, with the following objectives:

- To place Uttarakhand on the tourism map of the world as one of the leading tourist destinations and to make Uttarakhand synonymous with tourism.

TABLE 10.18
Income and Employment Multipliers of Tourism and Related Sectors

| | <i>Direct+Indirect Income Multiplier</i> | <i>Direct+Indirect Employment Multiplier</i> |
|------------------------------------|--------------------------------------------------|------------------------------------------------------|
| 17 Other crops | 0.121 | 0.021 |
| 18 Milk and milk products | 0.029 | 0.001 |
| 38 Miscellaneous food products | 0.020 | 0.176 |
| 39 Beverages | 0.008 | 0.006 |
| 40 Tobacco products | 0.002 | 0.013 |
| 49 Miscellaneous textile products | 0.035 | 0.149 |
| 51 Wood and wood products | 0.003 | 0.020 |
| 52 Paper, paper prods. & newsprint | 0.003 | 0.002 |
| 53 Printing and publishing | 0.001 | 0.001 |
| 55 Leather and leather products | 0.003 | 0.004 |
| 58 Petroleum products | 0.004 | 0.001 |
| 65 Drugs and medicines | 0.003 | 0.001 |
| 66 Soaps, cosmetics & glycerin | 0.006 | 0.005 |
| 68 Other chemicals | 0.003 | 0.002 |
| 77 Miscellaneous metal products | 0.001 | 0.002 |
| 84 Electrical industrial machinery | 0.000 | 0.000 |
| 86 Batteries | 0.000 | 0.000 |
| 87 Electrical appliances | 0.002 | 0.000 |
| 98 Miscellaneous manufacturing | 0.004 | 0.008 |
| 103 Railway transport services | 0.027 | 0.016 |
| 104 Other transport services | 0.049 | 0.056 |
| 106 Communication | 0.007 | 0.003 |
| 107 Trade | 0.109 | 0.148 |
| 108 Hotels and restaurants | 0.198 | 0.467 |
| 114 Other services | 0.025 | 0.024 |
| Others | 0.073 | |
| Tourism | 0.736 | 1.126 |

Source: Author's Compilation.

- To develop the manifold tourism related resources of the state in an eco-friendly manner, with the active participation of the private sector and the local host communities.
- To develop tourism as a major source of employment and income/revenue generation and as a pivot of the economic and social development in the state.

The Tourism Policy attempted to analyse the tourism potential and strengths of Uttarakhand along with the weaknesses and challenges which lie ahead. On the basis of this analysis, a road-map for the development of tourism in the state was to be drawn up. Actionable objectives were set and contours of an action plan delineated in order to reach the milestones and achieve specific targets, while indicating the areas of opportunity

for participation of the private sector and the tourism industry and trade. In this process, an effort was also made to bring out the manifold tourism attractions, which, in close cooperation with the private sector and all those associated with the national as well as the global tourism industry.

In order to meet the stated objectives, the state government identified the following thrust areas:

1. Infrastructure Facilities

In order to attract tourists from all over the world, it was felt that there is an urgent need to create efficient, modern and state-of-the-art infrastructure to cater to the specific needs of tourists of all categories.

2. Year Round Tourism

Tourism has mainly been confined to the summer months when people from the neighbouring states come to get respite from the heat in the plains. But there is a lot of potential for winter tourism as well in Uttarakhand. Winter sports activities like skiing, ice-skating and ice-hockey, water sports, winter trekking etc., need to be promoted, publicised and advertised to attract tourists throughout the year.

3. Group-oriented Tourism Development

Apart from the general need to provide a clean and healthy environment at all tourist destinations, it would be essential to identify specific target groups and tourism activities and provide facilities according to their special requirements. For instance, the nature lover needs facilities which are quite different from those of a pilgrim. The challenge is to identify the needs of different categories of tourists and provide for them in a comprehensive and integrated manner.

4. Development of New Tourist Destinations

Apart from the pilgrimage centres, Uttarakhand has so far been generally known for its 'hill stations' such as Mussoorie and Nainital. There has been excessive pressure on these hill stations. There are a number of other destinations with immense potential such as New Tehri, Tehri dam site, Pithoragarh, Munsiyari, Pauri, Khirsu and Lansdowne and many others in the interiors, which can be developed into attractive tourist hill destinations. As of now, the state has identified two new tourist circuits and the master plans for these are being prepared. These are:

1. Pauri-Khirsu-Lansdowne in the Garhwal region.
2. Pithoragarh-Munsiyari in the Kumaon region.

The promotion of lesser known destinations is also underway.

5. Promotion of Tourism-oriented Handicrafts Industry and Cuisine

Souvenirs and cuisine are integral to tourism anywhere in the world. So also, in Uttarakhand, it will be essential to promote large scale production of souvenirs and artefacts based on the traditional arts and crafts of the region, and encourage a rich fare of high quality international, national and local cuisines.

6. Publicity and Tourism Marketing

Publicity and marketing of the tourism attractions of Uttarakhand and its brand name at the national and international level has been inadequate. Planned and coordinated efforts are required in this direction, with the fullest utilisation of information technology.

7. Human Resources Development

Upgradation of existing institutions, facilities, tourism entrepreneurship, management capabilities and training in specialised services such as guides, porters, chefs, housekeeping, etc., are necessary for developing tourism in the state. The existing institutional arrangements need modernisation and qualitative improvement. In doing so, it will be essential to provide for the maximum involvement and participation of the private sector, specialists and experts, and those concerned with the tourism trade and industry. It would also be essential to ensure coordination between different agencies involved in tourism development.

8. Private Sector Participation

So far, the development of tourism in Uttarakhand has been a public sector affair. There has been a dearth of participation and involvement of the private sector. Acute need is felt to promote and encourage private sector participation in the development of modern tourist facilities and infrastructure and management practices in the state.

Implementation of Policy Statement So Far

Tourism has the potential to become a mainstay of Uttarakhand's economy, and needs to be developed in a planned and time bound manner. Towards this end, the following thrust sectors had been identified in the Tourism Policy of 2001.

The following table gives a brief summary of the action plan that was laid out in 2001 and the actual achievements of the state during these four years.

| S. No. | Policy Plan laid out in 2001 | Actual Achievements/What has been done till 2003 |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | <p>Institutional Framework To constitute a Tourism Development Board replacing the Tourism Directorate through appropriate legislation. This was to be the highest body to advise the government on all tourism-related matters. Board to have a Single window Information/Assistance centre to provide tourism related information, to sanction projects and escort services for obtaining clearances and approvals.</p> | <p>Uttarakhand Tourism Development Board (UTDB) set-up as a Statutory Board under the government of Uttarakhand, chaired by the Tourism Minister of Uttarakhand. The board has the Chief Secretary as the Vice-Chairman and five leading experts from the private sector as its members. The board serves as a nodal agency for the development and regulation of tourism related activities and provides a single window clearance to tourism projects.</p> |
| 2 | <p>Infrastructure Development</p> <p>(a) <i>Rail Services</i>: Plan to connect UA to important cities in India through high speed trains.</p> <p>(b) <i>Air Services</i>: Plan to develop and upgrade existing airports and airstrips and to link them to major air service centres. Plan to develop areas around the airport and airstrips.</p> <p>(c) <i>Road Connectivity</i>: Efficient road network equipped with modern tourist facilities to be developed to connect important tourist destinations.</p> <p>(d) <i>Accommodation Facilities</i>: Special efforts to develop and upgrade accommodation at important tourist centres keeping in view requirements and income levels of different categories of tourists.</p> <p>(e) <i>Modern Telecommunication Facilities</i>: To be made available in far flung areas wherever feasible with the help of GOI and the private sector.</p> <p>(f) <i>Private Sector Participation</i>: To be sought for development of accommodation facilities, tourist resorts, specialised food restaurants, facilities for adventure sports, amusement parks and facilities etc.</p> <p>(g) <i>Schemes for Self-employment</i>: Plan to implement a new "UA Tourism Development Scheme". Under this scheme, state assistance upto a maximum of 20 per cent for projects with capital investment of Rs. 10 lakh.</p> | <p>(a) Jan Shatabdi started between Dehradun and Delhi. The train between Dehradun and Chennai has been started.</p> <p>(b) Dehradun airport is being upgraded and developed. Three new airstrips developed which are ready to be operationalised are: 1. Gaucher in Chamoli 2. Chinyali Saud in Uttarkashi 3. Naini Saini in Pithoragarh Two new airports being developed in addition to the Jolly Grant airport in Dehradun. Master plan drafted to develop areas around airstrips with private sector allocation of Rs. 6.53 crores.</p> <p>(c) Expressway between Delhi and Dehradun under consideration.</p> <p>(d) Allocations have been made in the budget for construction of tourist rest houses, overnight shelters etc.</p> <p>(e) BSNL and many other private operators are working in hilly terrains of the state. WLL service has been started by the department of telecommunication i.e., BSNL.</p> <p>(f) Incentives like exemption of luxury tax, excise duty, entertainment tax etc., for setting up amusement parks, hotels etc., for the first five years being provided to attract private sector participation.</p> <p>(g) The Vir Chandra Singh Garhwali Paryatan Swarojgar Yojna launched. Scheme provides 20 per cent subsidy and facilitates bank loans for 67.5 per cent Loan Amount; 20 per cent Subsidy amount and 12.5 per cent margin money. The scheme has been amended in 2005. Now 25 per cent subsidy maximum of INR 3.75 lakh is being provided to the beneficiaries. Upto March 2006, 876 applicants have been benefited in this scheme.</p> |
| 3 | <p>Mobilisation of Resources To develop infrastructure facilities plan to invite private sector investment, foreign investment as well as investment from NRIs. Efforts to be made seek financial assistance from World Bank, ADB and other international agencies.</p> | <p>Fiscal and other incentives like tax exemption, excise exemption, capital investment subsidy etc., are being provided to attract private sector investment. Based on the recommendations of the master plan, proposals are under active consideration of Japan Bank for International Co-operation and ADB for ex. Char Dham Yatra Infrastructural Development plans is being examined by JBIC for funding.</p> |
| 4 | <p>Human Resources Development High level, middle level and special training programmes to be conducted.</p> | <p>Institute of Hotel Management (GOI) set up in Dehradun. This institute will provide bachelors degree in Hotel Management. Institute has already been started for the academic year 2006-07. Training is also been given to the service providers under "Capacity building for service providers" programme with the help of ITDC.</p> |
| 5 | <p>Publicity and Tourism Marketing</p> <ul style="list-style-type: none"> • Posters, pamphlets, guide maps, CDs etc., depicting UA tourism to be produced and widely circulated. UA tourism website to be launched which apart from providing information would also make available facilities like online reservation etc. • Familiarisation tours to tourist places to be organised for members of various sections of the tourism trade and industry. • Organisation of and participation in tourism conferences/seminars, travel and trade fairs etc. • Provision of Information Centres and other tourist facilities at railheads and convenient points on highways as also tourism related signages at all important highways, airports and bus stands. | <ul style="list-style-type: none"> • A massive publicity and marketing drive has been launched. Website has been developed providing all information and facilities like online reservation. Destination brochures, information guide etc., have been prepared and launched. • FAM tours are being organised for leading national and international tour operators, travel agents, travel writers and journalists etc. • Uttarakhand has been a partner state in important tourism meets – CII Heritage Conference, SATTE, TTF, ITB – Berlin, WTM- London, Surajkund Crafts Mela etc. It has also appointed an International PR Agency to promote Uttarakhand tourism in Europe. 'Tourism Conclave' organised in association with Confederation of Indian Industry (CII). • 29 Tourist Information Centres/Tourist Convenience Centers established in various tourist places. Tourist information Centre has been set up at Haridwar Railway Station. 344 signages made up and put up at different places. |

The detailed action plan of Tourism Policy -2001 of the Uttarakhand government is given in Appendix 10.5.

A Tourism Conclave was organised in association with Confederation of Indian Industry (CII) in February 2003. Over 500 delegates from India and abroad attended the Conclave and over 200 one-to-one meetings were held between the project sponsors, private and government, with financial institutions and investors; domestic as well as international.

As a follow-up of the conclave, Uttarakhand's first amusement park in Dehradun was operationalised with an investment of Rs. 4 crore. Seven hotels and one amusement park project are under way. Pawan Hans has started a helicopter service between Augustmuni and Kedarnath. The Taj group of hotels is establishing a chain of modest economy hotels in the state.

In fact, the Uttarakhand tourism has also been awarded the prestigious National Tourism Award in the category of "Best Practices by a State Government" by the Government of India in October 2003. The state governments were asked to make presentations on the 'Best Practices' adopted by them. The Secretary, Tourism of Uttarakhand made presentations on the 'Vir Chandra Singh Garhwali Paryatan Swarojgar Yojana' and on 'Community Based Tourism'. Uttarakhand received the award in appreciation of both these presentations.

The Vir Chandra Singh Garhwali Paryatan Swarojgar Yojana is a unique scheme which not only generates employment opportunities but also leads to the creation of tourism infrastructure in the state. The scheme provides the unemployed youth with 20 per cent subsidy and facilitates bank loans of 67.5 per cent with 12.5 per cent margin money. The unemployed youth, under this scheme, can run tourist cabs, motels, garages, fast food centres, PCO with information centres, souvenir shops etc. There is a state level committee and a district level committee, which looks into the applications and approves the proposals which are sent in by the unemployed youth. There is a single window through which the district level committee shortlists the candidates and then the blank application forms are collected by the applicants and submitted to the UTDB.

In 2003, there were 200 beneficiaries of this scheme, Rs. 300 lakh of subsidy was disbursed and projects worth Rs. 1500 lakh were created. The government expects to create 1000 beneficiaries, Rs. 7500 lakh worth of projects/tourist facilities in the next five years.

Community based tourism (CBT) is tourism which is owned and managed by the local community. The entire

community has some level of involvement and benefit. CBT has been developed in three villages near Jim Corbett Park with the active involvement of the local host communities.

The Government of India has also taken initiatives to further develop tourism in the state. It is establishing a hotel management institute at Dehradun and an academy for dance and music at Almora. A pre-feasibility study for the development of the Valley of Flowers with UNDP assistance is on the anvil.

9. Problems of Tourism in Uttarakhand

A few of the problems, which the tourists and the tourism officials (based on discussions with the tourism officials) are facing in the state and for which immediate action needs to be taken, are listed below:

1. The regional tourist offices are understaffed. The regional tourist offices in Udham Singh Nagar and Champawat have only one person managing the office; Bageshwar and Pauri Garhwal have only two people looking after the tourism offices. Their job profile apart from providing information to the tourists and other jobs includes collection of data on the tourist arrivals in the destinations of their district. But due to their excessive workload, they are not being able to do justice to their tasks.
2. The infrastructure facilities at some of the destinations are not adequate. This creates problems especially during the peak season. There is a shortage of accommodation facilities, water and even power supply. The peak season is taken to be for 120 days where the occupancy rate is also the highest. The government needs to look into this and try to make some arrangements for the peak season so that these problems can be avoided. The rates are not fixed during the peak season and this too causes problems especially during the peak season.
3. There is excessive pressure on some of the destinations like Mussoorie and Nainital, especially during the peak season. These places are becoming very dirty and the tourist attractions at these places are in a pathetic condition. These have to be taken care of at the earliest before it can become a serious problem. For example, Kempty Falls in Mussoorie is full of plastic water bottles. The government needs to impose rules and regulations at these places and also ensure that they are adhered to.

4. The connectivity to Uttarakhand is still not as well developed as in other states like Himachal Pradesh. The government needs to improve the connectivity to Uttarakhand. It has put in efforts to build airports and airstrips, but in order to attract the tourists in the middle and lower income brackets, it needs to concentrate on improving the road and rail connectivity, though it might be difficult given the terrain of the region.

10. Recommendations

1. What emerges is that most of the tourists visit Uttarakhand only for religious purposes. Thus the state government can do much to promote other forms of tourism. The state should be shown as nature tourism spot rather than just highlighting the pilgrimage destinations in the state. This does not mean that the religious destinations should be ignored. But the government can concentrate on promoting the other destinations in state along with provision of facilities in these religious places.
 2. Only 11 per cent of the tourists reported that they were visiting the place due to media (TV, newspapers, magazines etc.) indicating a poor media exposure. A lot can be done to promote the destinations in Uttarakhand through the media. There could be advertisements in TV and newspapers highlighting “Destination Uttarakhand” on the lines of the campaigns brought out by states like Goa, Kerala etc.
 3. The state government should encourage more private sector participation. Even though the master plans that the state government has set out are in partnership with the private sector, but it needs to see that these are properly implemented and it should encourage private sector participation in the other areas as well apart from these master plans.
 4. Develop a theme for Uttarakhand and highlight it and develop regions on the basis of this theme. This could also involve running a tourist train which showcases this theme.
 5. River tourism can be developed in the state and river cruises could be introduced along the Ganges.
 6. Nainital could be developed as a convention city.
 7. The technological capability of the tourism ministry officials as well as other staff should be upgraded. The government could conduct IT training programmes for the staff.
 8. The state government should also try to improve the infrastructure availability to the staff even at the district level/regional offices. And at the same time it should aim to increase the number of staff at the regional offices that are highly understaffed and are not able to do justice to the various tasks they have at hand.
 9. The state government can encourage hotel chains to set up shops in Uttarakhand by providing them with land, price and tax concessions. They will then themselves conduct promotions to fill rooms.
 10. Maintenance of historical and archeological monuments calls for a strong public private partnership.
 11. The state could provide incentives and technical assistance to SMEs in the tourism sector, notably local artisans and cottage industries producing high quality handicrafts.
 12. ‘Destination Cleaning Campaigns’ need to be launched and conducted at regular intervals. Funds need to be allocated for maintaining cleanliness at tourist attractions. Various NGOs can be roped in to undertake this.
 13. Betterment of basic amenities like electricity, water supply, drainage, sewerage, solid waste disposal system, etc., needs to be carried out at various tourist destinations.
 14. With regard to transport, luxury coaches and buses need to be introduced in a large quantum, low cost airlines and rail links could be introduced to the various tourist destinations. Along with this link roads and airport infrastructure needs to be upgraded.
- The state government must strive hard to make tourism an instrument of economic growth, poverty eradication and prosperity in Uttarakhand. There is worth mentioning here that state government has already taken firm steps on certain issues to promote and develop Uttarakhand as a major tourist destination of the country. Some of the initiatives currently under the process are:
1. To develop adventure tourism and eco-tourism master plans like Dayara Bugyal, Valley of flowers-Hemkunt etc., are designed and in process of implementation.

2. Promotion of Uttarakhand as a tourist destination is done through advertisements in print and electronic media alongwith seasonal advertisement campaigns like—autumn, winter campaign etc.
3. River rafting licences are granted to promote river tourism and adventure activities in the state.
4. Department of tourism is, in coordination with other departments trying to develop basic infrastructure facilities at the tourist places and on the tourist routes.

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APPENDIX A-10.1

(A) Foreign Tourist Arrivals in India during 2004 and Corresponding Figures for 2002 and 2003

| Months | Foreign Tourist Arrivals | | | Percentage Change | |
|-----------|--------------------------|---------|----------|-------------------|---------|
| | 2002 | 2003 | 2004 | 2003/02 | 2004/03 |
| January | 228150 | 274215 | 317510 | 20.2 | 15.8 |
| February | 241133 | 262692 | 317498 | 8.9 | 20.9 |
| March | 216839 | 218473 | 272796 | 0.8 | 24.9 |
| April | 159789 | 160941 | 218782* | 0.7 | 35.9 |
| May | 144571 | 141508 | 189043* | -2.1 | 33.6 |
| June | 134566 | 176324 | 206056* | 31.0 | 16.9 |
| July | 178231 | 225359 | 274226* | 26.4 | 21.7 |
| August | 162594 | 204940 | 259044* | 26.0 | 26.4 |
| September | 163089 | 191339 | 234965* | 17.3 | 22.8 |
| October | 213267 | 260569 | 319259* | 22.2 | 22.5 |
| November | 245661 | 290583 | 364635* | 18.3 | 25.5 |
| December | 296474 | 319271 | 394166* | 7.7 | 23.5 |
| Total | 2384364 | 2726214 | 3367980* | 14.3 | 23.5 |

Source: Ministry of Tourism, GoI.

(B) Foreign Exchange Earnings (in INR Crores) during 2004 and Corresponding Figures for 2002 and 2003

| Months | Foreign Exchange Earnings | | | Percentage Change | |
|-----------|---------------------------|----------|-----------|-------------------|---------|
| | 2002 | 2003 | 2004** | 2003/02 | 2004/03 |
| January | 1228.68 | 1505.06 | 1998.62 | 22.5 | 32.8 |
| February | 1294.42 | 1441.82 | 1998.55 | 11.4 | 38.6 |
| March | 1176.90 | 1199.12 | 1777.83 | 1.9 | 48.3 |
| April | 1102.45 | 1153.00 | 1652.91* | 4.6 | 43.4 |
| May | 946.76 | 1013.79 | 1353.08* | 7.1 | 33.5 |
| June | 905.79 | 1263.21 | 1518.33* | 39.5 | 20.2 |
| July | 1253.98 | 1488.52 | 1926.47* | 18.7 | 29.4 |
| August | 1127.49 | 1353.66 | 1808.46* | 20.1 | 33.6 |
| September | 1107.53 | 1263.82 | 1613.02* | 14.1 | 27.6 |
| October | 1111.26 | 1421.06 | 1825.81* | 27.9 | 28.5 |
| November | 1351.30 | 1584.74 | 2088.94* | 17.3 | 31.8 |
| December | 1588.44 | 1741.20 | 2266.23* | 9.6 | 30.2 |
| Total | 14195.00 | 16429.00 | 21828.25* | 15.7 | 32.9 |

Note: *Provisional ** Revised

Source: Ministry of Tourism, GoI.

APPENDIX A-10.2
Tourist Arrivals—Destination-wise

| S.No. | Tourist Site | 2000 | | | 2001 | | | 2002 | | | 2003 | | | 2004 | | |
|--------------|----------------------------------------------------|-----------------|--------------|-----------------|-----------------|--------------|-----------------|-----------------|--------------|-----------------|-----------------|--------------|-----------------|-----------------|--------------|-----------------|
| | | Indian | Foreign | Total | Indian | Foreign | Total | Indian | Foreign | Total | Indian | Foreign | Total | Indian | Foreign | Total |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 1. | Dehradun | 450291 | 9321 | 459612 | 442828 | 12667 | 455495 | 700518 | 9672 | 710190 | 917070 | 11922 | 928992 | 1012535 | 11972 | 1024507 |
| 2. | Hrishikesh | 230857 | 6414 | 237271 | 224792 | 6536 | 231328 | 268882 | 4573 | 273455 | 220097 | 6047 | 226144 | 323734 | 5918 | 329652 |
| 3. | Mussoorie | 847191 | 3555 | 850746 | 888870 | 3068 | 891938 | 988481 | 2863 | 991344 | 1024752 | 2986 | 1027738 | 1024985 | 2683 | 1027668 |
| 4. | Pauri | 113982 | 276 | 114258 | 124979 | 160 | 125139 | 72800 | 29 | 72829 | 73809 | 53 | 73862 | 74160 | 39 | 74199 |
| 5. | Srinagar | 108634 | 109 | 108743 | 113603 | 237 | 113840 | 118590 | 166 | 118756 | 207779 | 309 | 208088 | 174157 | 424 | 174581 |
| 6. | Kotdwar (incl. Chhila) | 99283 | 34 | 99317 | 99102 | 13 | 99115 | 223840 | 8586 | 232426 | 228737 | 7338 | 236075 | 273863 | 9372 | 283235 |
| 7. | Rudrapurav Janpad (excl. Kedarnath) | 242370 | 570 | 242940 | 304062 | 963 | 305025 | 359642 | 376 | 360018 | 415645 | 835 | 416480 | 493824 | 1092 | 494916 |
| 8. | Kedarnath | 300000 | | 300000 | 191465 | 2163 | 193628 | 167520 | 1697 | 169217 | 231988 | 2509 | 234497 | 275149 | 1257 | 276406 |
| 9. | Gopeshwar | 277707 | 1420 | 279127 | 145444 | 529 | 145973 | 148842 | 558 | 149400 | 141777 | 438 | 142215 | 150997 | 300 | 151297 |
| 10. | Joshimath (incl. Ghaganriyam and Govindghat) | 406228 | 1143 | 407371 | 214581 | 1060 | 215641 | 337303 | 515 | 337818 | 672970 | 684 | 673654 | 452874 | 922 | 453796 |
| 11. | Badrinath | 695332 | | 695332 | 430044 | 21 | 430065 | 448517 | 80 | 448597 | 580913 | 30 | 580943 | 500579 | | 500579 |
| 12. | Auli | 8323 | 407 | 8730 | 6459 | 167 | 6626 | 14148 | 221 | 14369 | 8973 | 262 | 9235 | 7145 | 162 | 7307 |
| 13. | Hemkund Sahib | 327550 | | 327550 | 210980 | | 210980 | 340578 | | 340578 | 391575 | | 391575 | 278918 | | 278918 |
| 14. | Phoolon Ki Ghati | 1089 | 12 | 1101 | 2349 | 132 | 2481 | 1500 | 15 | 1515 | 4154 | 303 | 4457 | 4514 | 437 | 4951 |
| 15. | Tehri Janpad | 388615 | 7321 | 395936 | 373755 | 6111 | 379866 | 533378 | 6570 | 539948 | 576274 | 7172 | 583446 | 591033 | 8699 | 599732 |
| 16. | Utarakshi (excl. Gangotri, Yamunotri) | 263379 | 1178 | 264557 | 265308 | 731 | 266039 | 279284 | 660 | 279944 | 478612 | 827 | 479439 | 541298 | 1075 | 542373 |
| 17. | Gangotri | 208407 | | 208407 | 131311 | 188 | 131499 | 118221 | 153 | 118374 | 139752 | 182 | 139934 | 160540 | 299 | 160839 |
| 18. | Yamunotri | 88672 | | 88672 | 54015 | 59 | 54074 | 53976 | 47 | 54023 | 77998 | 52 | 78050 | 102194 | 137 | 102331 |
| 19. | Haridwar | 5316980 | 7659 | 5324639 | 550273 | 6276 | 5508549 | 5518270 | 6029 | 5524299 | 5524432 | 7532 | 5531964 | 6283726 | 11012 | 6294738 |
| 20. | Almora | 64989 | 3633 | 68622 | 67108 | 1664 | 68772 | 71709 | 2398 | 74107 | 80354 | 2931 | 83285 | 80489 | 4106 | 84595 |
| 21. | Ranikhet | 62487 | 842 | 63329 | 65747 | 663 | 66410 | 63941 | 510 | 64451 | 68716 | 710 | 69426 | 69827 | 631 | 70458 |
| 22. | Kausani (incl. Bageshwar) | 67460 | 722 | 68182 | 66577 | 733 | 67310 | 65176 | 761 | 65937 | 70095 | 336 | 70431 | 75017 | 364 | 75381 |
| 23. | Pithoragarh Janpad | 63929 | 504 | 64433 | 70805 | 444 | 71249 | 135412 | 914 | 136326 | 137618 | 704 | 138322 | 153635 | 971 | 154606 |
| 24. | Champurav Janpad | 33820 | 81 | 33901 | 33171 | 90 | 33261 | 35097 | 212 | 35309 | 38174 | 167 | 38341 | 40312 | 165 | 40477 |
| 25. | Nainital | 320322 | 4756 | 325078 | 356941 | 5793 | 362734 | 412440 | 4224 | 416664 | 420016 | 4537 | 424553 | 478133 | 6277 | 484410 |
| 26. | Kathgodam | 40642 | 266 | 40908 | 42899 | 251 | 43150 | 43813 | 256 | 44069 | 43813 | 246 | 44059 | 44754 | 259 | 45013 |
| 27. | Corbett National Park | 57877 | 3624 | 61501 | 57113 | 3775 | 60888 | 61712 | 3678 | 65390 | 86886 | 4170 | 91056 | 93707 | 5968 | 99675 |
| 28. | Udhamasingh Nagar Janpad | 61673 | 86 | 61759 | 62203 | 207 | 62410 | 68428 | 211 | 68639 | 66614 | 217 | 66831 | 67946 | 220 | 68166 |
| Total | | 11148089 | 53933 | 11202022 | 10548784 | 54701 | 10603485 | 11652018 | 55974 | 11707992 | 12929593 | 63499 | 12993092 | 13830045 | 74761 | 13904806 |

Source: Ministry of Tourism, GoI

APPENDIX A-10.3

Ranks based on Tourist Arrivals and the Share of the District in Total Tourist Arrivals

| S. No. | Tourist Site | Total Tourists | Ranks-2004 | | | Total Tourists | Ranks-2000 | | |
|--------|--------------------------------------------|----------------|-----------------|------------------|-------------------------|----------------|-----------------|------------------|-------------------------|
| | | | Indian Tourists | Foreign Tourists | Share in Total Tourists | | Indian Tourists | Foreign Tourists | Share in Total Tourists |
| 1 | Dehradun | 3 | 3 | 1 | 3 | 4 | 4 | 1 | 4 |
| 2 | Hrishikesh | 10 | 10 | 7 | 10 | 13 | 13 | 4 | 13 |
| 3 | Mussoorie | 2 | 2 | 9 | 2 | 2 | 2 | 8 | 2 |
| 4 | Pauri | 22 | 22 | 26 | 22 | 15 | 15 | 17 | 15 |
| 5 | Srinagar | 14 | 14 | 17 | 14 | 16 | 16 | 19 | 16 |
| 6 | Kotdwar (incl. Chila) | 11 | 13 | 3 | 11 | 17 | 17 | 22 | 17 |
| 7 | Rudraprayag Janpad (excl. Kedarnath) | 7 | 7 | 11 | 7 | 12 | 12 | 14 | 12 |
| 8 | Kedarnath | 13 | 12 | 10 | 13 | 9 | 9 | - | 9 |
| 9 | Gopeshwar | 17 | 17 | 19 | 17 | 10 | 10 | 9 | 10 |
| 10 | Joshimath (incl. Ghaganriyam & Govindghat) | 9 | 9 | 14 | 9 | 5 | 5 | 11 | 5 |
| 11 | Badrinath | 6 | 6 | - | 6 | 3 | 3 | - | 3 |
| 12 | Auli | 27 | 27 | 24 | 27 | 27 | 27 | 16 | 27 |
| 13 | Hemkund Sahib | 12 | 11 | - | 12 | 7 | 7 | - | 7 |
| 14 | Phoolon Ki Ghati | 28 | 28 | 16 | 28 | 28 | 28 | 23 | 28 |
| 15 | Tehri Janpad | 4 | 4 | 4 | 4 | 6 | 6 | 3 | 6 |
| 16 | Uttarakshi (excl. Gangotri, Yamunotri) | 5 | 5 | 12 | 15 | 11 | 11 | 10 | 11 |
| 17 | Gangotri | 16 | 16 | 20 | 16 | 14 | 14 | - | 14 |
| 18 | Yamunotri | 18 | 18 | 25 | 18 | 18 | 18 | - | 18 |
| 19 | Haridwar | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| 20 | Almora | 20 | 20 | 8 | 20 | 19 | 20 | 6 | 19 |
| 21 | Ranikhet | 23 | 23 | 15 | 23 | 22 | 22 | 12 | 22 |
| 22 | Kausani (incl. Bageshwar) | 21 | 21 | 18 | 21 | 20 | 19 | 13 | 20 |
| 23 | Pithoragarh Janpad | 16 | 16 | 13 | 16 | 21 | 21 | 15 | 21 |
| 24 | Champavat Janpad | 26 | 26 | 23 | 26 | 26 | 26 | 21 | 26 |
| 25 | Nainital | 8 | 8 | 5 | 8 | 8 | 8 | 5 | 8 |
| 26 | Kathgodam | 25 | 25 | 21 | 25 | 25 | 25 | 18 | 25 |
| 27 | Corbett National Park | 19 | 19 | 6 | 19 | 24 | 24 | 7 | 24 |
| 28 | Uddhamsingh Nagar Janpad | 24 | 24 | 22 | 24 | 23 | 23 | 20 | 23 |

Source: Author's Compilation.

APPENDIX A-10.4

Plan Outlay for Tourism in Uttarakhand

| S. No. | Activity | Approved Outlay-2001-02 | Approved Outlay-2002-03 | Approved Outlay-2003-04 | Approved Outlay-2004-05 | Approved Outlay-2005-06 | Approved Outlay-Xth | Budget Provision 2001-02 | Budget Provision 2002-03 | Budget Provision 2003-04 | Budget Provision 2004-05 |
|--------|---------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|---------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. | Tourism development | | | 437.99 | | 657.63 | | 920.06 | 1178.89 | 575.81 | 473.45 |
| 2. | Promotion/advertisement | | | 510 | | 850.00 | 1700.00 | 211.87 | 301.26 | 500.02 | 364.24 |
| 3. | Beautification and provision of facilities | | | 500 | 666.37 | 1132.97 | | 411.54 | 606.8 | 555.51 | 1325.88 |
| 4. | Development of new tourist routes/destinations/lesser known destinations | | | 90 | 1200 | 1891.62 | 15500 | 105 | 180 | 1000.02 | 1100 |
| 5. | Infrastructure development (construction and development of residential, hotels/accommodation, road/air/rail) | | | 420.97 | 320.95 | 100 | 5700 | 933.91 | 949.07 | 972.12 | 1143.67 |
| 6. | Repairs and maintenance/renovation | | | 20 | 10 | 10 | | 16.09 | 20.09 | 20 | 10 |
| 7. | Eco-tourism | | | | | | | 59.61 | 10.01 | 0.02 | |
| 8. | Adventure tourism | | | 71 | 27.5 | 26.76 | 200 | 140 | 198.97 | 137.05 | 26 |
| 9. | Other construction works | | | | | 800 | | 500 | | | 800 |
| 10. | Human resource development schemes | | | 96.04 | 135.18 | | 500 | 1.5 | 206.96 | 76.04 | |
| 11. | Establishment of tourist centres/tourism development board | | | 20 | | 131.02 | 900 | 50 | 200 | 150 | 330.94 |
| 12. | Employment generation | | | 454.00 | 1060.00 | 300.00 | 1500.00 | 273.70 | 379.71 | 456.50 | 500.00 |
| | Others | | | | | | 50 | 3500 | | | 50.00 |
| | Total | | | 2620.00 | 4220.00 | 5150.00 | 30000.00 | 3123.28 | 4231.76 | 4443.09 | 5324.18 |

Source: Various Budget Documents, Govt. of Uttarakhand.

APPENDIX A-10.5

Tourism Policy 2001

Action Plan**• Strengthening of Institutional Framework**

The plan was to constitute a Tourism Development Board that would chalk out a comprehensive policy and work plan, the lack of which had prevented the development of tourism as per expectations. There was also been lack of coordination among the various agencies connected with tourism. This board was to replace the existing Tourism Directorate and was to be set up through appropriate legislation. The responsibilities of the Board were set as given below:

- Formulation of a policy and strategy for development of tourism in Uttarakhand.
- Preparation of plans and guidelines for developing and strengthening tourism related infrastructure in the state.
- Preparation of plans for various tourism segments and activities, identification and development of projects and ensuring their timely implementation.
- Establishment of standards/norms and framing of policy guidelines for various tourism activities.
- Formulation of a strategy for mobilising private sector participation and investment in the tourism sector.

The Tourism Development Board was to be the highest body to advise the government on all matters relating to tourism in Uttarakhand. It was also to function as a Regulatory and Licensing Authority.

The board was to have separate divisions for infrastructure, investment and finance, administration, planning and project development and publicity and marketing. The board was also to appoint separate committees, consisting of subject-specialists to study the existing resources, prepare development schemes and set quality, safety and other standards in different areas of tourism. It was also decided that the board would have a single window information/assistance centre to provide all tourism related information, sanctions for projects and escort services for obtaining clearances and approvals from other departments.

The structure and functions of the existing Garhwal and Kumaon Mandal Vikas Nigams or Zonal Development Corporations were to be reviewed and streamlined with a view to enhancing their commercial viability and operational efficiency.

• Infrastructure Development

Establishment of world class infrastructure facilities was given the highest priority by the government. Special efforts were to be made to mobilise institutional resources and private sector investment and participation. In this context, the following areas were to receive special attention:

- *Rail and Air Services:* Efforts were to be made to connect Uttarakhand to important cities in India by high speed trains. Efforts were also to be made to develop and upgrade existing airports and air strips in the state and link them to major air service centres. Integrated development plans were to be prepared for areas around the airports and air strips. Participation of the private sector in this area was to be sought wherever feasible.

- *Road Transport:* An efficient road network, equipped with modern tourist facilities, was to be developed to connect the important pilgrimage and tourist destinations in Uttarakhand. A master plan for upgradation of facilities on important pilgrimage routes was to be drawn up and implemented in a time bound manner. Facilities like petrol pumps, motor garages, fast food centers, toilet facilities, arrangement for parking and transport, etc., were to be developed on the roads linking important tourist centres along with private sector participation. Treating major tourist centres as base camps, trails to the nearby lesser known tourist spots were to be developed and package tours to these places were to be organised and encouraged. Transportation facilities in the private sector were to be strengthened by encouraging schemes like “Rent a car” etc.

- *Accommodation Facilities for Tourists of Different Income Groups:* Special efforts were to be made to develop and upgrade tourism accommodation at important tourist centres in Uttarakhand keeping in view the requirements and income levels of different categories of tourists. Apart from the state government agencies, maximum involvement of organised private sector and local residents (having guest accommodation) was to be sought in this sphere.

- *Modern Telecommunication Facilities:* With the help of the Government of India and the private sector wherever feasible modern telecommunication facilities were to be made available in the far flung areas of Uttarakhand.

- *Hygienic Conditions and Clean Drinking Water:* Special efforts were to be made to ensure healthy sanitary conditions and safe drinking water supply in all important cities, major pilgrimage destinations and tourist centres in the state.

- *Land and Buildings for Development of Infrastructure Facilities:* Land was to be identified and land bank established for purposes of developing accommodation and other infrastructure facilities at important destinations and tourist spots and along the pilgrimage routes. Land was to be made available, on reasonable terms/price or as equity, by the state government to private entrepreneurs for tourism schemes.

In addition to the properties of the Tourism Department and Garhwal/Kumaon Mandal Vikas Nigam or Zonal Development Corporations, rest houses of the various departments such as the Forest Department, Irrigation Department and Public Works Department were to be utilised for tourism activities. Private

sector participation in the development and management of such facilities was to be promoted and encouraged.

- *Private Sector Participation:* Private sector participation in the tourism industry is of vital importance. Development of accommodation facilities for the different categories of tourists, tourist resorts, specialised food restaurants, facilities for adventure sports, amusement parks and facilities, etc., are some areas which provide attractive investment opportunities and where private sector could play a vital role. To attract private participation various facilities like rebate/deferment facility for the payment of luxury tax for a certain period, for fixing the rate of entertainment tax on hotels, exemption from payment of entertainment tax for new ropeways installed in the state, exemption for new amusement parks set up in the state etc.

- *Schemes for Self-employment/Uttarakhand Tourism Development Scheme:* To provide self-employment opportunities for local residents and encourage maximum participation of the host community in the tourism sector a new Uttarakhand Tourism Development Scheme was to be implemented. Under this Scheme, state assistance up to a maximum of 20 per cent for projects with a capital investment of up to INR 10 lakhs was to be provided. Projects under this scheme would include fast food centres, setting up retail outlets for local handicrafts, plying of buses and taxis, provision of equipment for adventure sports, establishing small motel-like residential accommodation, setting up tourism information centres with PCOs/restaurants, tented residential facilities and garages.

- *Package Tours/Tour-Travel Agencies:* With the objective of boosting tourist traffic to Uttarakhand and enriching the quality and content of tourism products, attractive package tours were to be developed and promoted, with the help of private sector tour operators and travel agencies, which would include air/road/rail travel, boarding and lodging, excursions, site visits etc. These package tours will be specially promoted for the *Char Dham*, Nainital and Mussoorie sectors, and the Dehradun-Haridwar-Rishikesh Golden Triangle.

• Mobilisation of Resources

Augmenting Capital Investment in Tourism

To develop infrastructure facilities in the tourism sector, it was proposed to invite domestic private sector investment, foreign investment as well as investment from non-resident Indians specially for the construction of star-category hotels, tourist resorts, golf courses, large eco-parks, amusement parks, ropeways, children's parks and winter sports projects. Efforts were to be made to seek financial assistance from World Bank, Asian Development Bank and other international agencies. There was also a plan to establish a separate tourism fund for tourism development in the state. The finances for this fund were to be mobilised through voluntary contributions from travel trade representatives, industrialists and other establishments connected with tourism.

• Human Resources Development

Under this, there was a plan to have three levels of training programmes in the state:

1. *High-level Training Programmes:* Diploma and degree training programmes to be conducted in the hotel management and catering institutes. Training institutes to be developed for specialised activities like adventure sports, aero-sports, water sports, etc.
2. *Middle-level Training Programmes:* Arrangements to be made for tourism awareness programmes, and short-term training in specialised tourism related activities and services such as catering, fruit conservation, cookery, paying guest facilities, S.T.D. equipped tourism information centres, handicrafts/souvenir related activities, guides and porters.
3. *Special Training Programme:* Special training programmes to be developed for local women and for youth in areas like adventure sports, trekking etc., with participation of the private sector as well as experts.

• Publicity and Tourism Marketing

To promote tourism, the following were planned:

- Wide circulation of posters, pamphlets, guide maps, U-matic films and other tourism literature depicting the important tourism attractions in Uttarakhand.
- Launch of an Uttarakhand tourism website which apart from providing tourism related information would also make available reservation facilities.
- Familiarisation tours to tourist places in Uttarakhand from time to time for members of various sections of the tourism trade and industry, media persons, departmental officers/employees.
- Organisation of, and participation in tourism conferences/seminars, travel and trade fairs on a regular basis.
- Promotion of film shooting in the region to give wider publicity to places of tourist interest in Uttarakhand. Establishment of a Film City in this region and provision of the necessary infrastructure for film shooting.
- Provision and development of information centres and other tourist facilities at railheads and convenient points on highways in Uttarakhand as also tourism related signages at all important highways, airports and bus stands for the information and convenience of tourists.
- Optimal development of pilgrimage tourism, cultural tourism, nature and eco-tourism, amusement and leisure tourism, corporate tourism, adventure tourism and promotion of tourism-oriented handicrafts and souvenir industry.

Pilgrimage Tourism

Amendments in the relevant statutory framework to be considered with the aim of streamlining the institutional arrangements pertaining to the *Char Dham* pilgrimage and improving the facilities for pilgrims. Accommodation and facilities along the pilgrimage routes to be augmented and upgraded in a phased and coordinated manner and a Master Plan will be drawn up for this purpose. Plan for the integrated development of the less developed and lesser known pilgrimage sites such as Purnagiri, Patal Bhuvaneshwar, Panchprayag, Panchbadri etc. Efforts to be made to develop integrated packages and facilities whereby pilgrims are also attracted to other tourism destinations in the area.

Cultural Tourism

The various fairs and festivals, traditional lifestyles and customs, dress and food habits of the people of Uttarakhand will be given wide publicity, so that tourists and visitors can get a chance to see and partake in the rich and varied culture of the region. Efforts will be made to develop the local fairs and festivals into tourism events and attractions. Action to be taken for preservation of buildings and places of archaeological interest.

Nature and Eco-Tourism

- Botanical gardens-cum heritage centres and theme parks to be established in order to highlight the biodiversity of Uttarakhand.
- Integrated eco-tourism projects to be developed and established and steps to be taken to promote eco-friendly tourism activities like jungle safaris, nature walks, mountain treks, camping, etc., in a manner that also promotes awareness and sensitivity towards environment conservation.
- Tree plantation as a tourism linked activity will be given special attention. Action will be taken in a planned manner to deal with the problem of non-biodegradable wastes. Intensive campaigns to regulate plastic waste to be launched with the assistance of the private sector and non-government organisations.
- The use of earthquake resistant technology and techniques in construction of buildings and use of local materials will be promoted and encouraged.

Amusement Tourism

Action was to be taken to develop projects for ropeways, amusement parks, golf courses, children's parks, lakes and ponds and generally augment entertainment facilities in places of tourism interest.

Leisure Tourism

Uttarakhand has innumerable locations which can serve as quiet retreats amidst exquisite natural beauty, for those seeking leisure away from the stresses of modern urban life. Special

efforts were to be made to develop leisure-oriented tourism spots including health resorts, spa centres, yoga and meditation centres etc., herbal treatment and naturopathy centres to attract such tourists.

Tourism Villages

Action was to be taken for development and promotion of village tourism and tourist villages at different places in the state. This would include development of basic facilities of clean and healthy food and comfortable accommodation to tourists in these villages. Together with mountain tourism activities in the surrounding areas, the historical traditions of the villagers, folk arts/culture and cuisine will be promoted as special attractions.

Corporate Tourism

Steps were to be taken to develop the enormous potential in Uttarakhand for corporate tourism. The private sector will be encouraged to participate in the establishment of high class convention centres and facilities for conferences, seminars, workshops, business meets, etc.

Adventure Tourism

A major thrust was to be given to the promotion and development of the following adventure tourism activities in the state.

1. Trekking

There exists a great potential for trekking in Uttarakhand. A Master Plan for development of trek routes was to be prepared and implemented. The facilities on various trek routes were to be improved i.e., for camping, provision for safe drinking water and hygienic food. Arrangements were to be made for pre-paid facilities for trained guides, porters, tents and apparatus on hire at the starting points of these treks.

2. Water Sports

Activities like river rafting, canoeing, kayaking etc., are becoming increasingly popular. At present, these are being conducted with private sector participation, along the Ganges from Kaudiyala to Rishikesh, and on some other rivers and water bodies. River rafting was to be further promoted/extended to other areas in Uttarakhand. For this purpose, guides were to be trained and employed from among the locals, who would also be assigned the task of protecting both the tourists and the environment.

Other water sports were also to be developed and extended to various water bodies in Uttarakhand like Dodital, Asan Barrage, Haripur lake, Tehri Dam and Maneribhali, etc. Fishing/angling, including "Catch and Release" angling will be promoted in a planned and regulated way.

3. Development of Winter Sports Centres

A Master Plan was to be drawn up to further develop Auli (already an established centre) as an ultra-modern winter sports centre. Action was to be taken in a time bound manner to develop Dayara Bugyal in Uttarakashi district as an international

winter sports centre. Steps will also be initiated to promote similar centres at other places such as Munsyari. Although these centres are envisioned mainly as winter sports centres, they would be developed in such a manner as to attract tourists round the year.

4. Aero Sports

Great potential for aero sports related activities like hang gliding, para gliding and ballooning etc., exists in Uttarakhand. Action was to be taken to promote these activities with private sector participation.

5. Standardisation and Rescue Organisation

Adequate facilities will be developed to provide a high level rescue system for adventure sports and other tourism related activities. This will include provision of various rescue

equipments like recovery vans, Repling, Piten, Jumar and walkie-talkie sets etc. A Rescue Co-ordination Committee will also be set up.

Registered organisations/clubs connected with adventure tourism will be encouraged through grants. A separate set of rules will be framed for this purpose.

Development of Handicrafts and Souvenirs

To encourage traditional handicrafts, rural craftsmen will be provided the necessary training and craft bazaars and craft villages will be set up and developed. Stalls will also be made available for marketing the crafted goods, especially during the various fairs and festivals. Besides, space will be provided for development in the tourism department hotels/guest houses for setting up souvenir shops in order to showcase and market locally produced handicrafts.



Chapter 11

Telecommunication and Information Technology

1. Introduction

The role of Information and Communication Technology (ICT) in transforming the way human society conducts itself has been well understood now. Research studies have found close association between telecommunication facilities and poverty incidence in rural India.¹ The government of Uttarakhand envisions “to deploy, use, exploit and leverage the information technology as an effective tool for catalysing accelerated economic growth, efficient and transparent governance which is accountable to the people and to this end create the knowledge rich society”.² Accordingly, the state has declared IT as a thrust sector and announced incentives to realise the aspirations of becoming one of the frontline IT states in the country.

A number of policy measures have been introduced to reap the benefits of ICT. Telecommunications being a subject of the Union government, the policy measures are required to be tailored to the needs of the state. Mainly, it is the geographical peculiarities of the state—with dispersed population and mountainous terrain—that needs to be addressed effectively. In regards to the information technology segment, Uttarakhand has formulated several ambitious plans. However, the scantily available data on the outcome indicates that the role played by the private resources in development of the ICT sector is not very encouraging.

The present chapter deals with: (1) telecommunications and (2) information technology in two different sections. The main objective is to present a realistic picture of the current status of the sector in the state and evaluate it with respect to the performance of other states.

1.1. Telecommunications

1.1.1 Present Status

Service Providers and Capacity Creations

The Bharat Sanchar Nigam Ltd. (BSNL) in the public sector and the Reliance Infocom Ltd. (RIL), are the two main service providers in the state. However, the presence of the latter is limited to few segments; the BSNL is synonymous to the communications sector in the state. The latest available data on the network of BSNL in the state is presented in Table 11.1.

BSNL has installed a total of 451 telephone exchanges in the state with present capacity of 5.4 lakh lines. Fixed and Wireless in Local Loop (WLL) capacities constitute about 92 per cent and 8 per cent of the total equipped capacity respectively. Additions to the capacity in fixed telephone segment have been insignificant while addition to the WLL capacity have increased at higher rate except for the financial year 2004-05. Capacity utilisation rates of fixed telephone segment has been stagnant at 73 per cent while that of WLL increased from 21 per cent to 74 per cent in about four years time. There are 11,931 village public telephones (VPTs) as on 1.12.2005. Thus, while growth in the fixed line telephone segment is stagnated, the WLL is turning out to be the appropriate technology for Uttarakhand state.

Capacity utilisation figures across different secondary switching areas (SSAs) are provided in Table 11.2. Capacity utilisation in landline segment is highest in Haridwar SSA and lowest in New Tehri SSA. In case of WLL in urban areas, Dehradun SSA has almost completely utilised the capacity; Haridwar SSA has provision for new

1. NCAER (2004). “The Nature of Rural Infrastructure: Problems and Prospects”, *Working Paper* No. WP040003 estimated the correlation between rural poverty in India with telecom deprivation index as 0.66.

2. Planning Department, Government of Uttarakhand (December 2004). *Annual Plan 2004-05*, Vol-I.

TABLE 11.1
Installed and Utilised Capacity of DELs in
Uttarakhand Telecom Circle

| <i>Information</i> | <i>As on</i> <i>01.04.2002</i> | <i>As on</i> <i>01.04.2003</i> | <i>As on</i> <i>01.04.2004</i> | <i>As on</i> <i>01.04.2005</i> | <i>As on</i> <i>01.12.2005</i> |
|----------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| No. of telephone exchanges | 399 | 427 | 444 | 450 | 451 |
| Total equipped capacity | 419460 | 485432 | 525736 | 530988 | 539916 |
| (a) Fixed | 405460 | 461432 | 488736 | 493988 | 498416 |
| Growth Rate | | 13.8 | 5.9 | 1.1 | 0.9 |
| (b) WLL | 14000 | 24000 | 37000 | 37000 | 41500 |
| Growth rate | | 71.4 | 54.2 | 0.0 | 12.2 |
| DELs (Total) | 311753 | 347835 | 370879 | 389740 | 395111 |
| Growth rate | | 11.6 | 6.6 | 5.1 | 1.4 |
| (a) Fixed | 308765 | 337180 | 353005 | 365402 | 364598 |
| C.U.(per cent) | 76.2 | 73.1 | 72.2 | 74.0 | 73.2 |
| (b) WLL | 2988 | 10655 | 17874 | 24338 | 30513 |
| C.U.(per cent) | 21.3 | 44.4 | 48.3 | 65.8 | 73.5 |
| VPTs | | 11630 | 11729 | 11839 | 11931 |
| Growth rate | | | 0.9 | 0.9 | 0.8 |

Note: C.U. (per cent) stands for capacity utilisation rate in percentage.

Source: BSNL's office of Uttarakhand Telecom Circle.

TABLE 11.2
SSA-wise Installed and Utilised Capacity of DELs in
Uttarakhand Telecom Circle

| <i>Items</i> | <i>UA Circle</i> | <i>Almora</i> | <i>Dehradun</i> | <i>Haridwar</i> | <i>Nainital</i> | <i>New Tehri</i> | <i>Srinagar</i> |
|-----------------------------|------------------|---------------|-----------------|-----------------|-----------------|------------------|-----------------|
| Equipped capacity | | | | | | | |
| Landline | 498416 | 57216 | 150468 | 72052 | 127228 | 35980 | 55472 |
| WLL urban | 9500 | 0 | 5000 | 4500 | 0 | 0 | 0 |
| WLL rural | 32000 | 11500 | 3500 | 0 | 3500 | 7000 | 6500 |
| Total | 639916 | 68716 | 158968 | 76552 | 130728 | 42980 | 61972 |
| Working DELs | | | | | | | |
| Landline | 364598 | 42906 | 108828 | 57816 | 94018 | 20708 | 40322 |
| WLL urban | 7143 | 0 | 4745 | 2398 | 0 | 0 | 0 |
| WLL rural | 23370 | 7390 | 2180 | 0 | 3538 | 5021 | 5241 |
| Total DELs | 395111 | 50296 | 115763 | 60214 | 97556 | 25729 | 45563 |
| Capacity utilisation | | | | | | | |
| Landline | 73 | 75 | 72 | 80 | 74 | 58 | 73 |
| WLL urban | 75 | | 95 | 53 | | | |
| WLL rural | 73 | 64 | 62 | | 101 | 72 | 81 |
| Total DELs | 62 | 73 | 73 | 79 | 75 | 60 | 74 |

Source: BSNL's office of Uttarakhand Telecom Circle.

WLL connections. In the case of role out of WLL in rural areas, Dehradun SSA has the lowest capacity utilisation figures and the Nainital SSA has completely exhausted the capacity. Overall, Haridwar SSA has maximum capacity utilisation rate owing to its landline segment.

1.1.2 Distribution of DELs across Rural and Urban Sectors

SSA-wise distribution of DELs across rural and urban sectors indicate that majority of the fixed lines is provided in urban areas while WLL is mainly used for connecting

rural areas (Table 11.3). However, there are exceptions to this pattern. For example, in Dehradun SSA majority of WLL phones are provided in urban areas, while in the New Tehri SSA, majority of fixed line are provided in the rural areas.

TABLE 11.3

Status of DELs (Urban/Rural) in Uttarakhand Telecom Circle (As on 01.12.2005)

| Sl. No. | Name of SSA | Technology | Urban | Per cent in Total | Rural | Per cent in Total | Total |
|---------|-------------|------------|--------|-------------------|-------|-------------------|--------|
| 1 | Almora | Fixed | 24092 | 56 | 18814 | 44 | 42906 |
| | | WLL | 366 | 5 | 7024 | 95 | 7390 |
| 2 | Dehradun | Fixed | 88031 | 81 | 20797 | 19 | 108828 |
| | | WLL | 4744 | 69 | 2180 | 31 | 6924 |
| 3 | Haridwar | Fixed | 53030 | 92 | 4786 | 8 | 57816 |
| | | WLL | 410 | 17 | 1989 | 83 | 2399 |
| 4 | Nainital | Fixed | 76399 | 81 | 17619 | 19 | 94018 |
| | | WLL | 0 | 0 | 3538 | 100 | 3538 |
| 5 | New Tehri | Fixed | 9136 | 44 | 11572 | 56 | 20708 |
| | | WLL | 0 | 0 | 5021 | 100 | 5021 |
| 6 | Srinagar | Fixed | 21872 | 54 | 18450 | 46 | 40322 |
| | | WLL | 0 | 0 | 5241 | 100 | 5241 |
| 7 | Total | Fixed | 272560 | 75 | 92038 | 25 | 364598 |
| | | WLL | 5520 | 18 | 24993 | 82 | 30513 |

Source: BSNL's office of Uttarakhand Telecom Circle.

1.1.3 Distribution of Telecom Technology across SSAs

All the telephone exchanges in Uttarakhand circle are digital but smaller in capacity. The smaller exchanges are

those manufactured indigenously by CDOT. The bigger switches are of the type OCB, EWSD, E10B and MAX-XL. Majority of telephone exchanges in Dehradun and Haridwar SSAs are large, while Srinagar and New Tehri SSAs have more number of smaller exchanges (Table 11.4). Thus, plains have more of larger exchanges, while hills have smaller exchanges.

Tables 11.5 and 11.6 below contain information on the media used for connecting Uttarakhand state as on 01.12.2005. Area-wise selection of media to provide cost effective connectivity is influenced by the geographical terrain and the resulting difficulties in laying cables. While fibre optic cable (OFC) is proven to be the most reliable media, it cannot be provided everywhere. However, all the district headquarters and most of the *tehsil* and block headquarters are connected with optic fibre. Five *tehsil* headquarters and one block headquarter are connected by ultra high frequency radio. Satellite communication facility is used to connect three *tehsil* and four block headquarters. In particular, radio (UHF and MCPC) is used mainly in Srinagar, New Tehri and Almora districts due to difficulty of geographical terrain in laying OFC.

BSNL, in Uttarakhand circle has established trunk automatic exchanges (TAX)—switch to which all the local exchanges of the SSA are connected in order to get connected to networks in other states—in all the SSAs with a combined capacity of 71000 lines. The TAX with maximum capacity is located at Dehradun while the minimum capacity TAX is located at New Tehri SSA indicating the size of traffic generating from these SSAs. There are 49 Base Transceiver Stations (BTSs) in the Uttarakhand state installed by BSNL; of which Dehradun, Srinagar and Almora have more than ten each (Table 11.7).

TABLE 11.4

Technology-wise Break-up of Exchanges as on 30.11.2005

| S. No. | Name of SSA | Large Exchange | | | | | Small Exchange | | | Total Exchanges |
|--------------|-------------|----------------|-----------|-----------|-------------------|----------------------|----------------|-----------|-----------------------|-----------------|
| | | OCB | EWSD | E10B | MAX-XL Main & RSU | Total Large Exchange | AN-RAX | C-DOT 256 | Total Small Exchanges | |
| 1. | Almora | 0 | 0 | 0 | 33 | 33 | 60 | 13 | 73 | 106 |
| 2. | Dehradun | 24 | 11 | 5 | 8 | 48 | 10 | 3 | 13 | 61 |
| 3. | Haridwar | 3 | 6 | 12 | 0 | 21 | 8 | 0 | 8 | 29 |
| 4. | Nainital | 11 | 0 | 2 | 36 | 49 | 29 | 0 | 29 | 78 |
| 5. | New Tehri | 0 | 0 | 0 | 17 | 17 | 32 | 11 | 43 | 60 |
| 6. | Srinagar | 0 | 0 | 0 | 22 | 22 | 73 | 22 | 95 | 117 |
| Total | | 38 | 17 | 19 | 116 | 190 | 212 | 49 | 261 | 451 |

Source: BSNL's office of Uttarakhand Telecom Circle.

TABLE 11.5

BSNL Telecom Network Statistics of Revenue Districts, Tehsils and Blocks

| Item | Total | OFC | UHF | SAT |
|--------------|-------|-----|-----|-----|
| District H/Q | 13 | 13 | | |
| Tehsil H/Q | 78 | 70 | 5 | 3 |
| Block H/Q | 95 | 90 | 1 | 4 |

Source: BSNL's office of Uttarakhand Telecom Circle.

1.1.4 Village Connectivity

The number of villages provided with village public telephones (VPTs) under the Universal Service Obligation Service Scheme stands at 11,931 thus, leaving 3679 villages left to be covered. In Almora, New Tehri and Srinagar SSAs WLL technology is preferred. Though the replacement of Multi Access Radio Relay technology (MARR) was taken up as a separate service, eligible for funding from USO there are 697 VPTs still left to be replaced. This can be

TABLE 11.6

Status of Exchanges and Media

| Name of SSA | Total No. of Exchange | OFC | UHF | MCPC |
|-------------|-----------------------|-----|-----|------|
| Almora | 106 | 86 | 14 | 6 |
| Dehradun | 61 | 57 | 1 | 3 |
| Haridwar | 29 | 28 | 1 | 0 |
| Nainital | 78 | 74 | 4 | 0 |
| New Tehri | 60 | 71 | 10 | 9 |
| Srinagar | 117 | 95 | 10 | 12 |
| Total | 451 | 381 | 40 | 30 |

Source: BSNL's office of Uttarakhand Telecom Circle.

attributed to the slow progress in roll out of WLL in the circle. There are 18 VPTs functioning on International Maritime Satellite technology (INMARSAT). These are mainly provided on the pilgrim routes. Most of the villages are yet to get phone facility are falling in Srinagar and Almora SSAs of the circle. (Table 11.8).

TABLE 11.7

Status of Exchanges and Media: Trunk Automatic Exchanges (TAX)

| Items | UAL Circle | Almora | Dehradun | Haridwar | Nainital | New Tehri | Srinagar |
|----------------------------|------------|--------|----------|----------|----------|-----------|----------|
| TAX | | | | | | | |
| Capacity (in lines) | 71000 | 10000 | 20000 | 14000 | 15000 | 5000 | 7000 |
| Exp plan (2005-06) (lines) | 12000 | 0 | 5000 | | 5000 | 1500 | 500 |
| WLL network (numbers) | | | | | | | |
| Existing BTS | 49 | 10 | 11 | 4 | 6 | 8 | 10 |
| Planned BTS (12K) | 16 | 5 | 0 | 2 | 2 | 3 | 4 |
| Planned BTS (50K) | 60 | 15 | 7 | 8 | 8 | 8 | 14 |

Source: BSNL's office of Uttarakhand Telecom Circle.

TABLE 11.8

Status of Village Connectivity

| Items | UAL Circle | Almora | Dehradun | Haridwar | Nainital | New Tehri | Srinagar |
|---------------------------------------|------------|--------|----------|----------|----------|-----------|----------|
| No. of revenue villages | 15610 | 5193 | 741 | 483 | 1745 | 2590 | 4857 |
| Total no. of revenue villages covered | 11931 | 3869 | 632 | 483 | 1637 | 2133 | 3177 |
| WLL | 6018 | 2209 | 307 | 124 | 280 | 1236 | 1862 |
| Landline | 5198 | 1383 | 290 | 343 | 1191 | 775 | 1216 |
| MARR | 697 | 275 | 34 | 16 | 164 | 116 | 92 |
| INMARSAT | 18 | 2 | 1 | 0 | 2 | 6 | 7 |
| Balance no. of villages | 3679 | 1356 | 109 | 0 | 108 | 457 | 1680 |

Source: BSNL's office of Uttarakhand Telecom Circle.

1.1.5 Internet Penetration

With regard to internet usage, there are 29,013 Internet subscribers in Uttarakhand circle as on 1st December 2005. About 54 per cent of them are in Dehradun SSA. Nainital and Haridwar are the other two SSAs with significant share of Internet subscribers. The BSNL in Uttarakhand state has 770 broadband (data transmission speed exceeding 256 kilobits per second) customers, majority of them are in Dehradun. There were 679 integrated services digital network (ISDN) subscribers in the state as on 1st December 2005; most of them are in Dehradun SSA. The BSNL has laid optical fibre connectivity to the extent of 5,016 kms all over the state. The majority of OFC route length is in Almora and Srinagar SSAs—SSAs with more difficult terrain. Only 23 towns in the state have been provided with ISDN capability. BSNL has provided 28 INMARSAT terminals of which 18 are functioning as VPTs (Table 11.7). Army uses the remaining 10 for its own purposes (Table 11.9).

1.1.6 Mobile Penetration

Coming to the mobile services, BSNL's mobile services was inaugurated in the state on 19th October 2002. Barring Haridwar SSA, that have got mobile services introduced on 24th December 2003, all other SSAs have got them in 2002 itself. There were about 2.4 lakh mobile subscribers of BSNL in Uttarakhand circle at the end of November 2005. Mobile services are provided by BSNL in 54 towns of the state. Dehradun and Nainital SSAs account for 34 per cent and 20 per cent shares respectively, in total number of mobile connections in the state. There are two Base Station Controllers (BSCs), connecting the BTSs, set up by BSNL. However, Mobile Switching Centre (MSC) (is a telecommunication switch or exchange within a cellular network architecture which is capable of interworking with location databases) is located in Meerut. The BSNL has plans to invest in telecom infrastructure adding to provide mobile services to two lakh customers by putting 212 BTSs in the cities and on highways of the state indicating its roll

TABLE 11.9
Status of Village Connectivity: Internet Penetration

| Items | UAL Circle | Almora | Dehradun | Haridwar | Nainital | New Tehri | Srinagar |
|---------------------------------|------------|--------|----------|----------|----------|-----------|----------|
| No. of Internet subscribers | 29013 | 1488 | 15607 | 4730 | 5861 | 564 | 763 |
| No. of broadband subscribers | 770 | 0 | 549 | 71 | 150 | 0 | 0 |
| No. of towns with ISDN facility | 23 | 3 | 3 | 2 | 7 | 2 | 6 |
| No. of ISDN subscribers | 679 | 33 | 421 | 92 | 90 | 20 | 23 |
| OFC route (Km) | 5016 | 1447 | 603 | 390 | 783 | 486 | 1308 |
| No. of INMARSAT terminals | 28 | 8 | 3 | | 2 | 7 | 8 |

Source: BSNL's office of Uttarakhand Telecom Circle.

TABLE 11.10
Status of Mobile Services

| Items | UAL Circle | Almora | Dehradun | Haridwar | Nainital | New Tehri | Srinagar |
|---------------------------------------------|------------|--------|----------|----------|----------|-----------|----------|
| No. of Internet subscribers | 29013 | 1488 | 15607 | 4730 | 5861 | 564 | 763 |
| Status of mobile subscribers as on 30/11/05 | 244582 | 24947 | 82036 | 28647 | 47799 | 24095 | 37062 |
| No. of towns covered | 54 | 7 | 11 | 6 | 14 | 8 | 8 |
| No. of BTSs | | | | | | | |
| City BTSs | 76 | 9 | 25 | 12 | 17 | 5 | 8 |
| Highways BTSs | 38 | 1 | 4 | 5 | 7 | 9 | 12 |
| Total 114 | 10 | 29 | 17 | 24 | 14 | 20 | |
| Mobile expansion | 201583 | 42634 | 54730 | 23028 | 31292 | 14250 | 35649 |
| No. of BTS | | | | | | | |
| (a) City | 202 | 46 | 47 | 21 | 37 | 14 | 37 |
| (b) Highways | 10 | 0 | 3 | 0 | 0 | 5 | 2 |
| (c) Total | 212 | 46 | 50 | 21 | 37 | 19 | 39 |

Source: BSNL's office of Uttarakhand Telecom Circle.

out plans of mobile services. Thus, mobile expansion in urban areas is going to be facilitated the same in rural areas require network expansion, which is at present missing.

1.1.7 Waiting List

The latest waiting list figures (as on 1.12.2005) show that there is a larger waiting list in rural areas than in urban areas for DELs numbering 10,166 and 5171 respectively. While Nainital and Haridwar SSAs have more urban people in the waiting list for telephones in new Tehri and Nainital SSAs more from rural areas are waiting for private telephones. Keeping the fact that demand for telephones increase with the setting up of an exchange, these figures do not present real scenario. SSA-wise waiting list figures are in Table 11.11.

1.2 Evaluation of Present Status with Respect to Other States

Teledensity (number of telephones per one hundred population) in Uttarakhand state was 5.10 at the end of March 2004, which increased to 5.72 by December 2005.

There is a significant urban-rural digital divide existing in the state as indicated by urban and rural teledensity figures of 17.22 and 1.6 respectively, in December 2005. Compared to Himachal Pradesh, Uttarakhand is falling far behind. However, in comparison with Uttar Pradesh (East and West circles), Uttarakhand has higher teledensity. Average teledensity in the urban India is higher than that of Uttarakhand. Thus, it can be noticed that whole of UP and Uttarakhand circles are lagging behind than all India average in terms of teledensity; Uttarakhand is better connected by telephone facilities than U.P. (Table 11.12).

With regard to the role of private capital in providing telephone services, the entire basic telephone services segment is untouched by private operators in the state and is insignificant in Himachal Pradesh. In UP, private operators provided sizeable number of basic telephones. This could be attributed to the difficulties associated with laying basic telephone network in the hilly terrain. The prohibitive costs involved in digging and trenching for connecting isolated small clusters are acting against the provision of providing basic telephone facilities.

TABLE 11.11
Waiting List in Uttarakhand Telecom Circle
(As on 1.12.2005)

| Name of SSA | Pending Demand (Waiting list + POBs) | | | | | | Total |
|-------------|--------------------------------------|--------------------|-------|----------------|--------------------|-------|-------|
| | Large Exchange | Urban S&M Exchange | Total | Large Exchange | Rural S&M Exchange | Total | |
| Almora | 23 | 0 | 23 | 897 | 0 | 897 | 920 |
| Dehradun | 362 | 0 | 362 | 527 | 49 | 576 | 938 |
| Haridwar | 589 | 904 | 1493 | 0 | 381 | 381 | 1874 |
| Nainital | 2363 | 0 | 2363 | 127 | 19 | 146 | 2509 |
| New Tehri | 676 | 28 | 704 | 246 | 2101 | 2347 | 3051 |
| Srinagar | 225 | 1 | 226 | 565 | 83 | 648 | 874 |
| Total | 4238 | 933 | 5171 | 2362 | 2633 | 4995 | 10166 |

Source: BSNL's office of Uttarakhand Telecom Circle.

TABLE 11.12
Tele-density—Urban and Rural

| Circles | Tele-density | | | | | |
|------------------|--------------|--------|--------|--------|--------|--------|
| | Overall | | Urban | | Rural | |
| | Mar.04 | Dec.04 | Mar.04 | Dec.04 | Mar.04 | Dec.04 |
| Himachal Pradesh | 10.14 | 12.52 | 51.12 | 63.89 | 5.51 | 6.72 |
| Uttarakhand | 5.10 | 5.72 | 15.17 | 17.22 | 1.48 | 1.6 |
| U.P. (E&W) | 2.96 | 3.88 | 12.24 | 16.54 | 0.47 | 0.49 |
| All India | 7.02 | 8.59 | 20.74 | 25.9 | 1.57 | 1.69 |

Source: Annual Report-2004-05, Department of Telecommunications, Government of India.

TABLE 11.13
Basic Telephones

| Circles | Basic Phones (Fixed DELs + WLL (Fixed)) | | | |
|------------------|-----------------------------------------|----------|-------------------|---------|
| | PSUs' Operators | | Private Operators | |
| | Mar.04 | Dec.04 | Mar.04 | Dec.04 |
| Himachal Pradesh | 476793 | 483770 | 0 | 566 |
| Uttarakhand | 370813 | 378357 | 0 | 0 |
| U.P. (E) | 1749345 | 1725613 | 17510 | 46462 |
| U.P. (W) | 1279630 | 1260490 | 14692 | 46117 |
| All-India | 40868365 | 40576227 | 2359582 | 4301891 |

Source: Department of Telecommunications, Government of India, Annual Report 2004-05.

As for the mobile telephone services, as on December 2005, in Uttarakhand mobile services are provided exclusively by BSNL alone (Table 11.14).

As per the latest information, Internet penetration in Uttarakhand state at the end of March 2003 was 0.23, which was higher than that of Himachal Pradesh at (0.11), U.P. at (0.07) but falls below the all India level at (0.34).

There are more number of public call offices in Uttarakhand than in Himachal Pradesh. Very few of them do not have STD facility.

TABLE 11.14
Number of Mobile Telephones

| Circles | Mobile Phones (Cellular Mobile Phones + WLL(M)) | | | | | |
|------------------|-------------------------------------------------|----------|-----------------|---------|-------------------|---------|
| | Total | | PSUs' Operators | | Private Operators | |
| | Mar.04 | Dec.05 | Mar.04 | Dec.05 | Mar.04 | Dec.05 |
| Himachal Pradesh | 170588 | 599129 | 72625 | 206418 | 97963 | 392711 |
| Uttarakhand | 85432 | 244585 | 85432 | | 0 | |
| U.P. (E) | 1090000 | 3186165 | 345221 | 1528070 | 744779 | 1658095 |
| U.P. (W) | 1121890 | 2612257 | 295266 | 868210 | 826624 | 1744047 |
| All India | 33311561 | 37378807 | 5614667 | | 27696894 | |

Source: Department of Telecommunications, Government of India, Annual Report 2004-05.

TABLE 11.15
Internet Penetration

| States | Population (millions) | March 2002 | | March 2003 | |
|--------------------|-----------------------|--------------------|------------------------|--------------------|------------------------|
| | | No. of Subscribers | Penetration (per cent) | No. of Subscribers | Penetration (per cent) |
| | | Himachal Pradesh | 6.08 | 3483 | 0.06 |
| Uttarakhand | 8.49 | 10902 | 0.13 | 19801 | 0.23 |
| Uttar Pradesh(E+W) | 166.20 | 96828 | 0.06 | 120006 | 0.07 |
| All India | 1028.61 | 3239675 | 0.31 | 3500278 | 0.34 |

Source: Department of Telecommunications, Government of India.

TABLE 11.16
Circle-wise Public Call Offices (as on 30.11.2005)

| Unit | Local PCOs | STD / PCOs | Highway PCOs | Total PCOs |
|-------------------|------------|------------|--------------|------------|
| Himachal Pradesh | 549 | 8921 | 1510 | 10980 |
| Uttarakhand | 509 | 12362 | 1303 | 14174 |
| Uttar Pradesh (E) | 21328 | 72590 | 5581 | 99499 |
| Uttar Pradesh (W) | 13630 | 41831 | 3779 | 59240 |
| All - India | 1062786 | 921538 | 28900 | 2014952 |

Source: BSNL's office of Uttarakhand Telecom Circle.

In view of the existence of geographic similarities between Uttarakhand and Himachal Pradesh, a comparison between the quality of services of BSNL in these two states is presented in Table 11.17.

The second row of the table indicates benchmark parameters for stipulated by TRAI for service providers. Performance of BSNL in Uttarakhand and Himachal Pradesh states are evaluated using eight parameters. These are:

- (1) Provision of telephone within 7 days for exchange areas declared "On Demand" (100 per cent in <7days).
- (2) Fault incidences per month per 100 telephones should be less than 5.
- (3) Percentage of faults repaired by next working day (should be >90 per cent).
- (4) Mean Time to repair (MTTR) (should be <8hours).
- (5) Call Completion Rate in local network (should be >55 per cent).
- (6) Metering and Billing credibility (Not more than 0.1 per cent of bills should be disputed over a billing cycle).
- (7) Customer Care: Promptness in attending 95 per cent of customers requests (Benchmarks for shifts, closures and providing additional facilities are <3 days, <24 hours and <24hours respectively). BSNL has 0.00 per cent performance for this parameter against the TRAI stipulated benchmark of 95 per cent of requests.

Source: TRAI

It can be observed from the above table that the state, even though the exchanges declared as 'on demand', only 61 per cent of the demand is met within the stipulated seven days time. In Himachal Pradesh, the corresponding figure is 99 per cent. Thus, confirming to this norm

requires lot of improvement in operational efficiency. It can also be noticed that fault incidence is more in both Uttarakhand and Himachal Pradesh. This could be attributed to the fact that wireline telephones are predominantly used in these states that are prone to frequent faults. In contrast, as regards the percentage of faults repaired by next working day, mean time to repair, and call completion rate in local network, Uttarakhand has confirmed to the stipulated norms. As regards i.e., shifting and closing of phones, BSNL in both of the proportion of the states is very poor.

The comparison of telecom services between Uttarakhand and other states reveals that: (a) there is a significant urban-rural digital divide existing in the state. This is again reinforcing the main conclusion of the previous section. When compared to Himachal Pradesh, Uttarakhand is falling behind. In the case of urban teledensity also Uttarakhand figures are lower than the India average, (b) private operators have not entered the basic services segment in the state so far, (c) number of PCOs in Uttarakhand is more than Himachal Pradesh indicating the commercial viability of public telephone facilities, and (d) the operational efficiency of BSNL is lower in Uttarakhand as indicated in the delay in providing telephones from exchanges under 'on demand'. Since the study also noticed poor consumer service and high incidence.

1.3 Key Findings

The important issues regard to the present status of telecom services in Uttarakhand state are:

1.3.1 Wide Digital Divide

It was stated earlier that majority of fixed lines are provided in urban areas while WLL is mainly used for connecting rural areas. At present, WLL accounts for only 8 per cent of total installed capacity in the state. Telephone exchanges in plains, like in Dehradun and

TABLE 11.17
Quality of Services Comparison between Uttarakhand and Himachal Pradesh

| QOS Parameters | Telephone Connection on Demand | Fault Incidences per 100/sub/mth | Fault Repair by next Working Day less than 90% | Mean Time of Repair MTTR | Call Completion Rate in Local Network | Metering and Billing Credibility per cent of Bills Disputed | Shifts (95%) | Closures (95%) |
|--------------------|--------------------------------|----------------------------------|------------------------------------------------|--------------------------|---------------------------------------|-------------------------------------------------------------|--------------|----------------|
| 1 Himachal Pradesh | BSNL | 98.79 | 93 | 6 | 59.34 per cent | 0.05 | 0 | 94.99 |
| 2 Uttarakhand | BSNL | 61.41 | 95 | 6 | 63.74 per cent | 0.02 | 0 | 95.72 |

Note: Based on the data related to the quarter July-Sept. 2005.

Source: TRAI (December 2005) The Indian Telecom Services Performance Indicators, July-Sept. 2005.

Haridwar SSAs, are larger ones compared to exchanges in rural SSAs in Srinagar and New Tehri. About 54 per cent of the total Internet subscribers are in Dehradun SSA. Nainital and Haridwar are the other two SSAs with significant share of Internet subscribers. Thus, Internet facility so far has been limited to plains and the Internet service penetration of SSAs in difficult terrains are lacking. The margin of the 770 broadband customers of BSNL are in Dehradun. Also, the ISDN facilities are available only in Dehradun. Out of 212 BTSs, 202 are in cities and the remaining 10 are installed only on highways leaving no BTS for the rural areas. About 24 per cent of the villages are yet to get the public voice phone facility. It was also noticed that 54 per cent of the mobile subscribers in the state are from two SSAs. The larger waiting for DELs in rural areas than in urban areas reveals high demand for telephones in rural areas. All these factors indicate the existence of wide digital divide between plains and hills and between urban and rural areas of the state. This could mainly be attributed to the supply side constraints existing in the telecom services sector.

1.3.2 Slow Rollout of WLL Network

As noticed above, the growth in the fixed line telephone segment got stagnated as the WLL has been identified as the appropriate one for the state. At present WLL accounts for only 8 per cent of the total equipped capacity. Despite the support from the Universal Service Obligation (USO), about 24 per cent of the villages in the state are yet to receive VPT. About 700 VPTs are still working on Multi Access Radio Relay technology (MARR) and are waiting to be replaced with WLL under the USO programme. Besides this, there is a larger waiting list in rural areas than in urban areas for DELs. All these are attributed to slower rollout of WLL network in the circle.

1.4 Feasible Short Term and Long Term Targets

BSNL in Uttarakhand aims at providing smaller number of DELs till the next two years. All over the circle, BSNL has plans to provide 17,000, 16,000 and 17,000 new DELs in the years 2005-06, 2006-07 and 2007-08 respectively. These modest targets indicate: (a) the present difficulties faced in extending the fixed and WLL network in view of the hostile terrain and (b) increased use of mobile technology in coming years. Most of the new DELs are planned to be provided in rural areas mostly under the USO Programme. (Table 11.18)

TABLE 11.18
Short Term Targets for DELs (Land Line and WLL (F))

| Technology | Target for 2005-06 | Target for 2006-07 | Target for 2007-08 |
|--------------------|--------------------|--------------------|--------------------|
| Fixed Line (Total) | 7000 | 4000 | 5000 |
| a) Urban | 3500 | 2000 | 2500 |
| b) Rural | 3500 | 2000 | 2500 |
| WLL (Total) | 10000 | 12000 | 12000 |
| a) Urban | 3000 | 3500 | 3500 |
| b) Rural | 7000 | 8500 | 8500 |

Source: BSNL's office of Uttarakhand Telecom Circle.

As stated earlier to provide every year about 17,000 new DELs, mostly in rural areas, BSNL is planning to install 12 new exchanges. Of these, six are to be provided in Srinagar, three in New Tehri, two in Almora and one in Dehradun (Table 11.19).

In the case of mobile services, BSNL has set ambitious targets for the state. As can be seen, all the five highways that are still left uncovered with mobile network would be

TABLE 11.19
Short-term Plans for Installing New Exchanges

| Items | UAL Circle | Almora | Dehradun | Haridwar | Nainital | New Tehri | Srinagar |
|------------------------------|------------|------------|----------|----------|----------|------------|---------------|
| No. of new exchanges (Rural) | | 12 | 2 | 1 | | 3 | 6 |
| | | Chaubatiya | Sinola | | | Likhwar | Mastura |
| | | Someshwar | | | | Nakote | Majza Mahadev |
| | | | | | | Sunharigad | Ghimtoli |
| | | | | | | | Sanglakoti |
| | | | | | | Ladoli | |
| | | | | | | | Kotma |

Source: BSNL's office of Uttarakhand Telecom Circle.

covered by March 2006. Similarly 100 per cent of rail routes are set for coverage by March 2006. All the district headquarters have already been covered; 26 of the 33 uncovered *tehsil* headquarters are planned to be covered by March 2006 and the remaining 7 would be covered in year 2006-07. Similarly 100 per cent coverage of revenue blocks, towns and villages with more than 5000 population is aimed by March 2007. In order to fulfill these objectives, 75 new cellular towers would be constructed by March 2006. Another 71 towers would add these before June 2006. The equipped capacity as a result would be increased to 4,70,000 by the end of June 2006 from the present level of 2,76,000. (Table 11.20).

BSNL has planned to connect all the *taluk* and block headquarters of Uttarakhand by March 2006. It also has plans to replace connectivity of all the 30 MCPC exchanges with optical fibre media by March 2007.

Among short-term goals, BSNL has set the following targets:

1. *Connectivity*: All SDCC will be connected in Ring fashion on OFC by March 2007. At present 11,931 revenue villages are covered with telephone facility. Remaining 3679 are planned to be covered by September 2006 using Satellite and WLL technology.
2. *Broadband*: Presently broadband capacity of 1680 is available. 1013 connections are working at present. Eight Cities i.e., Dehradun, Haridwar, Haldwani, Rudrapur, Roorkee, Kashipur, Pantnagar, Rishikesh have been covered by broadband. There is a plan to increase capacity by 1932 ports and achieve 3612 capacity by March 2006 and cover 3 new cities of Nainital, Mussoorie and Bazpur. It has also been planned to cover 33 more towns with broadband by June 2006 and 5000 capacity.
3. *Internet*: More than 29,000 Internet connections are working in the state as on 30th December 2005. CLI

TABLE 11.20
Details of Targets for Mobile Coverage in the Short Run

| | Total | Coverage as on | Coverage till March 2006 | Coverage till March 2007 |
|--------------------------------|--------------------------------|-------------------------|--------------------------|--------------------------|
| Covering highways | 28 highways measuring 5000 kms | 23 highways of 4200 kms | 100 per cent | - |
| Rail routes | 310 kms | 300 kms | 100 per cent | - |
| District headquarters | 13 | 13 | - | - |
| Coverage of <i>tehsils</i> | 78 | 45 | 26 | 78 |
| Coverage of blocks | 95 | 67 | 17 | 95 |
| Coverage of no. of towns | 86 | 73 | 2 | 86 |
| Villages with >5000 population | 82 | 60 | 15 | 82 |
| Number of towers | | 265 | 75 | 71 till June 2006 |
| Equipped capacity | | 276,000 | 315,000 | 470,000 till June 2006 |

Source: BSNL's office of Uttarakhand Telecom Circle.

TABLE 11.21
Short Run Targets: OFC Media Spread

| | Total | Present Coverage | Till March 2006 | Till March 2007 |
|-----------------------------------------------|-------|------------------|-----------------|-----------------|
| Number of district HQs | 13 | 13 | - | - |
| Number of <i>taluk</i> HQs | 78 | 70 | 8 | - |
| Number of block HQs | 95 | 90 | 5 | - |
| Conversion of MCPC exchanges to IDR/OFC media | 30 | - | - | 30 |

Source: BSNL's office of Uttarakhand Telecom Circle.

based Internet facility is presently available in Dehradun and Nainital SSAs, which will be extended to all remaining SSAs by March 2006.

4. *Customer Support Services:* Call centres have been set-up in Dehradun. Shortly it will be extended to all SSAs in the circle. New customer service centre is being established at Rajpur in Dehradun by March 2006.

All these factors indicate that a lot of developmental activities are taken by BSNL in order to improve the services for the existing customers and also provide connectivity to the unconnected rural and remote areas.

1.5 Strategies Required for Achieving the Targets

For achieving the desired goals, there is a need to support the sector in the form of policy reforms, institutional set up, and investments as brought out below.

1.5.1 Policy Changes

a. BSNL Relaxation of Norms for Setting Up New Exchanges

In order to cater to the scattered demand in hills, low capacity exchanges need to be opened. However, BSNL's present norms require that there should be a demand for minimum 150 lines within the coverage area of 5 kms for opening a small exchange. This puts a hurdle in opening new exchanges in rural areas of the state. The government should evolve a policy to compensate BSNL for recovering loss incurred in establishing a telephone exchange in hills and for running it with a sub-optimal capacity utilisation rate. Similar to opening smaller exchanges, the capacity utilisation rates of WLL are lower than optimal levels owing to factors attributed to hilly terrain and scattered population. As stated by BSNL's senior field officers, CorDECT technology could not be used in Uttarakhand as the height of its tower is more than that of CDMA and hence costlier. Therefore, instead of high capacity CDMA towers used in plains, more BTSs of smaller sizes and capacity needs to be deployed.

b. USO Support for Mobile Facilities and Setting Up Infrastructure

A shift in the USO funds policy, away from service subsidy and towards infrastructure subsidy is more suitable for providing telephone services in Uttarakhand. In the present USO functioning,

financial assistance has been provided to operators for providing specific services in remote areas. However, since telecom sector is a capital-intensive one and returns are spread over a longer period, for lack of sufficient capital and for recovering investment in short periods, private operators are not interested in participating USO activities in states like Uttarakhand. An alternate approach that gives assistance in provisioning of infrastructure and subsidised access to the backbone network would enable private operators to participate in USO. Especially, if passive infrastructure is shared (subsidy subject to sharing), more competition in difficult terrain areas can be realised. Thus, there needs to be a change in the USO scheme to consider wireless technology in the last mile.

c. Increasing Subsidies from USO Fund

In the present USO set up, benchmark subsidies meant for telecom facilities provided in difficult terrain districts are fixed five percent higher than in normal districts. Moreover, USO support does not take the total switch cost into account. It only takes the cost of last mile-from customer premises equipment to the line card in the exchange. In view of special geographical conditions prevailing in Uttarakhand state, USO subsidy needs to be enhanced to cover the cost of switch also.

d. Niche Operators

It is assessed by TRAI³ that despite the USO support, existing big service providers would not be interested to serve about 50 per cent of the villages. To address this issue, TRAI in its unified licensing recommendations envisaged that the short distance charging areas with teledensity less than one per cent be notified as telecom-wise-backward areas. In these areas, niche operators defined as 'the telecom service providers whose services are restricted to these backward areas only' will be inducted. These operators are entitled for concessions of zero entry fees, lower licence fees and eligibility for USO support. The scheme is aimed to promote local entrepreneurs who have the technical competence to provide communication solutions but cannot compete on equal footing with large operators. Uttarakhand would greatly benefit from introducing 'Niche Operators'. However, so far there has been no development towards the introduction of 'Niche Operators'. If not all over the country, in states like

3. TRAI (Oct. 2005). Recommendations on Growth of Telecom Services in Rural India.

Uttarakhand, such operators should be allowed to provide services.

e. Infrastructure Development

Providing and maintaining telecom services mainly require quality electricity and roads. In the rural areas of Uttarakhand, there is no three-phase power, required for running BTSs. Providing power backup to BTSs with engine alternators is very costly. At the customer end also, solar batteries are provided for VPTs and not for DELs. The landslides, no road connectivity to far-flung areas, *ghat* roads and unfriendly weather add to the maintenance costs of telephone facilities in Uttarakhand. Therefore, improvement of power supply and road conditions is necessary for increasing teledensity in rural areas of Uttarakhand.

1.5.2 Institutional Set-up

In view of the special conditions prevailing in Uttarakhand, a separate cell to look after the Uttarakhand and similar states, needs to be set up within the present TRAI. Instead of the present USO method of supporting same set of services across the country, a demand based USO subsidy for the services identified at the level of a SDCA would help increase teledensity in Uttarakhand.

2. Information Technology

2.1 Present Status of Information Technology

The vision document of Uttarakhand state is “to deploy IT as an effective tool for catalysing accelerated economic growth and efficient governance resulting in the creation of knowledge rich society with a high quality of life.” For using information technology for the betterment of its people requires initiating, establishing and operationalising IT infrastructure as well as providing people centric applications. In line with the vision, objectives of the planning exercise of the state with regard to IT are stated as:

- a) Encourage the use of IT in the government not only as a tool for management and decision support systems but also re-engineer the processes of the government to provide a more efficient, transparent, accountable and responsive government to its citizens.
- b) To improve the quality of life of citizens by facilitating easy access to consumer applications of IT.
- c) To encourage private sector initiatives for the development of world class IT infrastructure.

- d) To upgrade and develop manpower skills required for the IT industry and to accelerate the use of IT in schools, colleges and other educational institutions with a view to provide skills and knowledge to youth so as to render them fit for getting employment in this industry, and
- e) To use IT as a GDP driver by promoting and developing the state as an attractive IT destination.

The present Section covers four different aspects of the IT in the state for providing a comprehensive picture of the sector. These are:

2.1.1 IT infrastructure Development Efforts

- i. Generating awareness towards IT services and produce skilled IT workers,
- ii. IT industry promotion, and
- iii. Developing citizen-centric IT applications like e-Governance.

2.1.2 Development of IT Infrastructure

For a state like Uttarakhand, which wants to use information technology for the betterment of its people, creation of IT infrastructure needs to be followed by its mass operationalisation and citizen-centric applications. Therefore, establishing the required hardware and formulating suitable software for bringing it close to people must be addressed in the IT strategy.

2.1.2.1 Present Status of ICT Infrastructure

In view of the mountainous terrain and dispersed and small elements of population, Uttarakhand faces peculiar challenges. The state entered into collaboration with Software Technology Park of India (STPI) to establish an earth station with an international gateway at Dehradun. The BSNL has laid over 3000 kilometres of optical fibre cables in the state and established another gateway exchange at Dehradun. These earth stations and the OFC network constitute backbone of communications network and provide the band width connectivity for the IT industry in Uttarakhand. Under the state-wide area network (SWAN) the entire district headquarters are connected with reliable media. Majority of block offices and district rural development agencies (DRDAs) have also been connected under SWAN. With the computerisation of all the government offices (expected by March 2007), the hardware set-up required for providing e-Governance applications is in place. In order to link up all its citizens to this backhaul, a separate project called ‘Uttarakhand Infoway’ was formulated by the state. Under this project, a seamless hybrid of optical

TABLE 11.22
Number of Beneficiary Schools and Colleges

| Item | 2001-02 & 2002-03 | 2003-04 | 2004-05 | 2005-06 (Up to Dec.05) | Total |
|---------------------------|----------------------|---------|---------|---------------------------|-------|
| No. of schools/colleges | 220 | 903 | 490 | 122 | 1735 |
| No. of computers provided | 1100 | 3850 | 2590 | 488 | 8028 |

Source: Information Technology Development Authority, Government of Uttarakhand, Dehradun.

fibre cables, WLL, radio and satellite technologies are combined to reach all significant population pockets to overcome the adverse topography. The end delivery point infrastructure would be primarily in private hands with a 'user pay principle'. It is worth mentioning that the role of private capital so far is minimal in creating ICT backbone infrastructure, as all these efforts stated above are put by the public sector. Reliance industries has commenced laying its optical fibre network in Uttarakhand but to connect only industrial areas identified by the state to develop as knowledge industry centres.

2.1.2.2 Creation of IT Awareness

Popularisation of computer and Internet penetration are other issues to be addressed by IT strategy. Uttarakhand government started introducing IT first in the higher education institutions and training institutes for teachers. In the second phase, computers and Internet is planned to be extended to senior secondary and high schools. A scheme called project 'Gyanotkarsh' was formulated in collaboration with the State Bank of India to provide the low-interest/easily repayable loans to all government employees and teachers for purchase of computers for the home segment.

2.1.3 IT-related Human Resource Development

IT education and the use of IT technology in imparting education are both focused by Uttarakhand state. Computer literacy of the students studying in high school and senior secondary levels as well as using computer technology for classroom teaching, is being addressed in a project named 'Aarohi'. It has a simple mission statement: 'Computer Literacy for All'. The students who pass out of the government schools as well as the aided institutions shall be computer literate, irrespective of their economic status and affordability. Till December 2005, a total of 1735 schools and colleges are provided with 8028 computers under this programme (Table 11.22).

Eventually the programme aims to cover all the educational institutions in the state. The training of teachers in the schools as Master Trainers (MTs) as well

as Master Trained Professional Teachers (MTPTs), is being carried out in collaboration with Intel where the course curriculum, examination system and instructors have been provided by the collaborator. Besides this, Uttarakhand state has been selected by Microsoft as a launch pad for Project Shiksha in India. Microsoft would carry the 'Aarohi' programme to its logical conclusions by the way of training students and teachers in web designing and hosting, elementary programming etc. Details of number of teachers trained as Master Trainers by year is presented in Tables 11.23 and 11.24.

TABLE 11.23
Number of Master Trainers (MTs)

| Training Institution | 2002 | 2003 | 2004 | 2005 (Up to Dec.05) |
|----------------------|------|------|------|------------------------|
| DIET Bhimtal | 201 | 223 | 192 | 99 |
| DIET Dehradun | 208 | 237 | 186 | 117 |
| DIET Pauri | - | 67 | 180 | 97 |
| DIET Didihat | - | 76 | 143 | 44 |
| SCERT Narendra Nagar | - | - | 13 | - |

Source: Information Technology Development Authority, Government of Uttarakhand, Dehradun.

TABLE 11.24
Number of Teachers Trained

| Training Institution | Dec.2003 to June 2004 | July 2004 to June 2005 | July 2005 to Dec. 2005 |
|----------------------|--------------------------|---------------------------|---------------------------|
| DIET Almora | 31 | 244 | 616 |
| DIET Barkot | 13 | 200 | 520 |
| DIET Gauchar | 30 | 208 | 550 |
| DIET New Tehri | 26 | 202 | 579 |
| DIET Roorkee | 34 | 212 | 591 |
| IT Academy Dehradun | 240 | 437 | 1325 |

Source: Information Technology Development Authority, Government of Uttarakhand, Dehradun.

Microsoft is also establishing an IT Academy in the state. To complement 'Aarohi' project, another project

called 'Shiksha' is formulated for developing a high standard, world class curriculum, training modules, examination system with scholarships for students. Table 11.25 presents the number of students enrolled in IT diploma courses.

TABLE 11.25

Number of Students Enrolled in PGDCA Courses

| Training Institution with Affiliation | 2003-04 | 2004-05 | 2005-06 |
|---------------------------------------|---------------|---------|---------|
| Colleges affiliated to APTECH | 1261 | 3202 | 2312 |
| Colleges affiliated to ECIL | 74 | 229 | 269 |
| Polytechnics affiliated to APTECH | (not started) | 1947 | 2298 |

Source: Information Technology Development Authority, Government of Uttarakhand, Dehradun.

The Uttarakhand government has entered into an MoU with CISCO for establishing a specialised regional training and software development centre at IIT Roorkee. Various local academies are proposed to be established at all professional colleges, such as College of Technology, Pant Nagar, engineering colleges at Dwarahaat, Pauri and Rishikesh, Universities of Kumaon and Garhwal etc. CISCO has agreed to provide the software content and certification. The government would provide only the initial infrastructure for establishment. The recurrent cost would be borne on a self-sustaining model.

The state wants to develop these capacities by taking the following steps: (a) Computer has already been recognised as a subject in the course curriculum. Efforts now would be undertaken to introduce "O" level courses in high school/intermediate levels in a PPP mode, (b) Extensive use of computer as a training aid would be encouraged in the classroom teaching. The state would undertake development of CD based course modules an effective aid to teaching.

2.1.4 Promoting IT Industry

The state government recognises the key role played by private sector in the development of IT industry. A number of measures have been announced for corporates participating in the IT sector.

The non-fiscal incentives are:

1. Preferential allotment of land for IT industry by the development authorities in the state.
2. Continuous/uninterrupted power supply to IT industries—whether set-up inside the STP or at a

stand-alone location. Exemption from power cuts without limit to be provided.

3. Encouragement to captive power generation in all IT locations. Total exemption from payment of electricity duty.
4. Creation of venture capital funds for financing viable ideas in the IT sector. Lending in IT shall be considered as priority sector loaning by state level financial institutions.
5. Special efforts to develop high quality social infrastructure like schools, housing, health, entertainment and leisure facilities in IT locations.
6. Providing Escort services by the IT and the industries department and enabling administrative system for obtaining easy clearances and approvals from various government departments, single windows to be set-up for all statutory clearances in department of IT.

The fiscal incentives are:

- Registration/stamp duty subsidies.
- No entry or purchase tax on IT hardware.
- Trade tax exemption for industry.
- Trade tax deferment for industry and products.
- Assistance to VSNL/DOT to expand communication link in the state.
- Special incentives for mega projects > 50 crore to be decided by high level committee.

IT-enabled services, which are of specific relevance to Uttarakhand relate to agriculture in the belts of Udham Singh Nagar, Haridwar and Dehradun as also horticulture in the higher regions. It is proposed to outsource these services to professional agencies, such as Mahindra & Mahindra or ICICI with whom negotiations are already at an advanced stage. The role of the government would only be that of a facilitator in creating this infrastructure at specific *mandis* providing connectivity and specific content creation. *Mandis* proposed to be covered are Dehradun, Haridwar, Kichcha, Haldwani and Khatima.

2.1.5 e-Governance Applications

The state envisages that its e-Governance is not just automation of government processes but re-engineering of government processes for the fulfilment of expectations that people have from the government. Therefore, understanding the demands of the people through a detailed survey and preparing a single integrated state

portal fully confirming to international standards and best practices are seen as major steps involved at government end for e-governance. On the user end, establishment of community centres for delivery of e-Governance services is required. The state shall act as facilitator for establishment of such community centres and encourage private sector initiatives, on pre-arranged transparent licence terms for wider spirit of such services. Reasonable user charges would be levied for the delivery of such services. Beginning with simple transactions such as downloading of forms and information regarding various schemes, the state shall endeavour to move into more complex regime of online application making and data driven, decision-making for its citizens.

There is also an issue of convergence, which has been addressed. From the very beginning, separate cards for transport or rations or utility payments are not encouraged. On the other hand, an integrated approach based on Public Key Integration (PKI) is proposed. These smart cards would also become the basis for interfacing with government applications that are in the process of digitisation at IIT Roorkee and with the help of other service providers. The most important part would be content creation, which can act as a driver for this entire effort. The government of Uttarakhand has already partnered with IIT Roorkee for developing the content.

2.2 Evaluation of Present Status with Reference to Other States

The e-Readiness study conducted jointly by NCAER and Department of Information Technology in 2004 categorised Uttarakhand along with Mizoram, Jammu and Kashmir, Assam, Meghalaya and Jharkhand as below

average achievers. This category is the second lowest of the total six categories.

The plan outlay aimed at IT and associated services over the 10th Five Year Plan of the state is as given in Table 11.26. The state has planned to invest INR 142 crore on IT related activities. Most of it is for creating infrastructure required for IT.

Telecommunication services in the Uttarakhand state have improved significantly in recent years. The Universal Service Obligation (USO) scheme implemented by the department of telecommunications has been responsible for this development. Under USO scheme, shared telecom services such as public telephones as well as private telephones have been provided in rural and remote areas. The latest available figures (*source*: USO Administrator, Department of Telecommunications, Government of India) reveal the following developments in Uttarakhand telecom services sector.

The most important development that has taken place in recent years is the subsidy support for creating backbone infrastructure required for provision of mobile services. The USO Fund has identified 217 rural and remote areas falling in 13 districts of Uttarakhand state to build communication towers. These towers are located in the specified rural and remote areas, where there is no existing fixed wireless or mobile coverage. The infrastructure thus created can be shared by three service providers for provision of mobile services. This facility is expected to greatly improve the communication facilities in the state.

The next important development is the provision of more number of public telephones in rural and remote

TABLE 11.26
Allocation for IT in 10th Five Year Plan of the State (INR Lakhs)

| Projects | 10 th Plan |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| 1. Establish earth stations at Haridwar, Nainital, Roorkee and Pant Nagar by Software Technology Parks India Ltd. | 500 |
| 2. IT Infrastructure; V SAT based in Mountainous Terrain & Wireless in Local Loop Technology (at Haridwar, Udham Singh Nagar and Dehradun) (includes Hub at Dehradun) | 8600 |
| 3. Infrastructure creation in 300 schools/colleges | 1500 |
| 4. Establishment of regional and local academies (10) | 75 |
| 5. CD based teaching course material to be developed by IIT Roorkee | 300 |
| 6. IIT in Uttarakhand | 1 |
| 7. IT enabled services at Dehradun, Kichcha, Haridwar, Haldwani and Khatima Mandis | 200 |
| 8. Smart cards for transport/rations/utility payments etc. | 2000 |
| 9. Content development | 1000 |
| Total | 14,176 |

Source: Planning Department, Government of Uttarakhand, *Annual Plan 2002-03*, Vol.-I.

areas under the USO support. Out of a total of 3881 villages that were not covered with telecom services in 2003, as on 30.11.2007 barring 1837 villages, all villages have been covered with public telephone facility. Besides providing village public telephones in the erstwhile uncovered villages, under the USO scheme the state has got second village public telephone in 2796 villages with population exceeding 2,000. Another service that has contributed to the improvement of communications facility in the state is the MARR replacement service. Under this service, telephones functioning on the outdated wireless technology called Multi Access Radio Relay (MARR) technology were replaced with more reliable technologies. In Uttarakhand state, by 30.11.2007 out of the total of 2876 MARR telephones, 2823 have already been replaced. This leaves only 53 yet to be replaced.

Finally, turning to the provision of private telephones in rural and remote areas, under the Rural Household Direct Exchange Lines (RDELs), 29 SDCAs were identified in Uttarakhand state for provision of individual telephones in rural areas. In these 29 SDCAs 14,493 telephones were provided by the end of March 2007. The notable point in this regard is all these phones were provided by the BSNL. These developments indicate the improvement of telecom services in the state in recent years.

2.3 Strategies Required for Reaching the Targets

2.3.1 Lessons Learned from ICT Projects

- (a) ICT's effectiveness in rural areas depends on its short-term income generating applications.
- (b) These projects though successful in selected pockets, for scaling up to cover all the rural areas need regulatory intervention.
- (c) There is an entire range of triple play services (telephony, Internet and cable TV) that need to be provided for making these projects economically sustainable.

- (d) Projects that are innovative enough to cater to the localised needs and maintained by entrepreneurial franchisee have proved successful.
- (e) Different network approaches have been used including V-SATs and optic fibre cable. One of the very promising models identified by TRAI in India is the VOIP based network in Andhra Pradesh. It is a low cost optic fibre cable network and its economic viability is on account of cable TV.
- (f) Language, content, communication are the critical issues of ICT in rural areas. Development of locally relevant content that satisfies local information needs, in local language as well as localisation of global content is important. The content should essentially reach the most marginalised people.

2.3.2 A 'Hub and Spoke Model' is believed to be effective in connecting rural communities. Developing infrastructure at local business centres or at district headquarters for transforming it as a development hub is the first step in this model. As the second step, localised projects in the form of call centres and rural commodity marketing and information centres are to be established. This model generates employment and spurs economic activity. Thus, it helps check migration of people to large cities and metros.

2.3.3 Taking ICT to Rural Areas

Strategies that are required to address the supply side challenges are: (a) backbone infrastructure, (b) infrastructure sharing, (c) last mile connectivity, (d) power supply (e) operation and maintenance costs, (f) duties, levies and taxes, and (g) licencing framework. Similarly to take care of demand side issues viz.: (a) cost of computers and access devices, (b) unavailability of locally relevant applications, and (c) affordability of services are the challenges to be faced; suitable measures are to be prepared.

Technical Terminology

| | |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AN | Access Network Also known as local loop, the Access Network is the part of the telephone network that connects the customer premises equipment to the local exchange. |
| ANRAX | Access Network Rural Automatic Exchange |
| BROADBAND | A data connection defined as 'always on', and capable of providing a download speed of a minimum of 256 kbit/s. |
| BSC | Base Station Controller The part of the wireless system's infrastructure that controls one or multiple cell sites' radio signals, thus reducing the load on the switch. Performs radio signal management functions for base transceiver stations, managing functions such as frequency assignment and handoff. |
| BTS | Base Transceiver Station The name for the antenna and radio equipment necessary to provide wireless service in an area. |
| C-DOT 256 | C-DOT RAX is a digital stored programme control switching system with upto 256 terminations or ports. |
| CLI | Calling Line Identification At a minimum, the calling line identification includes a single calling party number. It may also include a second calling party number, a calling party sub address and redirecting number information. Calling line identification may not include any calling party number due to interworking, or because of an interaction with the CLIR supplementary service. |
| CDMA | Wireless in Local Loop (WLL) Access , that uses spread-spectrum techniques. CDMA does not assign a specific frequency to each user. Instead, every channel uses the full available spectrum. Individual conversations are encoded with a pseudo-random digital sequence. CDMA consistently provides better capacity for communications allowing more subscribers to connect at any given time. |
| CorDECT | Digital Enhanced Cordless Telephone (DECT) It is a Wireless Access system developed by Midas Communication Technologies and IIT, Madras, in association with Analog Devices, USA. CorDECT is based on the DECT air interface standard specification from the European Telecommunication Standards Institute (ETSI). The CorDECT air interface supports 10 kms of line-of-sight connectivity and has the provision to extend this to 25 kms using Repeaters. |
| DIAS | Direct Internet Access Network Offers a wire-line solution for high-speed symmetrical internet access on the existing telephone lines. Provides an 'always on' Internet access that is permanently available at the customer's premises. Combines voice and Internet data packets on a single twisted-pair wire at the customer's premises. |
| DSLAM | A Digital Subscriber Line Access Multiplexer It delivers exceptionally high-speed data transmission over existing copper telephone lines. It separates the voice-frequency signals from the high-speed data traffic and controls and routes digital subscriber line (xDSL) traffic between the subscriber's end-user equipment(router, modem or network interface card [NIC]) and the network service provider's network. |
| EIOB/OCB | Also known as OCB-181, the E10B was originally manufactured by Alcatel of France. It is one of the earliest digital exchanges in the world. Public Sector Indian Telephone Industries (ITI) entered into an agreement whereby the E10B was manufactured under licence in India in 1989-90. The E10B was succeeded by OCB-283. The OCB is also manufactured by ITI under licence. All installations of the E10B are being replaced by the OCB. The OCBs account for a major portion of the landline network in India. |
| EWSD | Electronic Worldwide Switch Digital EWSD performs switching for over 160 million lines in more than 100 countries. It is a modular system in which some switches in the system can be installed in a telephone company's Centrex facility and other switches can be located at the customer. |
| IDR | Intermediate Data Rate equipment IDR is a state of art technology for E1 connectivity via satellite. It meets the INTELSAT'S IESS 308/310 performance characteristics of IDR carriers. These E1 carriers share transponders with carriers |

employing other approved modulation techniques and or with other IDR carriers. The occupied satellite bandwidth for these carriers are equal to 0.7 times transmission rate in case of QPSK and 0.467 times transmission rate in case of 8 PSK modulation.

| | |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| INMARSAT | <p>International Maritime Satellite Organisation</p> <p>Inmarsat's original role was to build and operate a satellite system capable of offering communication and emergency services to ships on the world's oceans. These include ship-to-shore VOICE and DATA services as well as specialised safety systems such as GMDSS. In 1989, it launched so called land mobile DATA services aimed at truck drivers and other users whose needs cannot be met by existing cellular services owing to wide range of their travels or the remote locations in which they work. It also operates a system to provide telecom services to airline passengers.</p> |
| ISDN | <p>Integrated Services Digital Network</p> <p>Digital telecommunications network, capable of carrying image, sound and text data simultaneously.</p> |
| MARR | <p>Multi Access Rural Radio</p> <p>The MARR system comprises an analog electronic base station connected to a nearby telephone exchange, along with an omni-directional (O/D) antenna installed on a 40-metre-high tower. The system provides remote access to subscribers located in a radius of about 25km around the base station. The subscribers are provided with remote subscriber radio equipment, a Yagi antenna on a 15-metre mast and a telephone instrument.</p> |
| MCPC | <p>Multiple Channels per Carrier</p> <p>MCPC are a transmission format to multiplex two or more programme services into a single unified digital bit stream. With MCPC, a package of programme services can use the same conditional access and forward error correction systems, thereby economising on the overall bandwidth and transmission speed requirements.</p> |
| OFC | <p>Optical Fibre Conductive</p> <p>OFC is the designation given by the National Fire Protection Association (NFPA) to interior fibre-optic cables which contain at least one electrically conductive, non-current-carrying component, such as a metallic strength member or vapour barrier, and which are not certified for use in plenum or riser applications.</p> |
| RSU | <p>Remote Switching Unit</p> <p>The subtending remote switching device that depends in part on its host switch for call control but is capable of providing intra-unit switching.</p> |
| VSAT | <p>Very Small Aperture Terminal, a communication satellite whose transmissions cover only a small area of the earth.</p> |
| SDH Rings | <p>Synchronous Digital Hierarchy for Transmission</p> <p>The standard for most powerful form of Digital Transmission Technology, SDH is one of the new technologies at the heart of the broadband era, capable of delivering very high capacity links direct to customer and also bringing new levels of efficiency to the backbone of networks of public operators. The Transmission capacity of SDH systems currently ranges from 155 MBPS (known as STM-1) and 622 MBPS (STM-4) to 2.4 GBPS (STM-16).</p> |
| SSA | <p>Secondary Switching Area</p> <p>It is the area in which the country is divided by the Telegraph Authority, and is co-terminus with a Long Distance Charging Area.</p> |
| TAX | <p>Trunk Automatic Exchange</p> <p>TAX is an inter-city switch that helps connect pairs of switches that are not directly connected. For example, a TAX in Delhi with a connection to a switch in Mumbai indirectly connects all the switches in Delhi (connected to this TAX) to Mumbai.</p> |
| UHF | <p>Ultra High Frequency</p> <p>Frequencies from 300 MHz to 3000 MHz.</p> |
| WLL | <p>Wireless Local Loop</p> <p>A local loop network where the traditional copper wires are replaced with wireless network technology, giving greater flexibility in infrastructure deployment.</p> |



Chapter 12

Power

1. Introduction

The power sector reforms were already underway in undivided Uttar Pradesh when the state of Uttarakhand came into existence. The Uttar Pradesh State Electricity Board had already been ‘unbundled’ into three corporate entities. After the new state came into being, the electrical transmission and distribution assets and generating stations falling in its area were transferred to two newly formed corporate entities. Effective from 1st April 2001, the Uttarakhand Power Corporation Limited (UPCL) took over the management and responsibilities relating to electricity transmission and distribution (T&D). The transfer of the T&D assets (from the Uttar Pradesh Power Corporation Ltd. to UPCL) took place some months later, on 9.11.2001. This transfer was based on an interstate division of assets and liabilities arranged by the Central government. By the same arrangement and on the same date, the newly-incorporated Uttarakhand Jal Vidyut Nigam Limited (UJVNL) took over the generating stations located in the new state, all of them being hydro-based. While, initially, the UP Electricity Regulatory Commission continued to oversee the regulatory issues of Uttarakhand’s power sector, a separate Uttarakhand Electricity Regulatory Commission (UERC) was also constituted in September 2002.

Thus, the power sector has been functioning in its present form for four to five years. This period has also coincided with several statutory and policy initiatives concerning the power sector at the national level, chief among them being the enactment of Electricity Act 2003 (EA, 2003) and notification of the new National Electricity Policy (NEP, February 2005). A slew of programmes

aimed at overcoming very complex problems afflicting the sector have also been launched over the last five years. (Refer Appendix A-12.1). We shall thus be discussing the issues specific to the Uttarakhand power sector in the backdrop of these ongoing national initiatives.

It goes without saying that the electricity sector occupies a critical place among the physical infrastructure sectors of a state economy. But in case of Uttarakhand, this sector calls for more attention. One of these special factors is that the state is particularly well-endowed with respect to hydro-electric potential which, when optimally exploited, can yield rich gains to the state. A second factor is the high annual growth in demand during recent years between 2001-02 and 2005-06, when, total electricity consumed grew at the compounded annual rate of 12.05 per cent (Refer Appendix A-12.2, Table A-12.2a).¹ Significantly, the highest annual rates of growth of 39.3 per cent (CAGR) were recorded by the ‘metered’ segments of ‘industry’ followed by ‘commercial’ consumers (CAGR–22.5 per cent). These together accounted for 51 per cent of total consumption in 2005-2006. On the other hand, the ‘agriculture’ consumption, about 35 per cent of which is now being ‘metered’, registered a ‘negative’ growth rate of 3.93 per cent over the same period.

The rest of this section is organised into three sub-sections. Sub-section II that follows is devoted to a summarised presentation of the present status of the state power sector. Sub-section III is a selective examination of key issues relating to the sector. Feasible short-term and long-term targets for the sector and strategies and recommendations for its rapid development are presented in Sub-section IV.

1. Later in this section, some questions raised by UERC, concerning accuracy of data on electricity consumption in the ‘un-metered’ categories are addressed, which would indicate that the real overall growth rate could be lower than reported.

2. Current Status

2.1 Installed Capacity

The installed generating capacity was 1486.4 MW as at the end of May 2006 of which 1019.7 MW was the state's share (Table 12.1). As part of the interstate settlement on bifurcation that we referred to earlier, Government of India had allocated 353.3 MW out of the undivided Uttar Pradesh's share of 3399.9 MW in the central sector generating stations (owned by NTPC, Nuclear Power Corporation of India Ltd. and NHPC) of the Northern region to Uttarakhand. Five years later, on 31.3.2006, this share stood at 466.7 MW. Uttarakhand's share of Central Generating Stations (CGSs) is around 3 to 4 per cent of plant capacity. In the case of plants located in the state, the state is also entitled to 'free power' of 12 per cent of generation. At present, NHPC's Tanakpur (120 MW) and Dhauliganga (280 MW) plants provide such free power to the state. The Dhauliganga plant which came on stream in 2005 is the only CGS located in the state to be commissioned after Uttarakhand was formed. The Tehri project (Stage I-1000 MW) of THDC, which will also provide 12 per cent 'free power' in addition to the state's own share of 2.7 per cent is scheduled to be commissioned shortly.

The bulk of the hydro-power capacity owned by the state is accounted for by nine medium to large plants (details in Appendix A-12.2, Table A-12.2b). Five of these plants located in the Yamuna Tons basin bordering Himachal Pradesh (HP) were set-up under the 'composite' scheme designed to provide electricity to two adjacent states (in this case undivided UP and HP). The power generated from these five plants is therefore shared by Uttarakhand and HP; the plant-wise sharing formula gives HP 20/25 per cent of primary energy.

The only additional capacity in the state's share that has come on stream after formation of Uttarakhand is through two small privately promoted hydro-electric plants and by facilities categorised under 'Renewable

Energy Sources' (RES). The private plants that have come on stream are:

- Rajwakti plant of the 'Him Urja' group—4.4 MW in the Chamoli district, and
- Hanuman Ganga plant of the 'Regency Aquaelectro' group—4.95 MW in Uttarkashi district.

Renewable Energy Sources: CEA data show total capacity of 32.8 MW from RES in the state. This is made up of small and micro-hydel projects owned by UJVNL as also those promoted by the Uttarakhand Renewable Energy Development Agency (UREDA) which was constituted in July 2001 as the state nodal agency of the Central Ministry of Non-conventional Energy Sources. The UREDA plants are very small (in the capacity range of 20 KW to 500 KW) and most are designed to meet local needs on stand-alone basis in remote areas not connected to the grid. Some of these can also be linked to the grid when and where such connectivity is feasible. At present only 3 (out of total 28) UREDA micro-hydel plants are grid-connected. (More information relating to the work of this agency is given in a later paragraph).

Consumers and Per Capita Consumption

The state had a total of 10,56,949 electricity consumers on 31.3.2006. This marked an increase of 22.4 per cent in consumer numbers in the last 4 years. As the domestic and commercial consumer segments make up about 97 per cent of the total, growth is largely accounted for by new domestic and commercial connections. (Appendix A-12.2, Table A-12.2c)

The per capita consumption averaged 393.47 kWh in 2004-05, which was about 5 per cent lower than the corresponding national average of 411.04 kWh. Within the northern electricity region, Uttarakhand was better off than Uttar Pradesh, Rajasthan and J&K in this respect, but much below a state more comparable to it (in terms of size, topography and population) like Himachal Pradesh (Table 12.2). Significantly however, in the growth rate in

TABLE 12.1
Installed Generating Capacity of Uttarakhand (MW)

| As on March 31st/ Ownership-wise | Hydro | Steam | Gas | Nuclear | Renewable Energy Sources | Total |
|-------------------------------------|---------|-------|------|---------|-----------------------------|---------|
| 31-3-02 | 1049.9 | 186.6 | 69.0 | 31.1 | 0 | 1,336.6 |
| 31-5-06* | 1,132.9 | 220.6 | 69.0 | 31.1 | 32.8 | 1,486.4 |
| * Owned by state | 986.9 | 0 | 0 | 0 | 32.8 | 1,019.7 |
| * State's share of CGSs | 146.0 | 220.6 | 69.0 | 31.1 | 0 | 466.7 |

Source: Central Electricity Authority (All India Electricity Statistics, General Review and CEA Website, cea.nic.in accessed 22.6.2006).

per capita consumption, Uttarakhand at 12.35 per cent (compounded annual over the last three years) has outstripped all other states in the northern region and is far ahead of the all-India average (CAGR 4.98 per cent).

TABLE 12.2

Annual Per Capita Consumption of Electricity in the Northern Region (kWh)

| State | 2002-03 | 2003-04 | 2004-05 | 2005-06 | CAGR (per cent) |
|------------------|---------|---------|---------|---------|-----------------|
| Haryana | 580.0 | 618.98 | 658.00 | NA | 6.51 |
| Himachal Pradesh | 420.4 | 445.45 | 484.04 | NA | 7.30 |
| Jammu & Kashmir | 316.4 | 327.04 | 348.74 | NA | 4.99 |
| Punjab | 870.4 | 902.76 | 907.30 | NA | 2.10 |
| Rajasthan | 290.9 | 294.08 | 328.09 | NA | 6.20 |
| Uttar Pradesh | 187.7 | 188.83 | 202.03 | NA | 3.75 |
| Uttarakhand | 311.7 | 342.05 | 393.47 | NA | 12.35 |
| Chandigarh | 858.8 | 853.34 | 943.94 | NA | 4.84 |
| Delhi | 739.0 | 796.85 | 829.98 | NA | 5.98 |
| Northern region | 326.3 | 336.85 | 357.75 | NA | 4.71 |
| All India | 373.0 | 390.03 | 411.04 | NA | 4.98 |

Source: Central Electricity Authority (All India Electricity Statistics, General Review).

Electrified Households: According to Census 2001, percentage of households with electricity connections was 60.3 per cent. While nearly 91 per cent of urban households had access to electric connections, the share was a low 50.4 per cent for rural households. (Table 12.3).

TABLE 12.3

Electrified Households in Uttarakhand (As Per 2001 Census)

| Category | Total Households | Electrified Households | Percentage |
|----------|------------------|------------------------|------------|
| Rural | 11,96,157 | 6,02,255 | 50.4 |
| Urban | 3,90,164 | 3,54,740 | 90.9 |
| Total | 15,86,321 | 9,56,995 | 60.3 |

Source: Census of India 2001, Tables on Houses, Household Amenities & Assets.

In this respect also, the newly formed state has made big strides. While later figures on electrified households is not available, it is seen from the sector consumer data referenced earlier that between end-March 2002 and end March 2006, the number of domestic connections increased by 1,74,893. On this scale of increase, it is calculated that about 72 per cent of the households in Uttarakhand are currently provided with electric connections. That this increase is accompanied by a

reduction in average consumption in this category (Table 12.4) would reflect the impact of a large rural share in the number of new household connections.

TABLE 12.4

Trends in Average Electricity Consumption: Main Consumer Categories ('000 kWh)

| Year | Domestic | Commercial | Industrial | Agriculture |
|---------|----------|------------|------------|-------------|
| 31-3-02 | 1.32 | 2.69 | 38.34 | 25.83 |
| 31-3-03 | 1.44 | 3.09 | 67.00 | 20.95 |
| 31-3-04 | 1.20 | 4.63 | 78.45 | 17.37 |
| 31-3-05 | 1.20 | 5.66 | 128.68 | 26.38 |
| 31-3-06 | 1.13 | 4.96 | 179.18 | 21.36 |

Source: Central Electricity Authority: All India Electricity Statistics, General Review, Central Electricity Authority Website (cea.nic.in); 2005-06 data from Uttarakhand Power Corporation Limited (Commercial Statement CS-3 March 2006) Website: accessed 26.6.06.

On the other hand, there is explosive growth in the average consumption in 'industry' in the last two years. This is explained by the spurt in 'HT' industrial connections, reasons for which are discussed in a following paragraph.

Metering: Along with the 'domestic' category, the 'commercial' and 'agricultural' segments have also registered a decline in average consumption in 2005-06. This is the apparent result of the drive in the last two years to eliminate 'un-metered' supply in all consumer segments. Whereas previously all of the private tubewells and sections of the 'domestic' 'commercial' and even the 'public lighting' segments were availing of un-metered supply, by March 2006, this practice had been completely eliminated in the 'commercial' segment and considerably reduced in 'domestic' and 'public lighting'. As of March 2006, the share of un-metered supply in the three affected segments was as below:

TABLE 12.5

Status of Un-metered Supply as of end March 2006

| Consumer Segment | Total Connections | Un-metered Connections | Per cent Share |
|-----------------------|-------------------|------------------------|----------------|
| Domestic | 9,20,930 | 34,060 | 3.7 |
| Agriculture (Private) | 18,277 | 11,889 | 65.0 |
| Public Lighting | 217 | 4 | 1.8 |

Source: Uttarakhand Power Corporation Limited (Commercial Statement CS-3 March 2006) Website: accessed 26.6.06.

Un-metered supply is now a significant factor only in respect of agricultural consumers in the 'private tubewells' category.

Shortages

Data available for the last four years show that there is no improvement in the situation of electricity shortages (Tables 12.6 and 12.7). Of the two measures of shortages, the position is almost unchanged in the case of energy demand (shortage here is in the 2 to 3 per cent range, much better than the corresponding figures for the northern electricity region of 10.7 in 2005-06), but the shortfall in 'peak' power requirement in Uttarakhand aggravated in 2005-06 to 13.5 per cent (northern region—10.5 per cent, all India—12.3 per cent).

TABLE 12.6
Requirement and Availability of Energy in Uttarakhand

| Year | Requirement (MU) | Availability (MU) | Shortage (MU) | Shortage (per cent) |
|--------------------|------------------|-------------------|---------------|---------------------|
| 2002-03 | 3,774 | 3,670 | -104 | -2.8 |
| 2003-04 | 4,197 | 4,108 | -89 | -2.1 |
| 2004-05 | 4,628 | 4,470 | -158 | -3.4 |
| 2005-06 | 5,155 | 5,008 | -147 | -2.9 |
| N. Region(2005-06) | 188,794 | 168,611 | - 20,183 | - 10.7 |
| All India(2005-06) | 631,757 | 578,819 | - 52,938 | - 8.4 |

Source: Central Electricity Authority Website – 'Power Scenario' (cea.nic.in accessed on 22.6.2006).

TABLE 12.7
Shortages in Peak Energy Demand in Uttarakhand

| Year | Peak Demand (MW) | Peak Met (MW) | Shortage (MW) | Shortage (Per cent) |
|--------------------|------------------|---------------|---------------|---------------------|
| 2002-03 | 771 | 705 | -66 | -8.6 |
| 2003-04 | 777 | 737 | -40 | -5.1 |
| 2004-05 | 846 | 794 | -52 | -6.1 |
| 2005-06 | 991 | 857 | -134 | -13.5 |
| N. Region(2005-06) | 28,154 | 25,200 | - 2,954 | 10.5 |
| All India(2005-06) | 93,255 | 81,792 | 11,463 | 12.3 |

Source: Central Electricity Authority Website – 'Power Scenario' (cea.nic.in accessed on 22.6.2006).

2.2 Efficiency Parameters

Transmission and Distribution Losses

As noted above, power supply to sections of consumers in the domestic, commercial, agricultural and public lighting categories were un-metered over the period under review. Because data on such power consumption is based on estimates, the reported level of T&D losses involves a degree of approximation. The figures reproduced in Table 12.8 below are extracted from the Tariff petitions filed by UPCL. In their Tariff Orders on these petitions, UERC has found the estimated sales to

un-metered categories to be inflated through unrealistically high usage levels assumed in the estimations. Consequently, the Commission has concluded that the actual T&D losses are much higher than reported by UPCL.

TABLE 12.8
Efficiency Parameters: T&D Losses

| | 2001-02 | 2002-03 | 2003-04 | 2004-05 |
|------------------------------------|---------|---------|---------|---------|
| Total power purchase (MU) | 3687.79 | 3655.7 | 3989.1 | 4375 |
| Sale of power (MU) | 2229.10 | 2428.6 | 2628 | 3094 |
| T&D loss (per cent)- UPCL estimate | 39.55 | 33.57 | 30.9 | 29.28 |

Source: UPCL Tariff Petitions quoted in UERC Tariff Orders 2003-04 and 2005-06.

The two estimates vary widely: as against the UPCL's estimate of 33.57 per cent of T&D losses for 2002-03, UERC arrived at a figure of 46.17 per cent for that year. The Commission also set UPCL a loss reduction target of 4 per cent annually, for the three years 2003-2006.

Apart from the factor of inflated estimates of usage by un-metered consumers, a further factor lowering the UPCL figures of T&D losses is because the figures exclude some 4 per cent of its losses which it contends (in its submissions to UERC) is occurring outside the state system in the transmission of energy by supply lines of the central generating stations. Incidentally, it is difficult to accept that this level of technical losses can occur in the HT transmission lines even before the power supply reaches the state. Efficient level of technical losses in T&D is widely pegged at about 8 per cent and most of it occurs in the stepping down and the LT distribution system.

Data on T&D losses of different states is regularly tracked by the Central Electricity Authority (CEA); the relevant figures for the Northern region for 2004-05 are given at Appendix A-12.2, Table A-12.2d. This shows Uttarakhand's performance (39.3 per cent loss) to be poorer than the northern region average (36.2 per cent). For comparison, figures for two better-performing states in the southern region: Andhra Pradesh (23.96 per cent) and Tamil Nadu (19.28 per cent) are presented in the same Table.

UPCL's latest tariff petition for 2006-07 (under consideration by UERC as of June 2006) states that based on the actual data of power input and category-wise sales for first six months of the year, the level of T&D loss for that year is calculated to be 35.93 per cent. This marks an

acknowledgement of underestimation in previous years, but is still considerably lower than the Commission's finding. In the petition, UPCL has also submitted that the annual 4 per cent loss reduction target set for it by UERC is too high and has indicated the achievable reduction target to be 1.3-2.0 per cent per annum. It has further informed the Commission that it expected all consumers to be brought into the 'metered' category by 31.3.06 (which would lend more authenticity to the calculations) and on that ground has petitioned the Commission "that the distribution loss for FY-06 may be recognised as 35.93 per cent and an achievable loss reduction trajectory for the future years may be specified considering this starting level."

UERC's ruling on this issue will be known when the Tariff Order for 2006-07 is notified.

For the purpose of present analysis, the figures given out by CEA would be considered, which has the merit of uniformity in approach *vis-à-vis* other states. It may also be noted at this point that while UPCL has made much headway in the area of reducing un-metered connections (recall Table 12.5), the promise to bring all consumers into the metered fold remained to be fulfilled as of March 2006.

Collection Efficiency

UPCL inherited a huge backlog of 'receivables' dating from before the formation of the state. Efforts to clear these arrears are continuing. But focusing for the moment on collection efficiency over the period UPCL has been in full charge, the following figures point to a scenario that is a matter for concern:

| Year | 2001-02* | 2002-03 | 2003-04 | 2004-05** | Total |
|-------------------------------------------------|----------------|----------------|----------------|----------------|----------------|
| Opening balance at the beginning of the year | 0.00 | 52.81 | 222.38 | 504.17 | 0.00 |
| Due during the year | 257.48 | 710.94 | 846.81 | 454.67 | 2269.90 |
| Total dues | 257.48 | 763.75 | 1069.19 | 958.84 | 2269.90 |
| Collections during the year (including arrears) | 204.67 | 541.37 | 562.02 | 320.26 | 1628.32 |
| Collections as percentage of total dues | 79.49 per cent | 70.88 per cent | 52.85 per cent | 33.40 per cent | 71.74 per cent |

Note: * For part year – 9.11.2001 to 31.3.2002 **For part of the year only (up to 31.10.2004).

Source: UERC Tariff Order 2005-06.

A notable feature regarding outstanding dues is the poor collection rate from government agencies. While the

percentage of revenue realisation from all non-government consumers was 90 per cent of the assessment in 2001-02 and 87 per cent in 2002-03, the corresponding percentage for government consumers was as low as 8 per cent and 9 per cent for the respective years. (Reference: UERC Tariff Order 2003-04, page 49). As shown in the above Table 12.9, the efficiency levels have declined in the subsequent years and this decline has affected both government and non-government consumers. (Reference: UERC Tariff Order 2005-06, page 101). Among government consumers, largest billing and outstanding dues are against 'public water works'.

A related issue is that of delays in billing itself. While this has not been quantified, UPCL has acknowledged the incidence of such delays and has apprised UERC of the corrective steps that it is taking. These measures include the following innovations:

- Trying out 'best practices' of other utilities in select divisions and sub-divisions on 'pilot' basis,
- 'Online' billing and 'outsourcing' of commercial work in select areas,
- Bill collection through designated bank branches, bill distribution and collection through postal employees in remote areas, and
- Metre-reading and bill distribution in rural areas through Women's Self-employment Groups.

(Reference: UPCL's Tariff Petition for 2006-07, pages 8-9)

2.3 Power Supply Position and Cost of Power

Because of the concentration of undivided UP's hydro-power stations in the area that now forms Uttarakhand, there is a dramatic improvement in the power availability after the state's formation. While supply was made for restricted hours only under the pre-Uttarakhand dispensation, during 2001-02 it improved on average to 22 hours or more per day, barring some rural areas where it was around 20 hrs. (Reference: UERC Tariff Order 2003-04, pages 22 and 57).

However, because of the acute demand-supply position in the winter months of 2004-05, UPCL did have to resort to limited rostering to curtail demand (refer para 3.2.9 of Tariff Order for 2005-06, page 32). From the figures of 'peak-power' deficit that we noted earlier (Table 12.7, para 2.1), it is apparent that the position worsened in 2005-06. (The explosive growth in demand in the 'industry' segment is the obvious reason; this will be discussed further in a following paragraph).

With the formation of Uttarakhand, the cost of power for arranging the supply also dropped because the low cost hydro-power from stations, several of them built decades ago, met the bulk of the demand. This was partly fortuitous, and in part thanks to regulatory intervention that nullified an effort by Uttarakhand's newly-formed power entities—UPCL and UJVNL—to jack up the purchase price of power generated by UJVNL plants. In its first Tariff Order, UERC ruled that the price revision (which sought to set the basic price at a mutually agreed rate of 55 paise per unit) overlooked an agreement between UPJVNL and UPPCL—of which the respective Uttarakhand undertakings were successor entities—that continued to be valid and legally binding. Under this agreement, the generating undertaking was entitled only to the basic price of 37 paise per unit for the power its stations supplied to UPCL in year 2001-02 (refer UERC Tariff Order 2003-04, page 105) and this price could be revised only with the approval of the regulator. In December 2004, after considering fresh submissions by UJVNL, the Commission reviewed the rate and reset it still lower at 29.68 paise per unit. (Refer page 23 of Tariff Order 2005-06).

Although UPCL has been meeting the subsequent increase in demand from other costlier sources (chiefly Central Generating Stations) supply from UJVNL's stations continue to meet the larger share, accounting for 57 per cent of the total power requirement of UPCL in 2005-06. This has kept UPCL's average cost of power (from all sources and inclusive of transmission costs) in that year to a low INR 1.11p per unit. (Calculated from UERC Tariff Order 2005-06, page 73). The comparable cost incurred by states of AP, Haryana, Karnataka and UP is in the range of INR 2.00 per unit.

Seasonal Variations: While the power supply position has improved with the formation of the state, the demand and availability pattern has large seasonal variations. At present, the state is in a position to meet the demand in the summer months largely from its own sources and is able to spare part of its share from CGSs for export to other states through 'trading' via intermediate agencies like Power Trading Corporation (PTC). In winter months, however, it needs to draw its full central share. UPCL has also entered into a direct arrangement with the Punjab State Electricity Board to 'bank' its surplus power with PSEB which helps to meet the latter's high summer demand. The 'banked' power is returned (with an extra 5 per cent by way of premium) to UPCL to meet the state's demand in the power deficit winter months.

2.4 Power Sector Restructuring

As noted, two new corporate entities—Uttarakhand Power Corporation Limited (UPCL) and Uttarakhand Jal Vidyut Nigam Limited (UJVNL)—were formed within the first year of formation of the state. Initially, UPCL had responsibility for both transmission as well as distribution. The 'unbundling' process was carried further when the government of Uttarakhand decided to create an independent 'Power Transmission Corporation of Uttarakhand Ltd.' (PTCUL), for speedy timely evacuation of power from the large hydro-electric projects planned and under implementation. This would allow UPCL to concentrate on the distribution segment. PTCUL, functioning with effect from 01.06.2004, is expected to facilitate setting up of integrated power evacuation system to various pooling points in and near the boundaries of Uttarakhand on its own.

While private investment is being promoted in the generation segment (see para 2.6 below), the state has not, so far, initiated any schemes for private participation in the transmission or distribution segments.

2.5 Regulation

In the period of over three and a half years that the UERC has been functional, the Commission has issued two Tariff Orders for retail sale of electricity—the second on 25.4.05 for FY 2004-05 and 2005-06 (combined)—and also set the tariff applicable for electricity transmission within the state. On the generation pricing side, UERC has ruled on tariffs relating to the plants owned by UJVNL, the grid-connected micro-hydel units of UREDA and the IPPs that are operational in the state.

Before turning to the tariff issues proper, it may be noted that UERC has generally been very critical of lack of promptness in the tariff filings by UPCL as well as UJVNL. In the case of the second Tariff Order of UPCL (2005-06), the Commission had to initiate the Tariff proceedings *suo moto* because despite several extensions UPCL could not make its submissions within the allotted time. Because of the delays, the Tariff Order for 2003-04 could take effect only on 20.9.03, annual Tariff Order for 2004-05 was not issued at all and the rates for previous year continued to apply till the 2005-06 rates were enforced on 1.4.05.

UERC has also found the Aggregate Revenue Requirements (ARR) presented by UPCL in support of their tariff applications for successive years to be inflated and has found it necessary to drastically reduce the same

for each of the three years. As regards UJVNL, all the orders issued by UERC to date have been through proceedings initiated *suo moto* as the tariff petitions were not filed in time or were incomplete.

Tariff Trends

Retail tariffs for 2002-03, the first full year that UPCL was fully functional, were notified by it at the then prevailing rates of UP system, after obtaining approval from the government (not cleared by UERC). Through its first Tariff Order for 2003-04, UERC recast the existing 'domestic' tariffs by: (a) introducing 'lifeline' rates for consumers below the poverty line and with consumption below 50 units monthly, and (b) replacing the 'fixed' charges component of the tariff (that was being levied in addition to the 'energy' charge) by slabs of 'minimum' charges (adjusted against the energy charge). In regard to other categories, UERC attempted to bring the tariffs closer to the average cost of supply (for the whole system). The most significant impact of this approach and the scaling down of UPCL's cost estimates that we referred to above was a substantial reduction in the tariffs for 'industrial' consumers, both L.T and H.T. (Details in Appendix A-12.2, Table A-12.2e)

Cross Subsidy: The Commission has not quantified (in the 2003-04 Tariff Order or subsequently) the element of subsidy that the tariffs provide to segments of the domestic consumers and to private tubewells. It has not also recommended that the government should compensate the service-provider partially or in full on that account. The attempt, instead, has been to moderate the 'cross subsidy' regime while meeting the full costs from within the sector revenues.

Tariff Reforms: Through its first Tariff Order (2003-04), UERC made 'Time-of-Day' tariffs applicable to HT industrial consumers. These rates provided for three charging slabs for energy drawn at different times of the day—a low 'off peak rate' for night hours, a median rate for most of the daytime and a high 'peak' rate for the load-intensive morning and evening hours. Through its second Tariff Order, the rates, suitably adjusted for latest available position of peak-hours, were made applicable also to institutions (hospitals, educational etc.), other non-domestic consumers with connected load of above 25 KW and LT industrial consumers above the same connected load threshold.

Other reforms included the moderation of the 'minimum' charges levied on seasonal industries and the option given to agricultural consumers to clear their bills either monthly as normal or in two half-yearly instalments.

Power Intensive Units: One issue that arose in the tariff area has wider economic impact and deserves note. The reduction in 'industrial' tariffs (coupled with the improved supply position and number of other concessions/incentives being offered in the state) led to a spurt in demand for new industrial connections. This included several cases of intended relocation of power-intensive units (induction/arc furnaces, steel re-rolling mills etc.) from neighbouring states. As UPCL found it difficult to cope with this rush of demand, it approached the Commission with a mid-term petition (31.5.2004) seeking a separate tariff schedule for 'Power Intensive Units' (within the 'HT Industry' category).

At the time of this petition, UPCL—which had a contracted HT Industry demand of 59.7 MVA as of March 2004—had already sanctioned an additional load of about 30 MVA to be released in the near future and applications were pending for release of more than 210 MVA of additional load in the system, marking a jump of a massive 400 per cent in the load of HT industry in the pipeline.

Even while granting (August 2004) the request for separating Power Intensive Units (PIU) into a tariff sub-category, UERC scaled down the UPCL's tariff proposals in this regard. The newly-introduced rates were later amalgamated into the Tariff Order for 2005-06 and are prevailing now. Current average realisation from 'industry' segment as a whole is INR 2.83 paise per unit (INR 3.35 paise for PIUs), which makes the Uttarakhand tariffs for this segment 20 to 30 per cent lower than that of most other states and makes the state an attractive destination for investments in industries. This would explain the explosive growth in HT industrial consumption in the last two years that is noted earlier; as of March 2006, the connected load of the HT category had reached approximately 280 MVA. Another measure of the growth in industrial load is that against UPCL's own forecast estimated sale of 922 million units to total industry in 2005-06 (UPCL's tariff petition for 2006-07 page 14), the year actually registered a sale of 1230.58 million units (Appendix A-12.2, Table A-12.2a), outstripping even the projected sale for year 2006-07 (1089 MU).

Issues in Disputes: Certain of UERC's directions through the Tariff Orders have been contested by UPCL as well as UJVNL through appeals filed in the Uttarakhand High Court. While the appeal filed by UPCL was subsequently withdrawn by it following certain directions by the state government, UJVNL's writ petition contending that the basic price set for power generated by it (of 29.68 paise per unit vide para 2.3 above) denied it admissible return

on equity, full depreciation etc., has been referred by the High Court (with the consent of all parties concerned) to the Appellate Tribunal for Electricity set up under the central Electricity Act, 2003 and remains to be taken up for disposal.

UPCL is involved in a disputed issue that carries fairly large financial implications. Till UERC's first Tariff Order was enforced (20.09.2003), retail tariffs prevalent in undivided UP continued to be charged with some marginal adjustment. Since on separation from UP, the cost of power purchased for distribution within the state got reduced considerably, non-reduction of consumer tariffs gave UPCL substantial financial benefits till 20.09.2003. The point of contention relates to directions by the Commission that UPCL should identify and set apart 'surplus' earnings that accrued to it over this period through the overcharges on the consumers.

Apart from the higher than justified retail rates, there were also other elements in the revenue expenses claimed by UPCL for that period (especially in the area of interest charges) which UERC found to be inflated and inadmissible. The Commission has stuck to the view that the resulting 'surplus'—computed by it at INR 614.23 crore—needed to be separated out and utilised for specified purposes. In its second Tariff Order UERC has directed UPCL to set apart a small part (INR 5 crore) of the 'surplus' for improving the quality of service to consumers and a larger sum of INR 127.10 crore to be given as an interest-free loan to the GPF trust of UPCL and PTCUL employees. (Refer UERC Tariff Order for 2005-06, pages 106-108 and 128).

On the other hand, UPCL has all along held that it had no such savings to set apart. A complicating factor is that auditing of UPCL's accounts was over 2 years in arrears. Further, as per the recently audited accounts for 2003-04, UPCL claims that there are 'accumulated losses' of INR 90 crore. To resolve the disputed issue, UERC engaged a reputed firm of auditors to carry out a special audit of UPCL accounts for 3 years to identify the quantum of surplus earnings. The firm has submitted the report of the audit (24.4.2006) which finds that surplus earnings of the order of INR 755.53 crore have indeed accrued till 31.3.2005. The total assessed amount includes estimated surplus of earnings over expenses of INR 357.16 crore over 2003-04 and 2004-05 (i.e, including the period the retail tariffs fixed by UERC became applicable). The audit report is currently under consideration of UERC which is to pass orders on UPCL's Tariff petition for 2006-07.

The total surplus earnings identified by the 'Special Audit' are nearly equal to the total revenues of UPCL in 2004-05 (INR 790 crore); so further developments in this matter will have crucial bearing on the finances of UPCL as well as Uttarakhand's power sector.

Open Access: Electricity Act 2003 mandates that the 'open access' regime that would permit the larger consumers to access supplier of their choice should be introduced in time-bound manner. UERC has issued the needed guidelines that allow 'open access' to consumers with connected load of 5 MW or more effective 31.12.2005 and to consumers with load of 1 to 5 MW with effect from 31.12.2008.

2.6 Hydro Electric Potential

Uttarakhand has abundant sources of hydro power. According to latest authorised estimates, the state has a hydro-electric potential of 18,175 MW, which is 12.2 per cent of the total for the country (148,701 MW). Plants already set up by the state and central agencies (1,352 MW) make for just 7.4 per cent of the state's potential. A further capacity of 3,125 MW (17.2 per cent of potential) is being developed through plants either under construction (2,104 MW) or those for which clearances have been obtained and developing agencies identified, but are to be taken up for construction (1,021 MW). (Details in Annex. A-12.2, Table A-12.2f). Of the first category, 2 projects are due for commissioning in the current FY—Tehri Phase I (1,000 MW of THDC), Maneri Bhali II (304 MW of UJVNL)—and one IPP (Vishnu Prayag - 400 MW of the Jai Prakash group) that is now expected to be commissioned by the mid-2007. The fourth project in this category is the Koteswar plant of THDC (400 MW); in this case, civil construction is in progress and equipment contracts have been awarded which makes it likely that the project will be on stream by middle of the Eleventh Plan. Considering the credentials of the agencies involved in the latter set of projects on which work is yet to commence—NTPC Hydro (691 MW) and the Tata Power Group (330 MW)—there is good prospect of these being commissioned in the Eleventh and Twelfth Plans.

Because of uneven natural distribution of resources, inter-system comparisons on performance in exploiting hydro power could be unfair. But it happens to be the case that Uttarakhand's neighbour state of Himachal Pradesh also has an estimated hydro potential in the same range as Uttarakhand. Table 12.10 gives a comparison of hydro-power development in the two states.

TABLE 12.10
Hydro-power Resources: Uttarakhand and Himachal Pradesh Compared

| Description | Uttarakhand* | | Himachal Pradesh | |
|-------------------------------------------------|--------------|----------|------------------|----------|
| | (MW) | Per cent | (MW) | Per cent |
| Identified capacity/ share of country total | 18,175 | 12.2 | 18,820 | 12.7 |
| Capacity already exploited | 3056 | 16.81 | 6085.5 | 32.34 |
| Capacity under implementation | 1850 | 10.18 | 4435 | 23.57 |
| Capacity developed plus under implementation | 4906.1 | 26.99 | 10520.5 | 55.9 |
| Remaining to be developed | 13,269 | 73.01 | 8299.6 | 44.10 |

Note: *Uttarakhand data updated with latest information available from state sources.
Source: CEA, Status of Hydro Electric Potential Development, as on 30.06.2008.

Taking the status of hydro-electric potential into account, which is in the process of being developed, a better picture could emerge. According to details given in a presentation by PTCUL, the Uttarakhand government has already allocated eight projects adding up to 3,448 MW of additional capacity for execution to THDC (960 MW), NHPC (1,420 MW), NTPC Hydro (520 MW) and UJVNL (548 MW). (Listed at Appendix A-12.2, Table A-12.2g). It would be premature to categorise these projects as 'under implementation'. It needs to be mentioned here that three of these projects located in the Yamuna basin are multi-purpose ones (Kishau-600 MW, Lakhwar- 300 MW and Vyasi-120 MW) that involve issues of cost-sharing which could delay their implementation.

Uttarakhand government has also allocated 30 medium to small hydro projects of capacity of up to 70 MW to UJVNL and ten selected private agencies for execution. The total capacity of these projects adds up to 646.15 MW (Appendix A-12.2, Table A-12.2h). In addition there are some 60 small hydro projects (capacity ranging from 2

MW to 21 MW) that have been identified for development, majority of them also allotted to private agencies for implementation. These together make for another 400 MW approximately. The private agencies with whom MoUs or draft agreements have been initiated, number over a dozen, indicative of strong private sector interest in the field. Most of the projects figuring in Tables A-12.2g and A-12.2h have been awarded through a bidding process, as laid down in the state's policy for hydro power development.

Taking all of the above into account, the present status of hydro-power development in Uttarakhand is tabulated in Table 12.11.

It appears, therefore, that approximately half of the estimated hydro-power potential of the state could become sources of generated power in the short to medium term (10 years).

Appendix A-12.2a indicates CEA's role in developing the 50,000 MW hydro-electric initiative. Under this initiative, Preliminary Feasibility Reports (PFRs) have been prepared for 162 schemes totaling 47,930 MW, of which, 77 'low-tariff' schemes (indicated tariff of less than INR 2.50p per Kwh) with a total capacity of 33,951 MW have been selected for preparation of detailed project reports/implementation. Uttarakhand accounts for 28 of these 'low-tariff' projects aggregating to total 3,559 MW of installed capacity. Three of these schemes (aggregate capacity-735 MW) have environmental or other implications that could delay implementation. According to information put out by CEA, one scheme (Urthing Sobla - 280 MW) has already been allotted by the State to an IPP for implementation. The remaining 24 schemes (ranging in capacity from 30 MW to 330 MW) could also be targeted for execution within a ten-year time frame. This, together with the projects figuring in Table 12.11 would bring the exploitation share of the state's identified

TABLE 12.11
Status of Hydro-power Development in Uttarakhand

| Description | Capacity (MW) | Remarks |
|-------------------------------------------|---------------|---------------------------------------------------------------------------------|
| Installed, operational | 1,352.00 | Includes 400 MW of NHPC, rest UJVNL |
| Under implementation | 3,125.00 | 2,725 MW will be on stream by 2007; 400 MW likely 2008-09 |
| Allotted for execution (large hydro) | 3,448.00 | Includes 1,020 MW in 'multi-purpose' projects. |
| Allotted for execution (small and medium) | 646.15 | To be implemented by UJVNL and several private agencies |
| Small and micro-hydel | 400.00 | Made up of about 60 projects; half of them allotted to private agencies |
| Total | 8,971.15 | Makes for about 49.4 per cent of total estimated potential of state (18,175 MW) |

Source: Compilation based on data from CEA web-site, presentation by PTCUL and information made available by Planning Department, Uttarakhand (Annual Plans) 2006-07.

hydro-power resources to about 65 per cent. The remainder is yet to reach the drawing board and hence can be seen only as a long-term prospect.

Policy for Private Participation

The policy that the Uttarakhand government has laid down for hydro power development allows ample scope for private participation. The policy regime differentiates between small (installed capacity less than 25 MW), medium (25 MW to 100 MW) and large (above 100 MW) schemes. International competitive bidding will be the norm for the large plants for which a 45 year concession period is stipulated. The small and medium ones will also be awarded through bidding; the concessions here will be for 40 and 45 years respectively. The concessions are of the BOOT variety: unless the concession is extended on mutually agreed terms, the projects will revert to the government at end of the period. In addition to private promoters, non-Uttarakhand government entities, Central and state PSUs and joint venture undertakings are also allowed to bid. Schemes for which acceptable bids are not received will be awarded to the state undertaking (UJVNL).

A comparative summary of the main features of the policy is given in Appendix A-12.2, Table A-12.2i. Here three key provisions shall be touched upon.

Award Criteria: This is a financial premium to be paid by the promoter up front. A minimum threshold level is prescribed (INR 5 Lakhs per MW for the large and medium projects, Rs. 1 Lakh per MW for small ones) and the highest bid by a pre-qualified bidder gets the project. Pre-qualification is based on past experience and financial capability.

Time-bound Project Development: Strict time-lines are prescribed for financial closure and project execution. The periods count from the date all necessary clearances are obtained.

Sale Options and Pricing: There are differences in the energy sale options for the three categories. The common points are full freedom to sell outside the state, and no binding commitment from either (selling or buying) side to sell to UPCL. If such sale is agreed upon mutually, the price will be set by the regulator.

2.7 Non-conventional Energy

Because of the topography of the state and the dispersal of population in remote and difficult to access areas, non-conventional energy sources have an important role in the state. As noted earlier, 32.8 MW of installed

capacity has already been provided through this source and a large shelf of micro-hydel projects have been identified for exploitation. UREDA, the agency constituted after the formation of Uttarakhand state accounts for 4.02 MW of installed micro-hydel power capacity which, together with 2.78 MW of power capacity provided by the same agency through solar photo-voltaic cells has served to electrify 558 villages in remote locations. As a general principle, all hydro power schemes of capacity less than 1 MW are allotted to UREDA to develop.

On account of being located in areas/villages at considerable distances from the state grid network, most of the hydro-electric schemes of UREDA and all of its solar-powered facilities have been operating in island mode with no grid connection. However, with the expansion of the state grid network, it has become possible for some of the remote hydel schemes of UREDA to be connected to the state grid for sale of surplus energy. This arrangement significantly improves the asset utilisation and economics of operations of these schemes, while also providing energy to the grid to meet its growing needs. The arrangement also brings considerable reliability of supply to the rural consumers in the event of failure of the decentralised generation unit. They also afford the opportunity for generating additional revenues through sale of surplus energy to the grid. For improving access to renewable sources of energy, it is suggested that small decentralised generating plants (based on hydro or biomass) feeding local grids should be promoted in the state.

UREDA has a wide range of activities in other areas of non-conventional energy like solar packs and biogas. The following Table 12.2 captures its recent profile.

TABLE 12.12
UREDA Activities

| Description | Status |
|-----------------------------------------|--------------------------------------------|
| Number of electrified villages/tokes | 754 [Small hydro (240) Solar energy (514)] |
| Small hydro plants | 4.02 MW (Combined capacity) |
| Solar photovoltaic | 2.78 MW (Combined capacity) |
| Solar domestic light plants distributed | 36,729 numbers |
| Solar lanterns distributed | 29,220 numbers |
| Capacity of solar water heater plants | 79,900 Litres per day |
| Solar cookers | 7,571 numbers |
| Biogas plants | 94 (1160 cubic meter) |

Source: UREDA Tariff Petition filed September 2005 before UERC for fixing tariff for the Bhikuriyagad Small Hydel project.

2.8 Tenth Five Year Plan

Even while part of erstwhile Uttar Pradesh state, the hill areas now constituting Uttarakhand were treated as a separate unit for ‘planning and development’ by designating a “Sub-Plan” that gave due weightage to problems peculiar to the hill areas. But this arrangement had its limitations. With the formation of the new state, a more focused planning exercise that takes note of the old linkages between these areas has been taken up. This is reflected in the Tenth Five Year Plan proposals relating to the power sector.

The initial draft of the state’s Tenth Plan had earmarked an outlay of INR 2305.41 crore for the energy sector, which was subsequently scaled down to INR 1940.0 crore. This revised figure makes for 21.6 per cent share of the state’s total Tenth Plan outlay of INR 9000 crore. According to the draft Annual Plan for 2006-07, the distribution of the energy sector allotment and its utilisation so far is as tabulated below:

The emphasis in funds utilisation in the first three years of the Plan was on the ‘district’ component that covers principally the 11 KV T&D works and rural electrification. In the ‘state’ component of the Plan, funds were earmarked for dedicated high voltage transmission lines for major projects, power evacuation schemes (132/33 KV) linked to medium/small hydro projects under implementation and for the ‘renewable energy’ component.

Transmission

With the state of Uttarakhand striving to become one of the exporting states of power, it is essential to establish highly reliable system of power evaluation with ultimate capacity in perspective. The state transmission system is being augmented and strengthened through financing

obtained from the Rural Electrification Corporation (REC) and NABARD. The state has drawn up a river-valley wise integrated evacuation system divided into two phases for implementation. Phase I covering the Yamuna, Bhagirathi and Alakhnanda valley has been proposed for ADB funding. Phase II (to be taken up later) will cover the Sarda valley.

Strengthening Distribution

The details of the Accelerated Power Development and Reform Programme (APDRP) that is designed to remove the shortcomings on the distribution side are given in Appendix A-12.1. Uttarakhand’s performance can be reviewed in each of the two distinct components of this centrally sponsored programme—the investment component and the incentive component linked to performance parameters, principally in loss reduction.

In regard to investments on APDRP projects, Uttarakhand, as a ‘special category’ state is entitled to full project funding, 90 per cent as ‘grant’ and 10 per cent as loan. The national financing ceiling of this component is INR 20,000 crore, of which INR 19,180 crore had been sanctioned by March 2006 and approximately 50 per cent of it utilised by participant states. Uttarakhand’s share is INR 310.08 crore (made up of six geographically identified schemes, sanctioned in November 2002) and work completion till March 2006 at 71 per cent is better than the national figure. Among ‘special category states’, Uttarakhand ranks second in performance after Sikkim (82 per cent). The state’s programme broadly envisages upgradation and strengthening of HT system network covering 7 electricity circles. As per the recent data available by UPCL, 91 per cent cumulative progress has been achieved so far whereas 100 per cent fund utilisation of INR 282 crore is done by Feb 2008.²

TABLE 12.13
Tenth Plan of Uttarakhand: Status of Energy Sector (Amounts: INR Crore)

| Category | Total Outlay | Spent 2002-05 | RE 2005-06 | Agreed Outlay 2006-07 | Total Likely Spending | |
|-----------------------|--------------|---------------|------------|--------------------------|-----------------------|-----------|
| | | | | | Amount | Per cent* |
| UPCL and transmission | 1400.00 | 614.33 | 304.41 | 276.49 | 1195.23 | 85.37 |
| Renewable energy | 90.00 | 32.10 | 15.88 | 12.79 | 60.77 | 67.52 |
| Jal Vidyut Nigam | 450.00 | | 107.00 | 127.05 | 234.05 | 52.01 |
| Electricity - general | | | | 33.20 | 33.20 | — |
| Total | 1940.00 | 646.43 | 427.29 | 449.53 | 1523.25 | 78.52 |

Note: * To total outlay.

Source: Uttarakhand Planning Department – Draft Annual Plan 2006-07.

2. However, estimates of Planning Commission show the actual utilisation to be around 74 per cent only till March 2008.

On the 'incentives' side of the APDRP, however, Uttarakhand does not as yet figure in the beneficiaries of the performance-linked incentive payments. Out of INR 20,000 crore also set apart for this component, total releases were INR 1,536.64 crore till March 2006. (Details in Appendix 12.2, Table A-12.2j). Gujarat (INR 384.45 crore), West Bengal (INR 375.76 crore) and Andhra Pradesh (INR 265.11 crore) lead the short list of eight states that have performed well enough to draw this incentive. It would seem that the physical implementation of schemes to strengthen the T&D system is yet to translate into technical and commercial gains for Uttarakhand.

Some of the initiatives include the following:

1. Uttarakhand has already started consumer billing using hand held spot billing machines.
2. The state had completed 100 per cent feeder metering in 2004-05 while more than 90 per cent consumer metering by the same period.
3. A huge part of T&D losses is also on account of theft. Uttarakhand detected 109 such cases in 2004-2005 and has taken steps to prevent such thefts.
4. The consumer indexing has been initiated.

Village Electrification

Out of 15,761 villages in Uttarakhand, 13,998 villages have been electrified through grid and 604 villages have been electrified by UREDA through non-conventional energy sources, as on March 31, 2005. This left about 1,159 villages and 18,000 *tokes* that were yet to be electrified in the state as on that date. Of this number, 418 villages were targeted for electrification in 2005-06 by funding through the Rajeev Gandhi Gram Vidyutikaran Yojana (RGGVY) and through UREDA schemes. UPCL has plans to connect all remaining villages and hamlets by 31st March 2007. (Source: UPCL Website—<http://www.upcl.org/ruralElectrification.htm> accessed 28.6.06)

The RGGVY guidelines provide for the setting up of a suitable franchisee mechanism for sustainable rural supply. Action remains to be taken to implement this concept.

2.9 Other Issues

Free Power

As noted earlier, Uttarakhand gets the benefit of free power at 12 per cent of generation of CGSs located in the state. At present such free power is drawn from the two NHPC plants with total capacity of 400 MW. Within the next few months, such benefits will start accruing also

from the Tehri Stage I project of THDC (1000 MW).

While the power is fed into the UPCL system, the financial gains therefrom do not accrue to it but are passed on to the state government. The arrangement is that UPCL pays for this power at the average rate of power purchased by it from CGSs.

Profit from 'Traded' Energy

The para 2.3 above referred to the seasonal variations in power availability and the opportunity this gave to 'trade' surplus power in the summer months. Because of the price differential, this trading generates a profit to the Uttarakhand system, but the gains here are again passed on to the state government. In terms of policy directions from the government, 15 per cent of the profit is retained by UPCL as 'handling charges' and the remaining 85 per cent is passed on to the state. Owing to the spurt in demand within the state, the volumes of traded power and gain from it have been progressively tapering down (Table 12.14 below), but the trend could reverse in the short term because of imminent commissioning of new plants of Tehri (Stage I), Maneri Bhali II and the IPP at Vishnu Prayag.

TABLE 12.14

Sharing of Profit from 'Traded' Power (INR Crore)

| Description | 2003-04 | 2004-05 | 2005-06 |
|-------------------------------------|---------|---------|---------|
| Income from trading/ UI* injections | 320.20 | 104.05 | 59.06 |
| Variable cost of sale | 220.65 | 42.59 | 29.20 |
| Total profit | 99.55 | 61.46 | 29.86 |
| Share of Uttarakhand government | 84.62 | 52.24 | 25.38 |
| Share of UPCL | 14.93 | 9.22 | 4.48 |

Note: * Refers to net effect of financial adjustments relating to 'Unscheduled Interchange' charges.

Source: UERC Tariff Order 2005-06, page 12.

Power Development Cess

On the advice of UERC, Uttarakhand government has levied a 'power development cess' on generation/sale of power within the state. Amounts raised are to be used to develop the state's hydro-electric potential.

3. Evaluation of Current Status

The state is still very backward in electricity terms with its lower than national level of per capita consumption. Secondly, after the formation of Uttarakhand, the power sector has registered notable achievements: (a) in connecting the unconnected villages and granting household connections, (b) in the drive for complete

metering, and (c) in sustaining rapid increase in consumption. Third, from the power and power-related perspective, the state has the natural resource potential to zoom ahead to the front ranks but also has some serious shortcomings that could hold it back.

Both the positive and the negative aspects stand out clearly in the discussion so far and do not need repetition. This section shall deal now chiefly with the shortcomings those need to be overcome. In order that the context of achievements, potential etc., is not overlooked, the structure of this sub-section will concentrate around three key overlapping inter-linked objectives:

- Accessibility with affordability
- Efficiency, and
- Growth
- Reforms

3.1 Accessibility/Affordability

The concept of 'Universal Service' in infrastructure services is now widely acknowledged. The target of providing access to electricity to all households by 2009-2010 set out in the National Electricity Policy (refer Appendix A-12.1) and the announced objective of electrifying all villages by 2007, stem from this basic concern.

In bare physical terms, Uttarakhand seems well set to achieve both of the above objectives. As of March 2006, 95 per cent of all villages would have already been connected to the grid or served by stand-alone power sources. The installed capacity available to the state will be augmented by over 50 per cent in the next one year, so power availability should not pose a constraint to granting household connections through the grid. UPCL's Tenth Plan spending has appropriately focused on T&D and rural electrification. The state has, in UREDA, the institutional back-up with the requisite technical expertise to address the task in respect of the remoter villages that still remain to be served. Taking all these into account, the residual problem as far as ensuring 'access' is concerned would be that of connecting the several thousand hamlets (variously mentioned in state documents as numbering 14,000–18,000) that remain to be served. The numbers involved and the dispersed remote locations do pose a formidable challenge for a single agency to overcome; but a solution that taps local initiatives that would replicate UREDA's skills and expertise should be feasible of implementation.

Considering the longer term, the key issues are of ensuring quality of supply to households connected to the

grid and of sustainability of the stand-alone sources that are being provided. The issue of sustainability is both long-term and needing institutional supports and is dealt with below.

Sustainability: It is widely experienced in the case of infrastructure services that assets provided through government programmes—especially those provided in the implementation of targets set from above—deteriorate over time owing to departmental budget constraints/limitations and lack of user participation in their maintenance and upkeep. In the case of Uttarakhand itself, the State Annual Plan 2002-03 reported that 11 out of 13 very small hydro projects commissioned in the past were lying unused and were planned for renovation. The Annual Plan also noted that in the case of new plants, local user groups were being encouraged but there were problems posed by low plant load factor, low revenue collection and heavy expenses on repair and maintenance of schemes. The problem of low plant load factor will be alleviated when the units are connected to the grid as and when grid extension makes this feasible. According to data given in a tariff application of UREDA, the plant usage of one of its stand-alone units improved fourfold after it was connected to the grid.

Ideally, the local user groups should be woven into commercial arrangements that will give them a degree of financial partnership. In the case of a service like electricity, the success of local user groups (who will be responsible for revenue collection and O&M) will be dependent on the technical and financial support that they can access and the level of actual participation. Apart from a reference to imparting training, our review has not come across specific plans to address this aspect. The financial support in particular could involve some level of subsidy. Certain technologies promoted by UREDA avail of capital subsidy provided by the Central Ministry of Non-conventional Energy Sources (MNES). Central Ministry of Finance has also put in place a scheme for providing financial support to bridge the viability gap of infrastructure projects undertaken through Public-Private Partnerships. (Refer Scheme for Support to Public-Private Partnerships in Infrastructure—July 2005). A project to provide remote communities in Uttarakhand access to electricity would be an ideal candidate for the scheme for viability gap funding. The central scheme has set a limit of 20 per cent of the project cost as the funding limit; but it allows supplementary funding of up to another 20 per cent by the state government or statutory entity that owns the project.

UREDA is also trying out the alternative of 'outsourcing' O&M to agencies selected through

competitive bidding on a revenue-share model. In either arrangement, routine maintenance costs are borne by the user group/agency but major repairs and renovations are funded by UREDA. All these present arrangements are predicated on UREDA being the sole executing agency for such projects. What is needed is to identify interested private parties between whom and UREDA itself, the residual areas that remain to be provided with access could be apportioned through a combination of the funding options mentioned above.

Where capital subsidy is not an option, revenue subsidy support will be needed for long-term viability of schemes based on non-conventional energy. Here again, The Tariff Policy notified by the Central Ministry of Power (January 2006) envisages that procurement of power by distribution companies from non-conventional technologies (that cannot compete with conventional energy sources) “shall be done at preferential tariffs determined by the Appropriate Commission”. Hitherto, UERC has adopted a restrictive approach in this regard (see following paragraph); this needs to be modified in line with the provisions of the recently notified Policy.

Tariff of Micro Hydel Projects: The term ‘Micro Hydel Projects’ in the chapter refers to very small hydro power projects (of less than 1 MW capacity) that constitute the main bloc of schemes promoted by UREDA. As noted above, such plants are at present being set up only by UREDA and serve mainly as stand-alone supply sources for isolated villages/hamlets. One 500 KW plant can serve up to 20 or more villages. As Electricity Act, 2003 brought all sale of power by generating companies to distribution licensees within the ambit of regulation [Section 62 (1) (a)], when such a plant is connected to the grid, the tariff is again set by the Regulator. In this case UERC has notified a regime that offers the promoter one of two options: either the weighted average cost of power allocated to the state from CGSs or tariff determined on the same principles as for Large Hydro Power Projects (that provide for cost recovery through a combination of energy and capacity charge and the daily monitoring of plant availability), without any relaxation of norms.

These options are very restrictive. They do not allow for the environmental gains that renewable energy sources imply and also the savings in transmission/distribution losses by generating power close to the load points. The ‘weighted average cost’ of CGSs will be biased towards historical costs because they have large component of supply from old depreciated units. It should be a policy aim to encourage such units to be linked to the grid; for

this purpose, an ‘avoided cost’ approach that represents actual incremental costs of new energy supply sources would be the more appropriate model. While the existing tariff model may work when the investments are channeled solely through UREDA, the ‘avoided cost’ model can serve to attract private investments.

Retail Tariff Subsidy: Domestic connections through the grid are already subsidised and the tariffs set for small consumers and those below poverty line are in conformity with what is envisaged in the National Electricity Policy. But there are some drawbacks to the subsidy regime that has been put in place. Continued recourse to cross-subsidies, even where the tariffs can support the same (as happens to be the case with Uttarakhand) is not an efficient option for the long term. UERC is no doubt aware of the problem. The tariff rationalisation that the Commission has effected is based on average ‘cost of supply’ of the whole system. In both its Tariff Orders, the Commission has directed UPCL to provide it with data on ‘cost to supply’ power to different consumer segments. (This issue overlaps ‘efficiency’ concerns and is dealt with further in para 3.3 that follows).

3.2 Efficiency

This sub-section emphasises the area where improved efficiency is a most urgent need: bringing T&D losses under control.

T&D Losses

According to the CEA data reproduced in Appendix 12.2 (Table A-12.2d), the level of losses in Uttarakhand is exceeded in the Northern electricity region only by Delhi, J&K (two states characterised by some special features) and Rajasthan. There are some aspects to the case of Uttarakhand that need special note.

First, the very modest improvement targets that UPCL has presented to UERC in the tariff petition (1.3 per cent to 2 per cent per annum) are unduly low considering the ground to be covered. They do not also reconcile with measures taken by UPCL for loss reduction and some physical improvements that are already registered. The complete metering up to 11kV feeder level was finished by September 2005. According to the just released ‘State Power Sector Performance Ratings–June 2006’ (annual review done for the Central Ministry of Power), consumer metering in Uttarakhand had reached 92 per cent as of December 2005, of which 88 per cent were fitted with electronic meters. With that level and quality of metering support, a much more ambitious loss reduction target would be justified.

Secondly, the targets proposed by UPCL overlook the expected impact of the APDRP scheme which was specifically designed with rapid loss reduction as its chief aim. T&D loss levels nationally were targeted through that scheme to be brought down to 15 per cent in five years (refer: Mid-term appraisal of Tenth Five Year Plan—‘Overview and Priority Areas for Action’) which meant an annual reduction rate of 6-7 per cent. Uttarakhand’s performance in implementation of APDRP is better than the national average; in the two of the seven circles covered in the state, viz., Srinagar and Dehradun (rural), work completion was 82 per cent and 94 per cent respectively by March 2006. (Ministry of Power website – *powermin.nic.in*). With that back-up of experience, which could be replicated in the rest of the system, it is not at all logical that annual improvement targets are pegged at such modest levels.

Third, states like Andhra Pradesh and West Bengal, which lead in performance under the ‘Incentive’ component of APDRP had launched the drive to reduce commercial losses by either enacting special ‘anti-theft’ legislation or amending the then prevailing central law to provide for stringent penalties. This has helped these states to bring about loss reductions within a relatively short time. Considering the equally stringent legal provisions that have since been brought into effect through the central Electricity Act, 2003 and the further gains on the metering front, there is no apparent reason why the state should not aim at an even better loss reduction rate than that registered by A.P. and West Bengal. The target reduction of 4 per cent per annum, set by UERC, should in fact be the floor level for the reductions.

Lastly, tariff petition by UPCL has reported that raids are being conducted for checking of unauthorised use of electricity and also that full energy audit and indexing of consumers is being undertaken. It is not clear why such measures are not expected to yield tangible gains, especially when they have the following back-up:

- a) Government of Uttarakhand (GoU) has constituted 13 Special Courts (one in each distribution Circle) for the trial of offences related to the misuse and theft of electricity and has also designated Executive Engineers as Assessing Officers and constituted District level Committees, as required under the Electricity Act, 2003.
- b) The recently-notified Tariff Policy (January 2006) authorises third party verification of energy audit results for different areas/localities to be used to impose area/locality-specific surcharge for greater

ATC loss levels and also empowers the SERCs to encourage suitable local area-based incentive and disincentive scheme for the staff of the utilities linked to reduction in losses.

In short, UPCL now has all the tools needed to effect sharp rates of loss reduction on the commercial side. On the technical side, it has the experience of the APDRP projects by evaluating which an investment plan that would replicate similar schemes for the rest of the system can be drawn up and implemented.

Strain on UPCL Finances

As referred earlier (para 2.5) to the UPCL’s claim that as per its audited accounts, the company had accumulated losses of INR 90 crore till 2003-04 as against UERC’s contention that large surplus earnings had accrued to it. In its latest tariff petition (for 2006-07), UPCL states that its provisionally audited accounts of 2004-05 show the accumulated losses to have increased to INR 259 crore. At current tariff levels, the company also projects a revenue deficit of as much as INR 303.66 crore in 2006-07.

While it is for UERC to take a view on these contentions, these numbers cannot be taken at face value on two counts:

- a) UERC had found the cost estimates presented by UPCL in earlier tariff petitions (‘Aggregate Revenue Requirement’) to be inflated in areas like interest on loans and by including liabilities (past CPSU dues) that had been taken over fully by the state government, and
- b) The energy sale projections for year 2005-06 presented through UPCL’s petition for 2006-07 (as late as December 2005) have, on the year’s completion, turned out to have been underestimated for the cross-subsidising ‘industry’ segment by as much as 33 per cent (refer para 2.5).

UPCL’s strengths in technical areas are commendable, witness for instance the gains in new connections, meter installation and village electrification. However, these strengths are not matched by its other functions: from the ‘efficiency’ perspective, UPCL’s commercial and accounting areas are in urgent need of strengthening as also its field operations that are tackling theft and losses.

Proposal for ‘Regulatory Asset’: Another issue of immediate concern is that in order to cover the ‘accumulated losses’, UPCL has petitioned UERC that it be allowed recourse to the device of ‘Regulatory Asset’—a notional instrument that would bridge the gap between current revenue and expenditure. The idea is that the

carrying cost of this asset will be allowed as expenses to the utility till the asset is actually made good through future surpluses. Tariff Policy (January 2006) stresses that this mechanism should be used only in exceptional circumstances like “natural causes or *force majeure* conditions”.

In face of the low rates of efficiency improvement that UPCL is projecting, the ‘regulatory asset’ idea is a risky one that could drag the state power sector into the vicious circle of financial losses and efficiency decline that marked the SEBs. On rough calculations, UPCL’s average loss of revenue for every percentage of avoidable T&D loss (beyond an efficient minimum of 15 per cent) works out to about INR 11.13 crore annually. If the T&D losses are brought under control, the additional sales earnings at current tariffs would have worked out to approximately INR 278 crore in 2006-07. In the situation of ‘accumulated losses’ as claimed by UPCL, the appropriate solution as spelt out in the Tariff Policy itself is transition financing or capital restructuring.

Tariff Efficiencies

Uttarakhand is yet to adopt tariffs based on ‘cost of service’. The consumer and cost data needed to frame such tariffs is to be made available by UPCL. The company’s latest tariff petition does not carry any reference to compliance on this instruction of UERC, so it is unlikely that this important principle will be implemented even in the tariffs for 2006-07. This is a measure that could bring about efficiencies by enabling the regulator to align the tariff for each consumer segment close to the actual costs to serve that segment. Secondly, it would also make it feasible to replace cross-subsidies by targeted subsidies (to be provided by government) to segments where the costs to supply are more than the revenues earned.

A second tariff reform that would contribute to efficiencies is to replace annual revisions by adopting ‘multi year tariff’ (MYT). As this measure will provide price certainty and bring confidence to investors it is important to have this implemented when the state is in need of a large inflow in private investment. The recent Tariff Policy stipulates that the “MYT framework is to be adopted for any tariffs to be determined from April 1, 2006.”

Other Areas

Financing Costs: In paragraph 2.2, the low level of collection efficiency was discussed, which imposes a cost in terms of working capital requirement. Savings in financing costs are also to be targeted in interest charges which are currently running at the rate of INR 51 to INR

52 crore annually. There is scope for savings through debt restructuring. As with arrears in revenue realisation, transactions with government itself offer this scope for savings. For instance, UPCL’s tariff petition [Commercial formats 5(a) to 5(c)] shows an outstanding loan of INR 67.73 crore from the government of UP on which interest at 17.5 per cent is incurred annually. The loan amount at this high rate of interest is being carried forward from year to year.

Plan Utilisation: Short fall in utilisation of plan funds is a particularly glaring form of organisational inefficiency. While the energy sector as a whole is afflicted, the figures tabulated earlier (Table 12.13) shows the performance of UJVNL (52 per cent utilisation of Tenth Plan outlay) in a particularly poor light. Shortfall is also marked under ‘Renewable Energy’. The conclusion is that despite the corporatisation, the expected efficiencies relative to the previous departmental structure are yet to be gained.

Utilisation of Human Resources: There are indications that both UPCL and UJVNL are having excess manpower on the rolls. In the context of UPCL’s Annual Revenue Requirement submissions, UERC had given a directive to it to carry out a ‘manpower study’; this remains to be done. In the case of UJVNL also, the ‘State Power Sector Performance Ratings’ (June 2006) notes that at 2.76 employees per MW, manpower levels at its hydel generation plants are higher than the benchmark of 2 employees per MW. As both undertakings are in an expansionary phase, surplus manpower is not a very complex issue to overcome if correct identification of surplus is arranged and measures are taken to retrain and redeploy.

Plant Availability: On the other hand, the same performance review notes that the availability of UJVNL’s hydel stations is only 75 per cent, which is 20 per cent lower than the benchmark of 95 per cent. It is possible that the age and condition of the older stations is a factor here. The undertaking is implementing renovation and modernisation (R&M) schemes in some of the plants. But in juxtaposition with the lapsing of plan funds just noted and the excess manpower, the picture that emerges is one of managerial shortcomings.

3.3 Growth

The growth registered so far both on the supply side and on the demand side result mainly from the fortuitous circumstance attending the newly carved out state power sector, *viz.*, the concentration of already exploited and planned hydro power resources within the state. On the

supply side, growth in power availability is almost wholly on account of increase from central sources. Even the two IPPs (Small Hydro Power) that have come on stream result from initiatives taken ten years ago. While the state can take due credit for the resumption of work on the Maneri Bhali II project which was languishing for several years, plan spending in the shortly-terminating Tenth Plan is likely to be only 78 per cent of the target. This would point to institutional shortcomings, especially in the hydro segment that accounts for the heaviest shortfall.

On the demand side, the fortuitous circumstance mentioned, leading to improved power availability at lower cost, again accounts for the sharp growth recorded so far. The peak power shortages that aggravated due to this growth are likely to abate in 2007-08, but (according to the presentation by PTCUL referred to earlier) are likely to reappear in acute form by 2008-09 if the latest demand trends in the industry segment are sustained. There is need for policy measures that would tackle this threat. As the bulk of the new capacity that is being developed is again allotted to CGSs over which the state has limited control, there is also urgency to focus on projects and resources within the state's own jurisdiction.

Policy on Small Hydro Power Projects

The state has entered into MoUs/draft agreements with over a dozen private promoters (selected through a bidding process) to develop and set up small hydro power projects: by definition of capacity of under 25 MW. Stand-alone units would serve isolated communities and hence there is very obvious justification in promoting these. As for small size grid-connected plants, gains from them primarily rest on their scope for speedy implementation which would make the power available much sooner than medium and large plants that would involve long gestation periods. This factor could be of short-term benefit when the state is already experiencing high peak-power deficits and further large-scale domestic connections are certain to add to the 'peak-time' pressure. Even after the peak-shortages are brought under control, these units could provide valuable back-up to the system which is in a position to trade seasonal surplus energy to the northern region states and possibly even beyond. It should be noted that tariffs for hydro power plants are generally 'front-loaded' because of the advance recovery against depreciation allowed in order to meet debt redemption. Hence, their tariffs would taper down over time, making for ideal sources of power for trading in a competitive environment.

It would therefore seem prudent to provide suitable incentives to promote early investments in this category of

projects. In the present policy, the project rights are awarded through a kind of auction, unrelated to tariffs. There is, in fact, no tariff incentive; the price of generated power for supply to UPCL—at mutually agreed rates—will be subject to regulation. UERC has not yet notified the tariff regulations for small hydro projects, for the reason that reliable generation data that would form the basis for the tariff design are sparse. This is an area of uncertainty and risk to the promoter. For instance, it is unclear if the regulator will allow the 'premium' paid upfront for securing the project to be treated as part of the cost for recovery through tariffs. The tariffs set by UERC for the two IPPs (small hydro plants) now functional are modified versions of the tariff for large hydro plants, the modifications being mainly a combined unit-based tariff (as against a two part—fixed/energy differentiated tariff) and a higher allowance for O&M.

In order to attract investments, specific incentives of two types could be considered: generation subsidies built into the tariffs and incentives linked to early completion/achieving set targets for availability. While initially, the quantum of incentive will need to be determined by the regulator, it can also be set through competition once the market has developed and viability of the model is established.

Shelf of 'Low-Tariff' Projects being Developed by CEA: The foregoing observations cannot obviously apply to the two-dozen projects under the '50,000 MW Hydro Initiative' that are being developed on priority, specifically because of their tariff economies. At the same time, the state has a large stake in implementing these projects at the earliest, because they will sharpen the state's competitiveness in cost and availability of power and hence help to accelerate investments in the rest of the economy. Including the delayed Maneri Bhali II project, UJVNL is already assigned small, medium and large projects for execution that add up 1017.8 MW (Appendix A-12.2, Tables, A-12.2f, A-12.2g and A-12.2h) which is more than the total installed capacity of its currently operational plants. UJVNL, which incidentally had prepared the PFRs for 10 of these schemes, and is the designated facilitator for all the small and medium IPP projects already awarded, could certainly play the promotional role in bringing these new set of 'low-tariff' projects to the stage of execution. But its capacity to take on any more projects on its own needs to be assessed carefully.

It will also be desirable to review the experience with the project award and actual progress in implementation of the IPPs awarded under the extant policy and decide on the necessary modifications to the policy. More comments on this topic are given in Sub-section IV below.

Finance for Projects

There is no indication of finances posing a constraint to the growth of the sector so far. The sector is basically financially viable and is not constrained like most power utilities in the country by distorted and uneconomic tariffs. As for the state's share of old arrears towards CPSU dues, the state government has completely freed UPCL of this burden by taking over the liabilities and interest thereon. In terms of the Ahluwalia Committee recommendations, government has also floated bonds of the value of INR 572 crore towards discharging this liability. These factors would make it easier for the state power undertakings to raise finances from FIs and from external lending agencies. What needs to be ensured is the efficient targeting of investments through the selection and ordering of projects.

As noted in Appendix A-12.1, schemes under the APDRP, RGGVY and non-conventional energy sources are eligible for funding through the respective central agencies. Power Finance Corporation (PFC) is now a major lender for sector schemes of all types.

With the advice of UERC, the state government has levied a 'power development' cess of 33 paise per unit of electricity generated/sold. Income from this source is to be utilised for developing the hydro-electric potential in the state. (The state is also levying a royalty at 10 paise per unit of hydro power and is realising additional revenues from the power sector by way of profit through 'trading' and payment towards the 12 per cent free power from CGSs located in Uttarakhand). These sources could help to meet costs of project development and institutional supports and also those of providing revenue subsidy support for supplies to remote communities.

Scale of Required Funding: In regard to financing the large shelf of new projects proper, there is a problem of scale to be considered. Limiting the analysis to the 3,448 MW of large projects (already allotted to PSUs and set to reach financial closure) and the 2,824 MW of 'low-tariff' schemes (for which DPRs are being prepared) the total investment on generating side alone at a conservative rate of INR 3.5 crore per MW works out to INR 21,952 crore. Add the transmission costs for evacuating/wheeling the additional power and the total investment is in the region of INR 30,000 crore—seemingly a staggering sum, considering that the size of state's total Tenth Plan is INR 9000 crore and of that, investment in the power sector is likely to be about Rs. 1,500 crore only (Table 12.13).

Is it at all realistic therefore to envisage investments of the order of INR 30,000 crore in the state's power sector

within a short span of ten years—the Eleventh and Twelfth Plans? Macro level indicators point that it is so. The estimates of 'Committee on Financing of Power Sector during X and XI Plans' (appointed by the Ministry of Power, GoI) indicated that the investment needs on physical assets over the two Plans would be of the order of Rs. 9 trillion (900,000 crore). The Committee did not envisage problems with the debt portion of this investment (at 70 per cent, INR 6.3 trillion) which could be raised from a combination of domestic and international sources. According to the calculations, domestic sources (banks, all India FIs, sector-specific agencies *viz.*, PFC, REC and direct market borrowing) could meet over 85 per cent of the estimated debt component and the balance would be forthcoming from International sources like multilateral and bilateral credits, external commercial borrowings and syndicated loans. Also last year, the Central government has launched yet another funding initiative in the form of the India Infrastructure Financing Co. Ltd. (IIFCL), a 100 per cent government owned 'special purpose vehicle' designed to provide long term debt of ten years' maturity or more to infrastructure projects, including in the power sector.

On the equity side the Committee identified a gap of the order of about 25 per cent and gave certain recommendations for bridging this gap. These would involve accessing of additional funds from private sources through forms of public-private partnership and setting up of sector-specific funds (like the India Power Fund—the venture capital fund recently promoted by PFC). The issue to be addressed by the state, therefore, is of developing the institutional capabilities needed to process and implement the plans that are, no doubt, very ambitious by current performance standards. We take this up for consideration next.

Institutional Strengths and Weaknesses

The 'unbundling' of the state power sector was completed less than two years ago (with the separation of the distribution and transmission segments) and the sector undertakings are in the process of consolidation. Changes in their structure are therefore to be kept to the unavoidable minimum at this stage. There is also no case, at this point, for changing the ownership pattern of these undertakings. At the same time, there are serious efficiency-related concerns which point to need for strengthening capacity within the organisations.

UPCL: The proven strengths of the undertaking on the technical side are poorly matched by the commercial and finance functions. In its tariff petition for 2006-07, UPCL

has given details of plans for market recruitments in the engineering, personnel and accounting disciplines, mostly at the junior levels [Petition format 6 (b)] This is against existing vacancies in the sanctioned cadre and for manning newly created distribution divisions. But equally importantly, its managerial and strategic capabilities as also the commercial wing need to be strengthened. We may recall that a number of pilot schemes have been mooted and intentions of adopting best practices of power utilities elsewhere have been announced. In order to translate these initiatives into tangible long term gains, capacity needs to be built in the organisation, especially at the managerial levels.

PTCUL: This undertaking has presented (to the regulator) comparisons of its staff strength with that of other transmission utilities to make the point that the overall strength needs to be augmented. From the growth perspective, it is also relevant to consider the organisational needs for implementing the large portfolio of transmission projects that are being taken up. So strengthening of this undertaking all along the line to induct planning and project implementing skills especially, is required.

UJVNL: The organisational separation of the projects implementation function from that of maintenance and consulting is most strongly indicated in regard to UJVNL. The organisation did not have good record in plan spending as well as in plant availability of functioning units. Soon after commissioning the Maneri Bhali II plant, it is to take on two large schemes and half-dozen medium ones. Their timely implementation will have crucial bearing on the growth of the state power sector. As we noted earlier, (para 3.3) this organisation's efficiency levels are lower than normative both in plant availability and in manpower ratios. There is a case here to look at internal structures and upgrading of skills of the existing staff.

Government-sector Undertakings Interface: The Management Boards of UPCL and UJVNL (PTCUL) are large (10–11 Directors) and are made up of senior state officials, full time functional Directors and two non-official (outside) Directors each. Going by present indications, these undertakings are poised for an exceptionally high growth phase over the next two Plan periods, calling for strategic and visionary skills at the very top. It is not for this review to comment on the present boards from this perspective; we only point out this requirement as a key item on the sector agenda.

There is wide acceptance now that public utility undertakings require a degree of autonomy and an 'arm's length' relationship with government. It will be timely to

consider how best this can be achieved in the Uttarakhand scenario, without diluting the ownership structure significantly or at all.

Private Sector Participation

The National Electricity Policy (February 2005) stresses that the role of private participation in generation, transmission and distribution would become increasingly critical in view of the rapidly growing investment needs of the sector. The Policy therefore urges that successful models of public private partnerships need to be developed.

In Uttarakhand, as with most other states, significant private involvement is limited at present to the generating segment of which details have been furnished earlier in this review. Considering the specific features of the state power sector, there is a good case for this pattern to continue beyond the short term. This does not imply a rigid approach that would shut out private participation in transmission and distribution altogether. In fact, UPCL already encourages private participation at the margin in the commercial areas and this could be enlarged progressively. Also, the NEP endorses the provision in the Electricity Act, 2003, to allow a second distribution licensee to compete with the incumbent public utility. This is a route that Uttarakhand could adopt, as soon as the current physical constraints to competition are overcome.

A further point is that if the objective of attracting large investments into the generating segment is accomplished efficiently, public undertakings responsible for transmission and distribution will not find it difficult to raise the resources for their upgrade. Conversely, it is viewed that overcoming the current shortcomings in distribution will contribute to attracting adequate private investments into the generating segment as well as the debt finance needed for expansion and upgrade of the transmission segment.

The relevance of providing appropriate incentives in order to harness private investment within a short time-frame in small hydro power and micro-hydel projects is already well identified. While time is the crucial element for the smaller projects, time together with infusion of financial resources is the objective we identify in regard to medium and large hydro power projects.

Distribution Segment: Until the prevailing high levels of T&D losses are brought down significantly, privatisation of distribution areas is to be avoided. Private sector strengths lie in implementing investments, bringing down technical losses and toning up commercial efficiencies, not

in combating large-scale theft. This is the wisdom to be gained from the limited experience in privatising distribution in the country (Orissa, Delhi). On the other hand, the successful experience of states like AP, West Bengal in bringing down losses illustrates that armed with the necessary tools, government undertakings can bring down losses to reasonable levels. (Refer Appendix A-12.3 for a discussion of this issue).

As regards the rural areas that are newly being provided with electricity, inducting private agencies into distribution is a feasible option. This can be done either through the 'franchisee' mechanism for small areas envisaged in RGGVY or by awarding distribution rights for larger areas based on bids for the subsidy levels. This issue is also discussed in Appendix A-12.3.

4. Feasible Targets and Strategies

4.1 Targets for the Short Term

NEP sets out the aim of 'Power on demand' throughout India by year 2012 (end of Eleventh Five Year Plan). According to preliminary calculations of CEA's ongoing 17th Electric Power Survey, by year 2011-12, Uttarakhand's energy consumption and energy requirement at power station busbar will increase (from the 2003-04 actuals) by 153.02 per cent and 112.82 per cent respectively. These calculations are based on the assumption that the aim of 'power on demand' will be actually realised in all states by the end of the Eleventh Plan. While this assumption may not be borne out in the case of some states, our discussion so far shows that Uttarakhand can reasonably expect to meet this target.

To meet this overriding objective, some intermediate objectives need to be realised. These emerge from the analysis presented so far. The most basic ones are:

- a) The efficiency level of sector undertakings to be raised to normative standards in key performance areas like T&D losses and plant availability.
- b) The short term targets of connecting all villages by 2007, all habitations by 2009 and providing access to electricity to all households by 2010 to be met.
- c) *Incentives for Small Hydro Projects:* Hydro power projects already allotted for implementation including those in the small hydro power category to be brought on stream over the next six years so that the level of exploitation of the state's identified potential rises to about half by end of Eleventh Plan.

- d) Pricing policy of micro hydel projects needs to be formulated at the earliest.
- e) Setting up a 'Strategic Planning Cell' is needed.

The intermediate objectives, in turn require a few very short-term measures.

Realising Efficiency Gains

Defining Schemes by the End Objectives: The disconnect noted between the technical improvements in areas like metering and upgrading the transmission arrangements on the one hand and the corresponding commercial/financial gains on the other needs to be removed. This would need the defining of projects by the end objective to be achieved and structuring, scheduling and monitoring the implementation of all its component parts. To illustrate, strengthening the distribution system of an area or circle, metering of 11 KV feeder lines and installing/replacing meters at consumer premises are not viable schemes by themselves; they are only parts of the viable scheme to improve the quality of supply and minimise the T&D losses to normative standards in the concerned area/circle.

Monitoring the Results: The realisation of the end objectives will be helped if: (a) they are spelt out in the project in a measurable manner, (b) if a time-bound plan for loss reduction is drawn up, and (c) if the results are monitored systematically both at the organisation level and at the government level. Monitoring at government level is needed in view of the critical need for securing time-bound results.

Government Level Monitoring: This review should be regularly done and should be independent of the Board level reviews so that the overriding importance of the scheme is driven home to all concerned.

Distancing Organisation from Government: Review at government level can be more effective if the distance between the undertaking and the government is increased. For this purpose, reducing the presence of senior government officials on the Boards of the undertakings should be considered. This would bring about greater objectivity and facilitate the effectiveness of the review.

It is important that all component elements of the project, contributing to the defined, measurable end objective are captured in the review. For instance, prosecution of offenders is an important component of a scheme to reduce losses in an area prone to energy theft. So the elements that contribute to this result—number of raids conducted, cases registered, penalties imposed etc.—

should also figure in the reviews, alongside the implementation of the technical measures forming part of the same project in that area.

Basically the same approach can be applied to all identified areas of priority in improving efficiency, like the availability levels of power plants.

Tariffs and Government Subsidy Support: We consider that the change-over to a tariff regime based on cost-of-service and specific government subsidy support to consumer segments that are charged below such truly cost-based tariffs are key to ensuring the improvements in efficiency. Hence, this is another priority area to be targeted for monitoring. If internal skills are lacking, UPCL should be directed (and if necessary provided specific funds from the moneys realised by government through ‘cess’ and ‘trading’) to obtain external help to this end.

Village Connectivity and Access

In statistical terms progress in this area is satisfactory. But it remains a high priority because of the remoteness of the locations that are yet to be served and the issue of long-term sustainability of the solutions put in place. As noted, in the earlier discussion there is need for replication of UREDA’s skills through identified agencies (this could also include private ones like NGOs) and the option of franchising out not only the maintenance of the newly created assets but also the long-term distribution rights of the areas concerned. There is need here for drawing up a policy that takes into account the experience gained so far as also successful models that have been tried out elsewhere.

More comments on this issue are set out in the note attached as Appendix A-12.3. Two key points/ideas are discussed here:

- a) Restructuring the undertaking responsible for distribution into separate entities to handle the rural and urban segments, and
- b) Training of educated local youth in the basics of maintenance and billing and commercial practices and engaging them as direct franchisees of small areas or employing them in larger areas that are handed over to local administrations or private rural distributors.

The sector undertakings are already in a phase of consolidation and further restructuring is to be avoided at this stage. The suggestion at a) above is therefore not offered as an immediate option, but one that should be kept in view for the future.

As regards (b) above, Uttarakhand is registering in the communication and IT fields, which will be a valuable support for trying out very small local franchise areas manned through trained youth.

Project Implementation

The emphasis of this section is on the projects that are within the ambit of control of the state viz., schemes that have been allotted to UJVNL and all schemes in the category of small and micro hydel projects. Some of the smaller ones (of capacity below 60 MW) could be also identified, through a quick review of the set of 24 projects in the ‘low tariff’ category, for speedy implementation. This will provide some insurance against possible slippages in any of the larger projects already entrusted to PSUs like NHPC and THC.

Project Incentives: While this is not clear from the text of the relevant policy documents, it is presumed that the incentives and penalties provided for early/late completion in the case of large hydro power projects (over 100 MW) would apply also to the medium and small projects. In the context of the target, these incentives seem to be too modest. One possible overriding incentive is to offer guaranteed purchase by UPCL of part or all of the generated power by projects that go on stream by a set deadline.

While the Policy in place does freely permit sales outside the state and direct sales to certain consumer categories in Uttarakhand, it should be noted that: (a) a proper electricity market will take time to develop in the country, and (b) there is going to be a sudden influx of supply entities and there are consequently elements of demand-side risk involved. An assurance before-hand of supply off-take by UPCL will mitigate these risks for the promoter and make financing smoother.

On the other hand, to avoid envisaging risks to UPCL in this arrangement; it may be noted that the increase in household connections will lead to increase in energy demand and more so in ‘peaking’ power requirement. UPCL would have done detailed exercises in this regard (as part of the 17th Electric Power Survey or separately); if these studies indicate a threshold beyond which intake would expose UPCL to risks, the policy could spell out such limits as well.

Tariff Incentives: The recently notified provisions of tariff policy concerning renewable energy strengthens the need to bring UERC regulations in line with this policy. Therefore, Uttarakhand, specifically should look at adoption of the ‘avoided cost’ model for pricing of power

from micro hydel projects and for generation subsidies in the case of small hydro projects. These would require policy directives by government to UERC.

Project Facilitation: UJVNL is assigned the tasks of project facilitation, advice on marketing, assistance in obtaining clearances and other consulting support. While embarking on a concerted drive to implement as many projects as possible, a review of how this facilitation support is functioning in actual practice will be in order.

Separation of Operation and Project Implementation: It is already observed that the project implementation function of UJVNL requires to be separated from the maintenance and consulting function. Perhaps it is even worthwhile to consider outsourcing of the R&M and maintenance of the renovated UJVNL plants as a package to an external entity with requisite experience. This could improve accountability in plant performance and also free UJVNL to concentrate on facilitation of private projects and implementation of its own new projects. In addition, the following points also need a consideration :

- Top priority should be given to reducing system losses.
- Franchising distribution of rural and small municipal areas.
- Upgrading commercial and accounting skills within UPCL.
- Plant management skills of UJVNL (low 'Plant availability').
- Outsourcing of plant renovation and management.

4.2 Long Term

The following discussion is based on the assumption that the 'short term' agenda discussed above would have been largely accomplished by the end of the Eleventh Plan. In other words, Uttarakhand would be in a position to supply quality power 'on demand' anywhere in the state by 2012. So the following discussion has in view the likely sector requirements in the next decade i.e., Twelfth Plan and beyond.

If 'power on demand' is a realised aim, the issues in the next stage will revolve around further growth of demand and improving efficiencies. In the latter context, the issue of competition which is now widely accepted as the most effective means of improving efficiency in an infrastructure sector needs to be addressed. If the support systems for an electricity market would be firmly in place by 2012, this could provide opportunities as well as challenges to Uttarakhand's power sector.

With this understanding, following three topics draw attention:

Review of Hydro Power Policy

To meet the long term demand on the generation side, the focus should be on implementing such of the already allotted large projects that may fail to take off in the next five years, and the shelf of projects under CEA's '50,000 MW Hydro Initiative', including the medium and large 'low tariff' schemes numbering around 20.

The basic elements of the extant state policy on hydro power development (notified separately with intervals, for medium, large and small plants) were drawn up some four years ago. Policies should have some stability and should not be modified frequently.

But from the long term point of view and for attracting investment into large projects, two key elements need to be reviewed here.

Criterion for Project Award: The present scheme is basically an 'auction' to the bidder who offers the highest premium. This brings in revenues to the state up front, and has the added advantage of transparency. However, bids based on 'tariff' offered are the more efficient. As electricity market could develop by the time these projects come on stream, a guaranteed 'off-take' be offered to this set of projects may not be a feasible option. What could be considered instead is bidding based on an offered share of the design capacity to the state (in addition to or in lieu of the 'free power') at an offered indexed per unit price. This would meet the need for transparency and will also be financially gainful to the state.

Dispute Resolution: The Policy leaves this issue to the ultimate decision of the state government. This is not in tune with large BOOT contracts of the type under discussion and needs to be brought in line with standard arbitration provisions.

To repeat, other terms of the Policy could also be subjected to review from the long term perspective, duly taking into account the experience gained so far.

Strategic Planning

This should take into account not only the resources that the state is endowed with but also the market that its power sector could exploit. Situated in the northern region, surplus power—especially 'peak-time' surplus—will have access to a peak-starved market like Delhi and several other large urban centres. Developed electricity markets abroad are characterised by 'electricity pools', 'forward' and 'spot' markets. As a potential future player

in such a market, Uttarakhand power sector could think in terms of investing in a 'Strategic Planning' cell to plan long term policy and advice on investments. The cell could collect data, keep update of developments elsewhere in the country and make projections for use in the state's planning process.

Privatisation of Distribution and Competition

This topic has to figure in a discussion of the long term needs. As suggested earlier, there should be no privatisation of any distribution area until the level of T&D losses are brought down to normative levels. This does not, of course, apply to private distribution through the franchisee route in rural areas which is to be encouraged right away. A few suggestions concerning rural distribution in the note are already attached at Appendix A-12.3. The main points relate to the 'least subsidy' bidding option for award of rural distribution rights and the US model of dedicated low-cost rural supply, both of which could be appropriate for consideration by Uttarakhand.

As regards urban distribution, it may be assume that normative efficiency levels would have been reached in about five years and would be fit for the privatisation option. Appendix A-12.3 discusses a note based on observations of privatisation experience in India so far. The main suggestions in it concern the size of the distribution area to be offered for privatisation, equitable sharing of obligations between the two parties to the contract and phased process of inducting the private entity. In addition, taking advantage of a five-year period of consolidation and improvement, a medium sized town may be made into a 'model distribution area' that should set the standards for the future intending private entrants in other areas. Since NEP permits the entry of a second competing distributor, due to favourable supply position, it is possible that expressions of interest on these lines may be made in Uttarakhand earlier than elsewhere. This is to be encouraged. Also, in the future distribution regime, incentives in permitted 'rate of return' (ROR) could be considered for improved levels of technical/

commercial losses. Such incentives could be paid by government and not passed on to the consumers.

4.3 Concluding Points

As a general comment, as noted in Appendix A-12.1, the initiatives taken at central level offer a holistic framework to address virtually all the issues in the country's power sector. The points given below are a few issues specific to Uttarakhand that need attention.

- Large outstanding 'receivables' of electricity dues from government agencies presents an incongruous situation when we consider that government is not paying any subsidies to the sector undertakings and is in fact earning substantial revenues from the sector through 'cess', royalty, energy trading and up front payments by project promoters.
- UPCL's idea of converting 'losses' into a 'regulatory asset' is to be discouraged. The state government could consider intervening in this matter after the issue of 'surplus' versus 'losses' is sorted out between UPCL and UERC.
- UREDA should consider putting in place a system of regular monitoring of progress and performance of stand-alone power supply schemes in remote areas as a long-term measure.
- Training of personnel and skills upgradation at all levels should be a priority area for the state power sector. Expert assistance should be obtained to identify the training needs and to put a well-designed training programme in place.
- Inter-sector linkages should be developed, in particular to draw upon communication and Information Technology. For example, linked to pre-paid cards, concepts like metering that displays the balance available could be developed.
- The strategic planning, therefore, requires stress at four levels; structural, policy and legislative, implementation/prioritisation and financing.

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APPENDIX A-12.1

Overview of National Power Sector Initiatives

The problems afflicting India's power sector are too well-known and do not require detailing here. A very pointed summary is given below to serve as the backdrop to a brief review of national initiatives aimed to overcome the problems so that the sector could function as a healthy limb of the economy.

A. Main Problems of Power Sector

Financial Bankruptcy of State Electricity Boards: Annual losses of the order of INR 25,000 crore in 2003-04 (*Source:* Fourth State Power Sector Performance Rankings which was released on June 2006).

- Creeping tariff distortions; unsustainable levels of 'cross-subsidies' within sector.
- Supply of 'free power' to some consumer groups by several states and resultant losses not compensated by governments.
- Commercial unviability because of average costs exceeding average revenues and the gap widening progressively.
- Mounting arrears in SEB dues to central power, energy and transport undertakings, accumulating at one point to INR 41,473 crore. (*Source:* 'Expert Group on Outstanding Dues of SEBs' under the Chairmanship of M.S. Ahluwalia, Report dt. May 11, 2001.)
- Squeeze on investments because of resources drying up; resulting power shortages.
- Imbalance in the thermal: hydro mix of generating capacity, leading to aggravated peak power shortages.
- Failure of the IPP initiative because of inability of SEBs to provide bankable payment security arrangements.
- Neglect of investments in transmission and distribution leading to very poor quality of supply and very high levels of technical losses.
- Decline in commercial efficiency, leading to wide-spread theft of power; technical-cum-commercial losses adding up in some SEBs to 50 per cent of power supplied.
- Hurdles to effective prosecution of irregularities because of legal loopholes.
- Neglect of energy conservation measures, proliferation of inefficient electrical gadgets (esp. pumpsets).

B. Policy Initiatives and Responses

Electricity Regulatory Commissions Act (1998) that set up autonomous regulatory institutions entrusted with tariff regulation and related policy advice. This Act was subsequently superseded by the comprehensive *Electricity Act, 2003*.

Electricity Act, 2003: designed to provide the institutional and legal framework for overcoming the weaknesses in the sector. Taking note of the sector requirements in the new context, it realigns the roles to the government and its agencies, the regulator and the sector undertakings at the Central and state levels. It also provides a strengthened legal framework for tackling theft and irregularities that had assumed alarming proportions in several parts of the country. It also mandates phased but time-bound introduction of 'open access' in power supply that would enable consumers with connected load of 1 MW and above to access a distributor of their choice.

Electricity Conservation Act, 2001

The Act provides the legal framework, institutional arrangement and a regulatory mechanism at the Central and state level to embark upon an energy efficiency drive in the country. A bureau of energy efficiency was established under the provisions of this Act whose aim is to assist the government to enforce the efficient use of energy and its conservation.

National Electricity Policy (2005)

Lays down the long term policy framework that will guide the sector functioning. Among the areas that it addresses are:

- Universal (especially rural) access.
- Policy relating to subsidies for service to vulnerable sections.
- Competition in the sector.

Tariff Policy (February 2006)

Guidelines for competitive bidding (Date- 6th January 2006) for determining tariff for power procurement by distribution licensees.

MOUs with State Governments

The Central government has signed a Memorandum of Understanding (MoUs) with 29 states (all states except Tripura and Manipur). The MoUs have provision for taking forward the distribution reform aspects in a time bound manner. Some of the important features of the MoUs are as follows:

1. Setting up of State Electricity Regulatory Commission.
2. Restructuring of State Electricity Boards.
3. Administrative measures for improvement.
4. Delegation of powers and duties.
5. Metering up to 11kV of feeder level and energy accounting.
6. 100 per cent metering of all consumers.

7. Computerisation of SEB commercial and technical functions.
8. Adoption of turnkey contracts for APDRP implementation.
9. Agricultural tariff policy and subsidy by state government.
10. Adoption of unit wise commercial accounting practices.

Amendments to Electricity Act 2003

(Enacted in 30th December 2003)

- To make rural electrification a shared responsibility of both Central and state governments.
- To empower state regulatory commissions to determine the time frame for gradually reducing cross subsidies within power tariffs.
- To strengthen the drive against theft of power by empowering police to investigate cases of power thefts.

Forum of Regulators

Constituted by the government (16th February 2005) to “facilitate consistency in approach especially in the area of distribution”.

C. Programme Responses

Accelerated Power Development and Reform Programme

The Accelerated Power Development Programme (APDP) was initiated in 2000-01 as a means for restoring the commercial viability of the State Electricity Boards. The Programme was renamed as ‘Accelerated Power Development and Reforms Programme (APDRP)’ in the year 2002-03 by integrating an incentive financing component with the existing investment programme

The main objectives of APDRP are:

- (a) Improving the financial viability of state power utilities.
- (b) Reduction of AT & C losses to around 10 per cent.
- (c) Improving customer satisfaction.
- (d) Increasing reliability and quality of power supply.

Under the investment component, the Government of India provides Additional Central Assistance for strengthening and up gradation of sub-transmission and distribution network in the state. This covers 50 per cent of the project cost in the form of 50 per cent grant and 50 per cent loan. The remaining 50 per cent of the fund has to be arranged by the State Electricity Boards in the respective states through the Power Finance Corporation (PFC) and the Rural Electrification Corporation (REC) or other financial institutions or from their own resources as counter part fund.

States which have been designated as ‘Special Category States’ receive 100 per cent of the project cost as Additional

Central Assistance in the ratio of 90 per cent grant and 10 per cent loan. The Special Category States comprise of the states of the North Eastern Region, Jammu and Kashmir, Himachal Pradesh, Uttarakhand and Sikkim.

Since APDRP is an instrument to leverage distribution reforms in the states, priority is being given to those states which are progressing within the given time frame according to the commitments mentioned in the MoUs signed by the states.

The incentive component of the APDRP Scheme provides an incentive equivalent to 50 per cent of the actual cash loss reduction by SEBs as grant. The year 2000-01 is considered as the base year for calculation of loss reduction in the subsequent years. The cash losses are calculated net of subsidy and receivables. Total incentives released up to March 2006 amounted to INR 1,536.64 crore to eight states, against cash loss reduction of INR 3446.6 crore.

Rural Electrification Supply Technology (REST) Mission

Was set up in September 2002 and its main objective was to accelerate electrification of all villages and households by 2012 through local renewable energy sources and decentralised technologies.

National Rural Electricity Infrastructure and Household Electrification Programme (renamed Rajiv Gandhi Grameen Vidutikaran Yojana - RGGVY)

RGGVY - targets electrifying of some 1,25,000 villages, is to be implemented through the Rural Electrification Corporation. The Centre will provide 90 per cent capital subsidy under the scheme. The Central government has already approved INR 5,000 crore for providing capital subsidy for this scheme in the remaining Tenth Plan period. The total cost of the scheme has been estimated to be INR 16,000 crore. The scheme will continue during the Eleventh Plan period as well.

50,000 MW Hydro Power Initiative:

CEA has prepared pre-feasibility reports of 162 schemes with aggregate installed capacity of 47,930 MW. Based on the scrutiny of the PFRs, detailed project reports are under preparation for 77 schemes of total capacity 33,951 MW.

Inter-regional Grid linkages

Formation of a National Power Grid is envisaged in order to enable scheduled or unscheduled exchange of power all over the country. Formation of a National Grid would do away with uneven disposition of energy resources and growth disparities in energy. A number of inter regional schemes have been initiated by the government. The level of inter-regional exchange was about 31,000 MUs in 2004-05.

Initially due to wide variations in electrical parameters in the regional grids, primarily HVDC interconnections were established between the regions. This phase was completed in 2002 and this enabled an inter-regional power transfer capacity

of 5000 MW. In the next phase, inter-regional connectivity is planned to be strengthened with hybrid system consisting of high capacity UHV and EHV AC (765 kV and 400kV) and HVDC links. This would enable dispersion of power not only from mega-sized generation projects but also enable the transfer of bulk energy from one part of the country to another in different operational scenarios. The schemes commissioned under inter regional power transfer is shown in the table below.

| Inter-Regional Links under Operation | | |
|---------------------------------------------|-------------------------------|----------------------|
| <i>Name of the Link</i> | <i>Regions Interconnected</i> | <i>Capacity (MW)</i> |
| HVDC links | | |
| Vindhyachal HVDC back to back | West and North | 500 |
| Chandrapur HVDC back to back | West and South | 1000 |
| Gazuwaka HVDC back to back | East and South | 500 |
| AC Links | | |
| Korba Budhipadar 220kV3ckts | West and East | 450 |
| Balimela-Upper Sileru 220kV S/c | East and South | 200 |
| Kolhapur-Belgaum 220kV D/c | West and South | 300 |
| Lower Sileru and Burgur | West and South | 100 |
| Dehri-Sahupuri 220kV S/c | | |
| Karmnasa-Sahupuri 132kV D/c | North and East | 200 |
| Biharshariff-Sarnath 400kV D/c | North and East | 500 |
| Birpara- Salakati 220kV D/c | East and North East | 100 |
| Auraiya-Malanpur220kVD/c | North and West | 200 |
| Bongaigoan-Malda 400kV D/c | North East and East | 800 |
| Total | | 4850 |

Source: Ministry of Power Website (<http://powermin.nic.in>)

| Additional Inter-regional Schemes in 2003 | | |
|--------------------------------------------------|-------------------------------|----------------------|
| <i>Name of the Link</i> | <i>Regions Interconnected</i> | <i>Capacity (MW)</i> |
| Talcher-Kolar HVDC bipole | East and South | 2000 |
| Rourkela-Raipur400kV D/c | East and West | 1000 |
| Total | 3000 | |

Source: Ministry of Power Website (<http://powermin.nic.in>)

The inter-regional transfer capacity has been enhanced to 9,500MW by the end of 2004-05 and is further planned to be enhanced to 30,000MW by 2012 depending on the growth of generation capacity.

Rural Electrification Distribution Backbone (REDB)

One of the priorities listed in NEP 2005 is the creation of a Rural Electrification Distribution Backbone (REDB) with at least one 33/11 kv (or 66/11 kv) substation in every Block. Through the Budget 2005-06, Central government has provided INR 1,100 crore for the programme.

Ultra Mega Power Projects

To be set up to achieve this target of huge capacity addition of 100,000MW during the Tenth and Eleventh Plan periods. Projects to be developed through a process of tariff based competitive PPP model.

Aimed at using the economies of scale, delivering comparatively cheaper power to the system using the latest super critical technology. Each project to have a capacity of a minimum of 4,000MW and scope of future expansion will meet the power requirements of a number of states through power transmission on the regional and national grids.

The main criteria for the selection of sites are pit head location with domestic coal, coastal location with imported coal, and coastal location with domestic/blended coal. In the first phase, two projects at pit head site and three projects at coastal locations have been identified for the development of five Ultra Mega Projects.

The government has approved the setting up of five Shell companies (January 2006) that will be used to induct large business groups and outside agencies into the programme.

1. Sasan Power Limited (Madhya Pradesh)
2. Akaltara Power Limited (Chhattisgarh)
3. Coastal Gujarat Power Limited
4. Coastal Karnataka Power Limited
5. Maharashtra Ultra Mega Power Project Co.

Source: Ministry of Power Website (<http://powermin.nic.in>)

APPENDIX A-12.2

Reference Tables

TABLE A-12.2a
Growth in Power Consumption by Categories in Uttarakhand

| S. No. | Description | Annual Consumption (Million Units) | | | | | CAGR (Per cent) |
|--------------|--------------------------------------------|------------------------------------|----------------|----------------|----------------|----------------|-----------------|
| | | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | |
| 1. | Domestic | 983.84 | 1085.63 | 1084.04 | 1010.39 | 1036.52 | 1.31 |
| 2. | Commercial lighting & small electric power | 239.76 | 277.93 | 446.04 | 573.17 | 539.82 | 22.49 |
| 3. | Industrial | 326.95 | 546.1 | 656.07 | 888.82 | 1230.58 | 39.29 |
| 4. | Public lighting | 21.8 | 24.07 | 26.63 | 46.38 | 49.81 | 22.95 |
| 5. | Agriculture | 479.52 | 369.14 | 318.33 | 487.96 | 408.49 | -3.93 |
| 6. | Public water works & sewage disposal | 130.78 | 161.13 | 131.34 | 155.59 | 175.83 | 7.68 |
| Total | | 2182.65 | 2464.00 | 2662.45 | 3163.15 | 3441.05 | 12.05 |

Source: Central Electricity Authority (All India Electricity Statistics, General Review); 2005-06 data from Uttarakhand Power Corporation Limited (Commercial Statement CS-3 March 2006) Website: accessed 26.6.06.

TABLE A-12.2b
Plants of UJVNL and Estimated Power Generation (2004-05)

| S. No. | Power Plant | Installed Capacity (MW) | Estimated Energy Generation (GWh) | | |
|--------------|----------------|-------------------------|-----------------------------------|---------------|----------------|
| | | | Uttarakhand Share | HP Share | Total |
| 1. | Dhakrani | 33.75 | 90.95 | 30.32 | 121.27 |
| 2. | Dhalipur | 51 | 134.64 | 44.88 | 179.52 |
| 3. | Chibro | 240 | 495.92 | 165.31 | 661.23 |
| 4. | Khodri | 120 | 233.23 | 77.74 | 310.97 |
| 5. | Kulhal | 30 | 94.54 | 23.64 | 118.18 |
| 6. | Ramganga | 198 | 214.86 | 0 | 214.86 |
| 7. | Chilla | 144 | 694.53 | 0 | 694.53 |
| 8. | Maneri Bhali I | 90 | 463.06 | 0 | 463.06 |
| 9. | Khatima | 41.4 | 173.17 | 0 | 173.17 |
| Total | | 948.15 | 2594.9 | 341.88 | 2936.78 |

Source: Filing of Proposed Tariffs for 2004-05, Uttarakhand Jal Vidyut Nigam.

TABLE A-12.2c
Category-wise Number of Consumers of Power in Uttarakhand

| Year Ending | Domestic | Commercial | Industrial | | Public Lighting | Agriculture | Public Water Works | Total |
|-------------|----------|------------|------------|------|-----------------|-------------|--------------------|-----------|
| | | | (LV& MV) | (HV) | | | | |
| 31-3-02 | 7,46,037 | 88,990 | 8,399 | 128 | 1,030 | 18,563 | 550 | 8,63,697 |
| 31-3-03 | 7,51,992 | 89,854 | 7,971 | 200 | 309 | 17,370 | 747 | 8,68,448 |
| 31-3-04 | 7,78,046 | 97,804 | 6,462 | 209 | 206 | 17,706 | 606 | 9,01,044 |
| 31-3-05 | 8,42,980 | 1,01,183 | 5,980 | 295 | 213 | 18,499 | 628 | 9,69,784 |
| 31-3-06 | 9,20,930 | 1,08,917 | 6,427 | 441 | 217 | 19,127 | 671 | 10,56,730 |

Source: Central Electricity Authority (All India Electricity Statistics, General Review); 31.3.06 data from Uttarakhand Power Corporation Limited (Commercial Statement CS-3 March 2006) Website: accessed 26.6.06.

TABLE A-12.2d
Transmission and Distribution Losses in 2004-05

| State/UT | Energy (GWh) | | | T & D Losses | |
|----------------|-----------------|-------------------|--------------|--------------|----------|
| | Total Available | Sold within State | Sold Outside | (GWh) | Per cent |
| Haryana | 20402.93 | 13873.01 | 65.87 | 6529.92 | 32.11 |
| H.P. | 5738.37 | 4537.50 | 1583.34 | 1200.87 | 28.90 |
| J&K | 6696.46 | 3993.50 | 116.50 | 2702.96 | 41.08 |
| Punjab | 30564.47 | 22886.01 | 359.90 | 7678.46 | 25.42 |
| Rajasthan | 30158.55 | 16682.55 | 0.00 | 13476.00 | 44.68 |
| U.P. | 42992.45 | 28351.11 | 411.86 | 14641.34 | 34.39 |
| Uttarakhand | 5503.69 | 3455.81 | 292.66 | 2047.88 | 39.30 |
| Chandigarh | 1318.88 | 918.29 | 0.00 | 400.59 | 30.37 |
| Delhi | 23525.58 | 12906.39 | 133.00 | 10619.19 | 45.40 |
| BBMB | 8568.00 | 8484.00 | 8484.00 | 84.00 | 100.00 |
| Total | 175469.38 | 116088.17 | 11447.13 | 59381.21 | 36.20 |
| Andhra Pradesh | 51309.12 | 39120.15 | 442.91 | 12188.97 | 23.96 |
| Tamil Nadu | 51486.68 | 41625.97 | 340.00 | 9860.71 | 19.28 |

Source: General Review 2006 Central Electricity Authority Website: cea.nic.in, accessed 22.6.2006.

TABLE A-12.2e
Hydro Power Projects under Implementation in Uttarakhand

| Project | Units & Capacity (MW) | Agency | Status |
|-----------------------------------------|-----------------------|--------------------------------------------|-----------------------------------------------------------------------------|
| A. Central Sector | | | |
| 1. Tehri Stage I | 4x250 = 1000 | THDC | All units scheduled for commissioning in 2006-07. |
| 2. Tapovan Vishnugad | 4x130 = 520 | NTPC Hydro | Project cleared. Construction not commenced. |
| 3. Lata Tapovan HEP | 3x57 = 171 | NTPC Hydro | Project cleared. Construction not commenced. |
| 4. Koteswar | 4x100 = 400 | THDC | Project cleared. Civil construction commenced; equipment contracts awarded. |
| B. State Sector | | | |
| 1. Maneri Bhali II | 4x76 = 304 | UJVNL | All units scheduled for commissioning in 2006-07. |
| C. Private Sector | | | |
| 1. Vishnu Prayag commissioning mid-2007 | 4x 100 = 400 | Jaiprakash Power Venture Ltd | Construction in progress. |
| 2. Srinagar HEP | 4x82.5 = 330 | Alaknanda Hydro Power Co. Ltd (Tata group) | Project cleared. Construction not commenced. |

Source: Uttaranchal Jalvidyut Nigam Limited.

TABLE A-12.2f
Large Hydro Power Projects Allocated for Implementation

| S.No. | Project Name/River Basin | Capacity (MW) | Agency to which Allocated |
|--------------|------------------------------------|---------------|---------------------------|
| 1. | Kishau (Yamuna Basin) | 600 | THDC |
| 2. | Vyasi (do) | 120 | NHPC |
| 3. | Lakhwar (do) | 300 | NHPC |
| 4. | Lohari Nagpala (Bhagirathi) | 520 | NTPC |
| 5. | Pala Maneri (do) | 416 | UJVNL |
| 6. | Kotli Bahal (do) | 1,000 | NHPC |
| 7. | Vishnugad (Pipal Koti) (Alaknanda) | 360 | THDC |
| 8. | Bawla Nand Prayag (do) | 132 | UJVNL |
| Total | | 3,448 | |

Source: PTCUL Presentation to Uttarakhand Government on Integrated Power Transmission Evacuation System.

TABLE A-12.2g
List of Small and Medium Hydro Projects to be Executed in Phase I

| S.No. | Name of Project | Capacity (MW) | Executing Agency |
|-----------------------------------|------------------------------------|---------------|------------------------------------|
| A. Tons & Yamuna Basin | | | |
| 1. | Hanol Tuni | 45 | M/s Sunflag |
| 2. | Arakot Tuni | 70 | UJVNL |
| 3. | Tuni Palasu | 42 | UJVNL |
| | Total | 157 | |
| 4. | Rupin V | 15 | Tons Valley Power Ltd. |
| 5. | Supin | 11.2 | UJVNL |
| 6. | Mori Hanol | 27 | Allottee details NA |
| 7. | Gangani | 8 | Regency Gangani Pvt. Ltd. |
| 8. | Deora Mori | 27 | Allottee details NA |
| 9. | Hanuman Chatti - Siyana Chatti | 33 | UJVNL |
| 10. | Siyana Chatti Gangani | 45 | Allottee details NA |
| 11. | Barkot Kuwa | 30 | UJVNL |
| | Tons and Yamuna Basin Total | 196.2 | |
| B. Alakhnanda Basin | | | |
| 1. | Alakhnanda-I | 15 | UJVNL |
| 2. | Alakhnanda-II | 10 | UJVNL |
| 3. | Malkhet | 15 | M/s Malkhet Pvt. Ltd. |
| 4. | Devoli | 9 | M/s Him Urja Pvt. Ltd. |
| 5. | Banala | 10 | M/s Him Urja Pvt. Ltd. |
| 6. | Rishiganga | 8.25 | M/s Rishiganga Power Pvt. Ltd. |
| 7. | Madmaheshwar | 5.6 | UJVNL |
| 8. | Kaliganga-II | 6 | UJVNL |
| | Total | 78.85 | |
| 1. | Bhinderghanga | 15 | M/s Super Hydro Electric Pvt. Ltd. |
| 2. | Pulna | 13 | M/s Super Hydro Electric Pvt. Ltd. |
| | Alakhnanda Basin Total | 28 | |
| C. Bhagirathi Basin | | | |
| 1. | Bhilangana-III | 8.4 | M/s Polyflex |
| 2. | Bhilangana | 22.5 | M/s Swasti Power |
| 3. | Jalendhrigad | 11.8 | M/s Harsil Hydro Pvt. Ltd. |
| 4. | Kaldigad | 6 | UJVNL |
| | Bhagirathi Basin Total | 48.7 | |
| D. Mandakini Basin | | | |
| 1. | Ramavara Gauri Kund | 24 | |
| 2. | Gauri Kund | 18.6 | |
| 3. | Phata Byung | 10.8 | Allottee details NA |
| 4. | Chunni Semi | 24 | |
| 5. | Singhauri Bhatwari | 60 | |
| | Mandakini Basin Total | 137.4 | |
| | Grand Total | 646.15 | |

Source: PTCUL Presentation to Uttarakhand Government on Integrated Power Transmission Evacuation System.

TABLE A-12.2h
Low Tariff Hydro Power Schemes in Uttarakhand

| S.No. | Scheme | Capacity | Cost* | Annual Energy (GWH) | Tariff |
|--------------|---------------------------|-------------------|------------------|---------------------|--------|
| 1. | Badrinath | 2 x 70.00 140 | 357.33 | 702.70 | 0.81 |
| 2. | Garba Tawaghat @@ | 3 x 210.00 630 | 1447.77 | 2483.11 | 0.90 |
| 3. | Arakot Tiuni | 3 x 24.00 72 | 310.51 | 382.90 | 1.00 |
| 4. | Harsil | 3 x 70.00 210 | 578.20 | 920.57 | 1.10 |
| 5. | Chhunger - Chal | 2 x 120.00 240 | 725.53 | 853.28 | 1.13 |
| 6. | Rishi Ganga - I \$ | 2 x 35.00 70 | 277.01 | 327.30 | 1.18 |
| 7. | Karmoli | 2 x 70.00 140 | 465.60 | 621.00 | 1.30 |
| 8. | Mapang - Bogidiyar | 2 x 100.00 200 | 667.19 | 882.04 | 1.30 |
| 9. | Taluka Sankri | 2 x 70.00 140 | 378.14 | 559.47 | 1.33 |
| 10. | Deodi | 2 x 30.00 60 | 242.34 | 296.76 | 1.37 |
| 11. | Sela Urthing | 2 x 115.00 230 | 696.73 | 816.73 | 1.40 |
| 12. | Urthing Sobla @\$ | 4 x 70.00 280 | 888.45 | 1360.20 | 1.49 |
| 13. | Sirkari Bhyol Rupsiabagar | 3 x 70.00 210 | 899.63 | 967.97 | 1.55 |
| 14. | Rupsiabagar Khasiyabara | 2 x 130.00 260 | 1101.55 | 1195.63 | 1.59 |
| 15. | Gangotri | 1 x 55.00 55 | 252.61 | 264.76 | 1.62 |
| 16. | Gohana Tal | 2 x 30.00 60 | 270.38 | 269.35 | 1.64 |
| 17. | Bokang Baling | 3 x 110.00 330 | 1120.75 | 1124.62 | 1.68 |
| 18. | Jelam Tamak | 2 x 30.00 60 | 277.92 | 268.12 | 1.71 |
| 19. | Jakhol Sankri | 3 x 11.00 33 | 171.00 | 144.24 | 1.71 |
| 20. | Bhaironghati | 2 x 32.50 65 | 304.32 | 293.18 | 1.80 |
| 21. | Maleri Jelam | 2 x 27.50 55 | 257.85 | 243.07 | 1.80 |
| 22. | Naitwar-Mori | 3 x 11.00 33 | 202.20 | 151.00 | 1.85 |
| 23. | Bogudiyar - Sirkari Bhyal | 2 x 85.00 170 | 859.27 | 744.00 | 1.99 |
| 24. | Nand Prayag | 3 x 47.00 141 | 670.04 | 794.00 | 2.05 |
| 25. | Jadh Ganga | 2 x 25.00 50 | 277.48 | 220.88 | 2.19 |
| 26. | Lata Tapovan | 4 x 77.50 310 | 1021.30 | 1123.00 | 2.21 |
| 27. | Rishi Ganga - II \$ | 1 x 35.00 35 | 212.98 | 164.64 | 2.22 |
| 28. | Tamak Lata | 4 x 70.00 280 | 988.21 | 1040.70 | 2.30 |
| Total | | 4,559 (MW) | 15,922.29 | 19,215.22 | |

Note: * Cost: INR Crore;
 @@ Scheme has international implications;
 \$ Scheme has environmental implications;
 @\$ Scheme allotted to IPP by state government.

Source: Uttaranchal Jalvidyut Nigam Limited.

TABLE A-12.2i
Cash Loss Reduction and Incentives Released to States under APDRP
(As on 31 Mar 2006) (INR crore)

| Sl. No. | State | Year | Cash Loss Reduction | Incentive Released |
|--------------|----------------|----------------|---------------------|--------------------|
| 1. | Gujarat | 2001-02 | 472.74 | 236.37 |
| | | 2002-03 | 296.16 | 148.08 |
| 2. | Maharashtra | 2001-02 | 275.78 | 137.89 |
| 3. | Haryana | 2001-02 | 210.98 | 105.49 |
| 4. | Rajasthan | 2001-02 | 275.78 | 137.71 |
| 5. | Andhra Pradesh | 2002-03 | 530.22 | 265.11 |
| 6. | West Bengal | 2002-03 | 146.00 | 73.00 |
| | | 2003-04 | 605.52 | 302.76 |
| 7. | Kerala | 2002-03 | 129.88 | 64.94 |
| 8. | Punjab | 2003-04 | 503.88 | 65.28 |
| Total | | 3446.60 | 1536.64 | |

Source: Ministry of Power Website (<http://powermin.nic.in>) (Accessed on 16-6-06).

TABLE A-12.2j
Status of Financial Progress of APDRP Works as on 29th February 2008

(INR Lakh)

| Sl. No. | Name of Circle | Scheme Provision | Progress for Month of February 08 | Progress during 2007-08 upto February 08 | Cummulative Progress upto February 08 | % Cumulative Progress |
|--------------|------------------|------------------|-----------------------------------|------------------------------------------|---------------------------------------|-----------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. | UDC Dehradun | 3213.30 | - | 21.34 | 2752.80 | 86 |
| 2. | EDC Dehradun (R) | 2815.36 | 2.67 | 57.37 | 3249.90 | 100 |
| 3. | EDC Roorkee | 7565.00 | - | 42.45 | 5560.99 | 74 |
| 4. | EDC Srinagar | 5488.00 | - | 175.78 | 5496.81 | 100 |
| 5. | EDC Rudrapur | 7031.50 | -5.05 | 97.31 | 5854.85 | 83 |
| 6. | EDC Haldwani | 3071.40 | 9.32 | 80.38 | 2736.66 | 89 |
| 7. | EDC Ranikhet | 1824.27 | 12.42 | -83.90 | 2579.46 | 100 |
| Total | | 31008.84 | 19.36 | 390.73 | 28231.46 | 91 |

Source: Ministry of Power (<http://powermin.nic.in>)

APPENDIX A-12.3

Privatisation of Electricity Distribution

This is an analysis of issues in the privatisation of electricity distribution based on post-reforms Indian experience. It approaches the issue from the basic perspective that such arrangements, in essence, are forms of public-private partnership.

While there are several reported instances of successful PPPs in electricity distribution in other countries, one fact that stands out is the mixed record of Indian experiments in the field. Fully private-owned distributors have been operating successfully in Ahmedabad, Kolkata, Mumbai and a couple of other areas. But these are arrangements inherited from before the nationalisation of the sector in 1948.³ After the sector was opened up, attempts to privatise existing public utility distribution systems have run into serious problems in Orissa and more recently in New Delhi. Repeated efforts to entrust urban electricity distribution in Kanpur to a public sector entity have also failed to take off.

What then is a viable model of PPPs in urban distribution? Experience points to three crucial elements that could determine the success or failure of such experiments.

Size of Distribution Area

Some experts argue (ref: Dr. T.L. Sankar)⁴ in favour of smaller distribution areas. This is considered to be more suited for efficient operations. It is a fact that Distribution Companies (eg: Delhi) were advocated to be retained as very large ones with a view to attract participation by foreign distribution companies but recent experience shows that foreign companies have little appetite for entering this field. Hence, it makes sense that a fully indigenous model should be encouraged. A smaller size would enable more actors to get into the distribution sector as partners with public sector or on their own. This is a very valid approach.

It is pertinent to note here that while the Orissa and New Delhi experiments have posed problems, a not widely publicised success story is the licensing (1992) of the Greater Noida distribution area to the Joint Sector Noida Power Company Ltd. (NPCL - 73 per cent owned by the RPG group). Overcoming some initial problems related to terms of agreement of bulk supply by UPSEB, NPCL has now been functioning successfully for over a decade. It has one of the lowest T&D loss levels (10 per cent) in the country. This has been achieved through a thorough energy auditing process, which involves periodic reconciliation of consumption and energy input in aggregated units. The 11 kv feeders are provided with electronic meters at substations, which enable accurate assessment of energy sent out to the system. To develop the rural distribution network, the Company has developed the concept of 'cluster supply' in

villages, whereby multiple small-sized transformers are introduced for supply to localised group of consumers. By extending the high-tension network to almost the doorstep of consumers, NPCL has reduced energy pilferage opportunities. New connections are sanctioned and activated speedily within a week to 15 days.

The case of NPCL indicates that distribution areas of very small dimensions can be viable. NPCL caters to just about 25,000 connections and has a current peak load of 45 MVA. Of course, each distribution area has its own specific features and the Greater Noida area may have certain advantages *vis-à-vis* a typical urban agglomeration in another state. But the NPCL story certainly underlines the point of size being key to efficient management.

Symmetry in Obligations

It is our diagnosis that the problems associated with Orissa and more recently the Delhi privatisations stem from a serious asymmetry between the structure of the PPPs and relative obligations. The Delhi case is a perfect illustration of the private partner being loaded with obligations without corresponding supports by the public partner (here the government), supports which are essential with respect to the specifics of the case. The central issue to be tackled in Delhi is the very high level of T&D losses and on paper the three Discoms have achieved the committed levels of loss reduction over the first three years of operation. But these targets were unduly low: consider that as per the targets set, after five years of privatisation, losses in Delhi would equal the current national average level of about 32 per cent. A more stringent loss reduction target would have been possible if a far more active government role in the reforms exercise would have been forthcoming, which would also have been consistent with the ownership pattern.⁵

The argument favouring smaller size of Discoms is relevant to the Delhi case as well. Despite the fact that the private parties belong to two of the largest business houses in India, investments have lagged behind in Delhi. Smaller Discoms would have also been better-placed to tackle the issue of loss reduction more effectively by isolating the theft-prone areas for rigorous energy audit of the type successfully adopted by NPCL. Larger number of distribution areas would have also facilitated 'yardstick competition' and more imaginative incentive schemes for loss reduction.

In the context of the problems encountered in Delhi (strong public opposition to tariff increases) one more important point may be made, which is that public awareness tends to be

3. Ahmedabad Electricity Co. and Calcutta Electric Supply Co. have been in existence for over a century. BSES has been operational for over 60 years. Two smaller private licensees are also operational at Surat and in the Durgapur area of West Bengal from pre-nationalisation days.

4. Former Civil Servant, former Principal, Administrative Staff College of India.

5. The Delhi Discoms are 49 per cent owned by state government.

heightened in a reform scenario because of the greater transparency (through the tariff setting process) and access to information. Also, it is the general observation that while there is scepticism in public mind if private operators will be qualitatively different from those they replace, the consumer does demand better performance standards from the private operator. To revert to the Delhi case again, as long as the DVB was running up losses, the bill was picked up by government and indirectly the taxpayer. In that regime, public protests were directed more against erratic services. But in the new arrangement, revenue gaps unmet through government subsidy are to be made good by the bill-paying consumer which is increasingly unacceptable to the public.

Phased Induction of Private Players

Even where the target areas for inducting PPP arrangements are smaller in size, it is advisable to stagger the entry of private players in order to improve the competition for the licences and to enhance the value of the public asset that is up for privatisation. (Ref: Dr. Joel Ruet, 2005). In the case of a state with a mix of urban and rural areas in particular, the phased approach outlined here is likely to be more acceptable politically. The precaution to be taken is that the first area(s) to be privatised should be processed in a way that the chance of failure is eliminated. This concerns both the selection of parties and the sharing of obligations that we have dealt with earlier.

Ideally, the public sector agency (in the case of Uttarakhand, UPCL) should take measures to upgrade the towns selected for the first round so as to 'showcase the product' for improved competition and to obtain greater value from the private agencies. Current Central schemes like support to IT-based systems under APDRP (and APDRP itself) and 'Transition financing' spelt out under the National Electricity Policy could be taken advantage of for this purpose. What is advocated is selectiveness in targeting the funds so available (as opposed to spreading the resources thin) so as to enhance the value of public investments over the longer term.

We envisage better competition to emerge through the phased approach, first because of the smaller size of each offering and secondly because the incumbent private partner of a Discom will have added interest in acquiring adjacent or similar areas put up for privatisation in succeeding phases. Political opposition can also be blunted more successfully if the plan is implemented in phases. For example, one main town in a select district (or one town each in a block of districts) could be put up to test the interest of private partners, and on successful performance over two or three years, other towns in the same district(s) could be taken up.

Rural Distribution

Unlike in the urban segment where it should be feasible to avoid arrangements involving subsidy transfers to the private party, privatisation of rural distribution is more often likely to require subsidies over the long term. There are other

complexities as well and as we noted earlier, the financing needs are also larger in scale. Hence, the PPP model for rural distribution is only part of the suggestions offered here.

One more suggestion (again offered by Dr. Sankar) is to identify existing low cost generating plants with agricultural supply across a state, so as to reduce the cost of service of this segment at the energy input level itself. A variant of this approach is prevalent in parts of US where rural areas are fed by dedicated low-cost. In the Indian context, the main arguments advanced in support are:

- a. It is a political reality that agriculturists have come to expect low-cost or free power supply and this reality cannot be changed in the foreseeable future, and
- b. The linking of low cost generation to agricultural supply on a long term basis (Dr. Sankar suggests a ten year announced commitment by Government) will make the actual installation of meters more acceptable and feasible, because farmers oppose metering, fearing that it is precursor to increase in tariffs.

Also, it is reported elsewhere (Haryana) that farmers oppose metering mainly because of the poor quality of supply and not only because of the fear that metering will invariably lead to higher tariffs.

A point to be considered here is if this arrangement will have adverse impact on pricing of non-agricultural supply. This is a matter for detailed calculations based on supply costs and consumption patterns. So a generalisation cannot be made.

A second suggestion implied in the above approach but spelt out specifically elsewhere (Ref: Dr. Siddharth Sinha, 2005) is endorsed here. This is the noted advantage of separating out the organisation for delivering power to agriculture, from the rest of the system. The concept has been mooted in varying forms by official committees set up by Ministry of Power (Distribution Policy Committee, 2002, Deepak Parekh Committee on State Specific Reforms, 2002). Among the advantages seen are:

- Facilitating closer targeting of subsidy to rural zones,
- Minimising the misreporting of actual T&D losses,
- Providing concentrated attention to the rural segment which has characteristics different from the urban, and
- Making out the remaining distribution business attractive to private investors.

We note here that the approach we recommended towards PPPs in urban distribution will dovetail with the suggestion noted above. The means of separating out the rural distribution from the urban is a matter that needs to be gone into, keeping in view administrative and staffing aspects of such reorganisation. Doing so at one go may pose difficulties in implementation. These problems can be minimised if the process is allowed to evolve organically, by putting PPPs in place in select urban and rural areas in phases.

The second point is the advisability of involving consumer groupings, local administrative bodies and such participatory agencies as active partners to manage rural distribution. There is the well-documented Chilean model where a rural electrification fund was utilised to allocate a one-time direct subsidy to private electricity companies to cover part of their investment costs in RE projects. Local operators, often working with community groups, commit to a target of new connections. Their proposals are scored against a checklist of objective criteria, including a cost-benefit analysis, the operator's investment commitment and social impact. Although grid connections are preferred, renewable off-grid systems also get support. (Electricity Act, 2003 allows for such stand-alone systems to be set up without licensing requirement). Operators receive the subsidy up front and must make a minimum contribution to project costs according to a formula set by government.

In the scoring criteria for allocation of subsidies from the fund, economic and social benefits could be given weightage in order to optimise the impact. National Council of Applied Economic Research recommends a social equity weight that reflects the poverty in the community affected by the proposed investment. The greater the poverty, the greater the social equity weight. Thus, the desirability of a power project (and its eligibility for subsidy) is given by the equation

$$D_i = S_i B_i N_i$$

where the subscript *i* refers to the power project *i*, *S* is the social equity weight, *B* refers to the economic benefits generated

and *N* refers to the population affected by the rural supply project.

Link up with Employment Promotion

Allocation of subsidies in the manner suggested will mute the opposition to private entrants, especially if they act in association with local groups. Yet another approach to make such schemes acceptable politically is to link them up with rural employment. This can be done by the Discoms providing initial facilities for training of educated local youth in power supply maintenance practices and then assimilating them in local distribution agencies, or even encouraging some among them to take up rural distribution in small manageable areas. There is little doubt that a scheme involving some degree of employment potential will find ready acceptance politically in India. This could be the route to promote additional investment through PPPs and their variants in the rural distribution segment.

One of the positive learnings from the Orissa privatisation is that decentralisation of distribution responsibilities can lead to some improvements in performance. It was seen for instance that rural consumers responded very positively to electricity management at the village level. When the local Xavier Institute of Management, in collaboration with the private distribution company, tried out a pilot scheme to set up village collectives to manage bill collection in a few areas, the newly-formed village committees achieved a 100 per cent increase in bill collection over a six month period. The precaution to be taken is that decentralisation does effectively transfer power into the hands of the local elite (ref: Navroz K. Dubash, 2002).

APPENDIX A-12.4

UERC's Retail Tariff Order Dated 12 July 2006 (for FY 2006-07)

In April 2006, Uttarakhand Electricity Regulatory Commission was reconstituted from a Single-Member body to a Three-Member Commission. Consequently, the petitions for fixing of retail tariffs for FY 2006-07 that were submitted to the Commission by UPCL in December 2005 were considered afresh by the reconstituted body that approved the Tariff Order on 12th July 2006. As the present report was written before the latest Tariff Order became available, it has become necessary to deal with this Tariff Order separately. Hence, a summary of some key decisions notified by the Commission in the latest Tariff Order is given here.

Results of Special Audit: In para 2.5 of this chapter we referred to a special audit of UPCL Accounts, ordered by UERC in order to determine the amount of 'surplus earnings' and the dispute attending this issue between UPCL and UERC. Through the T.O., UERC has accepted the findings of the Special Audit. While doing so, UERC has rejected the contention of UPCL that all expenses shown in the company's audited accounts should be accepted as prudent and valid for tariff purposes. The Commission has observed in this context that loss shown in the company's accounts could be on account of failure to control expenses and other inefficiencies.

Accordingly UERC has ordered that of the assessed surplus of INR 755.55 crore, an amount of INR 100.61 crore that is the subject of an appeal pending before the Appellate Tribunal Electricity may be set apart for the present and the balance (INR 654.94 crore) may be transferred to create a separate 'Network Development Fund'. This fund will be utilised exclusively for leveraging funds for system improvement works, so that it is returned to the consumers in the form of relief in tariffs over a period of three years.

Tariff Rationalisation: The main directives are the following:

- 'Minimum charges' are abolished for all categories of consumers
- UPCL's proposal to levy additional charges on units availing of 'captive generation' when they draw from the grid in emergency situations or normally has been rejected and the Commission has ordered that they will be charged only tariffs applicable to 'temporary' supply for emergency situations and normal tariffs for regular draws.
- Three separate tariff slabs obtaining for Steel Units under the Industrial category have been rationalised into a single rate.

UPCL's proposals for raising of tariffs by an average of 10 per cent in all categories have been turned down and existing

tariffs have been retained except to the extent of the rationalisation and some adjustment in the category of 'Railway Traction' supply.

In the result, the levels of 'cross subsidy' have been significantly brought down from average of 75 paise/unit in the prevailing tariff to about 25 paise/unit as calculated by the Commission.

Industrial Demand: In para 2.5 of the Report, we referred to the explosive growth in demand in the 'Industry' category. In the Tariff Petition, the estimated demand for 2005-06 for Heavy Industry category including Steel Units was reported by UPCL as 922 MU, while the demand actually registered reached 1230 MU—an obvious case of gross underestimation. As industrial consumption has large impact on revenue projections, this underestimation largely explains UPCL's proposal for across the board tariff hikes (and also creation of a 'Regulatory Asset' dealt with below) for year 2006-07.

However, for disallowing the proposed tariff hikes, UERC has relied on an estimate of sales based on new connections granted by UPCL for the category of Steel Units. The projected sales have been worked out as 2448 MU for Steel Units (an approximate 800 per cent increase over the UPCL projection and the total sales for 'Heavy Industry' as 3101 MU.

Comment: The method adopted by UERC in this respect is highly unusual and it is also doubtful if such a massive jump in sales can come about over one year. So it would appear that further disputes relating to revenues of UPCL could follow.

'Regulatory Asset': Along with the proposed tariff increases, UERC has also rejected UPCL's request for creation of a notional 'Asset' with the ostensible purpose of reducing the 'tariff shock' on consumers. From the facts discussed above, it is obvious that this particular proposal was ill conceived and unjustified on the basis of sales trends. So this decision of UERC is on expected lines.

Veracity of Data: In the concluding part of the Tariff Order, UERC has pulled up UPCL in strong terms for the delays and poor quality of information furnished with the tariff petition and separately. The most disturbing part of the comment is where UERC expresses that wrong information has been deliberately furnished in order to suppress revenues, show increased working expenses and thereby justify tariff increases.

From the point of view of this Report, it may be noted that the analysis and conclusions are based on data put out by UPCL and other agencies. If the reliability of any part of this data were in question, it would have contributed to flawed analysis as well.

Chapter 13

Roads



1. Introduction

Uttarakhand is predominantly a hilly terrain state spread over 53,483 square km with altitudes varying between 100 metres and 7800 metres. Rail network is minimal and confined to plains and foothills only while the air connectivity of the state is extremely low. Therefore, roads are a critical means of transport. Connectivity is a necessary condition for development in every sector of economic activity, particularly trade and tourism, agriculture and horticulture that are the main economic activities of the state. Road network in Uttarakhand is inadequate, both in rural as well as in urban areas. In this context, upgradation of the existing roads as all weather motor roads and providing connectivity to uncovered villages are considered as important strategies of economic development. Besides this, socio-economic development requires safe, affordable and reliable transport services. State government is working towards a strategy of optimal mix of public-private and multi mode transport services to meet the deficiency. This chapter reviews the present status of roads, the state's endeavour towards improvement of road network and the best practices followed elsewhere in the country. Finally, a set of measures is suggested to achieve the desired goals in light of the specific conditions prevailing in the state due to its geographical conditions.

2. Present Status

The Uttarakhand government envisions achieving rapid socio-economic development by upgradation of existing road network in the state. Accordingly, the State Public Works Department (SPWD) has been working towards upgrading light vehicle roads as all weather motor roads, providing connectivity to all villages above the population of 250 by year 2010. In addition to these measures, the state government has identified rapid provisioning of

reliable connectivity between major centres in Kumaon and Garhwal regions, building alternate access routes to the *Char Dham* pilgrimage centres and Kailash Mansarovar Yatra, and creation of permanent facilities for the Kumbh congregations and regular pilgrims at Haridwar as important goals. Upgradation of existing state highways to national highways and major district roads to state highways is also figuring prominently in the roads development strategy. Similarly, various tourist destinations that have so far been out of reach of the tourists due to poor road connectivity are made accessible by improving and upgrading the bridle roads and border tracks of the state. The concept of light vehicle roads has been dropped and all the new roads would be all weather motor roads. In order to achieve these goals, the state plans to mobilise additional resources through private participation and external aids.

2.1 Organisation of Construction and Maintenance Agencies

Administration of national highways rests with the Central government. The Ministry of Road Transport and Highways (MORTH) through Central Public Works Department (CPWD) maintains national highways. State governments maintain the state highways through the State Public Works Departments (SPWD) on the lines of CPWD. Responsibility of maintaining other categories of roads rest with the Rural Engineering Organisation (REO) of state, urban local bodies and *panchayats*. In Uttarakhand, Public Works Department (PWD) is the main organisation, responsible for providing road connectivity in the state. The State PWD as per directions of state's Ministry of Road Transport and Highways not only carries out reconstruction and improvement of the riding quality of existing roads but also constructs new roads. Border roads organisation (BRO) and local bodies

are the other agencies that build and maintain roads in the state.

2.2 Classification and Inventory of Roads

Roads are categorised as national highways (NH), state highways (SH), major district roads (MDR), other district roads (ODR) and village roads (VR) for administrative and maintenance purpose. National highways (NHs) are the arterial roads facilitating interstate and strategic defence movements. State highways, arterial roads within a state, facilitate inter-district movements. They connect district headquarters, important towns and cities in the state with the state capital and with national highways and highways of adjacent states. Major district roads run within the district to connect areas of production with markets, rural areas to the district headquarters as well as to national and state highways. By acting as the link between the rural and urban areas, state highways and major district roads combined facilitate intra-district movements. The other district roads (ODRs) and the village roads (VRs) provide connectivity across districts and villages. Village and district roads are critical to rural economy as they provide connectivity for marketing of agriculture produce and facilitate social needs.

The composition of various categories of road network in Uttarakhand is compared with the national average in Table 13.1. National highways account for 8.5 per cent of total road length in Uttarakhand as against 2 per cent share at all India level. Contrary to this, the state highways and major district roads have lesser percentage shares in total roads network in Uttarakhand. In the case of other district roads and village roads, there is not much

difference between Uttarakhand and all India. Clearly, the contribution of state government in building road network does not match with the efforts put in by the Central government in view of the fact that inadequacies continue to prevail in provisioning of inter-district and rural connectivity.

TABLE 13.1
Composition of Road Network in Uttarakhand and All India

| Category of Roads | Uttarakhand State | | All India | |
|--------------------------------------|-------------------|---------------------------|------------|---------------------------|
| | Total (km) | Percentage Share in Total | Total (km) | Percentage Share in Total |
| National highways | 1328 | 8.5 | 65569 | 2.0 |
| State highways | 437 | 2.8 | 131899 | 4.0 |
| Major district roads | 1369 | 8.7 | 467763 | 14.1 |
| Other district roads & village roads | 12540 | 80.0 | 2650000 | 79.9 |

Source: Uttarakhand State Public Works Department, Dehradun and National Highways Authority of India (as available on NHAI's website (www.Nhai.org/roadnetwork.htm) on 29.5.2006.

Between March 2000 and March 2005 length of national highways has increased by 802 km (765 km surfaced and 37 km unsurfaced/*kuccha*). The length of state highways decreased by 798 km during the same period. There was only 5 km addition to the surfaced length of MDRs. However, there was an addition of 1577 km of surfaced and 975 km of *kuccha* ODRs during this five years period. As regards village roads, length of painted village roads increased by 1134 km and length of village *kuccha* roads decreased by 1816 km. Overall there was an increase of 3242 km over this five-year period (Table 13.2).

TABLE 13.2
Length of Roads in Uttarakhand (Km)

| Road/Type | March 2000 | | | March 2005 | | | Change in km between 2000-2005 | | |
|-------------------------|------------|--------|-------|------------|--------|-------|--------------------------------|--------|-------|
| | Painted | Kuccha | Total | Painted | Kuccha | Total | Painted | Kuccha | Total |
| National highways | 526 | 0 | 526 | 1291 | 37 | 1328 | 765 | 37 | 802 |
| State highways | 1233 | 2 | 1235 | 437 | 0 | 437 | -796 | -2 | -798 |
| Major district roads | 1270 | 95 | 1364 | 1319 | 50 | 1369 | 49 | -45 | 5 |
| Other district roads | 2606 | 1752 | 4358 | 4183 | 2727 | 6910 | 1577 | 975 | 2552 |
| Village roads | 2446 | 5001 | 7446 | 3580 | 2049 | 5630 | 1134 | -2952 | -1816 |
| Light vehicle roads | 5 | 311 | 316 | 75 | 2558 | 2633 | 70 | 2247 | 2317 |
| Bridle roads | 0 | 3970 | 3970 | 0 | 3881 | 3881 | 0 | -89 | -89 |
| Length of all roads | 7559 | 11130 | 18946 | 10885 | 11303 | 22188 | 3326 | 173 | 3242 |
| Motor bridge (numbers) | | | 625 | | | 1084 | | | 459 |
| Bridle bridge (numbers) | | | 685 | | | 772 | | | 87 |

Source: Uttarakhand State Public Works Department, Dehradun.

The changes in composition of different types of roads are also on account of declaration of some of the state highways as national highways and takeover of some of the *panchayat*-maintained roads by the district administration besides the creation of new roads. While some of the state highways were declared as national highways, there were no noticeable additions to the length of state highways between 2000 and 2005. About 50 km was added to MDRs possibly, by converting *kuccha* MDRs to surfaced MDRs. Other noticeable development was upgradation of village *kuccha* roads to painted village roads and ODRs. There was addition of about 2,300 km to light vehicle roads till March 2005. However, as stated earlier the concept of creating light vehicle roads is abandoned now. In a nutshell, the new roads that were created during these five years were in the categories of ODRs and light vehicle roads. Besides this, all other activities in the roads sector were related to surfacing the existing *kuccha* roads and upgrading the existing roads.

2.3 Road Density

As of March 2005, Uttarakhand had 45.26 km of roads in every 100 square kilometres of geographical area, which is less than 50 per cent as compared to the all India average of 103 km road length for every 100 square km of area. In terms of coverage of population, Uttarakhand had

2.85 km of roads for every 1000 population as against all India average of 3.29 km (Table 13.3). Under this comparison, Himachal Pradesh also was better connected than Uttarakhand.

TABLE 13.3
Road Density: Uttarakhand, Himachal Pradesh and All India

| | Uttarakhand | Himachal Pradesh* | All India |
|------------------------------------------------|-------------|-------------------|-----------|
| Density of road length (per 100 sq.km.) | 45.26 | 49.94 | 102.92 |
| Density of road length per thousand population | 2.85 | 4.42 | 3.29 |

Note: * For Himachal, the information was as on March 2003.
Source: Uttarakhand State Public Works Department, Dehradun.

Within Uttarakhand, Kumaon region has more road length per 100 square km of area compared to Garhwal region. By area Dehradun and Nainital districts rank first and second while Uttarkashi, Chamoli and Pithoragarh districts rank among last three in terms of road density. When the road density is defined in terms of km per 1000 population, Pauri Garhwal and Uttarkashi districts rank among the top two while Haridwar and Udham Singh Nagar find lowest positions (Table 13.4).

TABLE 13.4
District-wise Road Length and Road Density in Uttarakhand State (As on March 2005)

| District | Area (Square Km.) | Population | PWD | | Total Road * Length (Km.) | Road Density | | | |
|----------------------|-------------------|------------|----------|--------|---------------------------|--------------|-----------|----------------------|-----------|
| | | | Surfaced | Kuccha | | Km/100 Sq Km | | Kms./1000 Population | |
| | | | | | | Surfaced | All Roads | Surfaced | All Roads |
| Uttarkashi | 8016 | 295013 | 570 | 507 | 1225 | 7.1 | 15.3 | 1.9 | 4.15 |
| Dehradun | 3088 | 1282143 | 1315 | 883 | 3173 | 42.6 | 102.8 | 1.0 | 2.47 |
| Haridwar | 2360 | 1447187 | 962 | 30 | 1668 | 40.8 | 70.7 | 0.7 | 1.15 |
| Tehri Garhwal | 3796 | 604747 | 765 | 1078 | 2387 | 20.2 | 62.9 | 1.3 | 3.95 |
| Pauri Garhwal | 5230 | 697078 | 1236 | 1678 | 3410 | 23.6 | 65.2 | 1.8 | 4.89 |
| Chamoli | 7520 | 370359 | 502 | 558 | 1356 | 6.7 | 18.0 | 1.4 | 3.66 |
| Rudrapur | 2439 | 227439 | 242 | 446 | 794 | 9.9 | 32.6 | 1.1 | 3.49 |
| Total Garhwal region | 32449 | 4923966 | 5592 | 5180 | 14013 | 17.2 | 43.2 | 1.1 | 2.85 |
| Pithoragarh | 7169 | 462289 | 616 | 509 | 1307 | 8.6 | 18.2 | 1.3 | 2.83 |
| Champawat | 2004 | 224542 | 341 | 271 | 798 | 17.0 | 39.8 | 1.5 | 3.55 |
| Almora | 3689 | 630567 | 1098 | 712 | 2073 | 29.8 | 56.2 | 1.7 | 3.29 |
| Bageshwar | 1696 | 249462 | 328 | 203 | 580 | 19.3 | 34.2 | 1.3 | 2.33 |
| Nainital | 3422 | 762909 | 1280 | 543 | 3162 | 37.4 | 92.4 | 1.7 | 4.14 |
| Udham Singh Nagar | 3055 | 1235614 | 1631 | 3 | 2275 | 53.4 | 74.5 | 1.3 | 1.84 |
| Total Kumaon region | 21035 | 3565383 | 5292 | 2241 | 10195 | 25.2 | 48.5 | 1.5 | 2.86 |
| Uttarakhand state | 53484 | 8489349 | 10886 | 7535 | 24208 | 20.4 | 45.3 | 1.3 | 2.85 |
| All India | 3287263 | 1027015247 | | | 3383344 | | 102.9 | 0.0 | 3.29 |

Notes: *Total road length includes surfaced and un-surfaced roads of PWD and roads maintained by other organisations (BRO and local bodies).

Source: Uttarakhand State Public Works Department, Dehradun.

If only the all weather *pucca* roads were to be considered for estimating the road density, there was only 20.4 km of surfaced roads per 100 square km of geographical area of Uttarakhand. Intra-regional comparison indicates Kumaon to be better connected with 25.2 km of road per 100 sq km as compared to Garhwal region, which has only 17.2 km of road length for every 100 sq km of area.

2.4 Road Density, an Inferior Measure of Connectivity for Uttarakhand

It may be noted that the above comparisons do not carry much meaning for policy formulation in the case of Uttarakhand due to wide variation in population density across districts and variation in the topography of the region. The importance of providing connectivity to each and every village to district roads cannot be undermined.

With regard to village connectivity, all over Uttarakhand, only about 60 per cent of the villages have been connected by road. The Garhwal region has 64 per cent of villages connected against 55 per cent in Kumaon region. Udham Singh Nagar and Haridwar districts have about 96 per cent and 95 per cent of villages respectively, connected by roads. Champawat and Pithoragarh districts have only 40 per cent and 44 per cent of villages respectively, connected by roads. Thus, a number of villages in the hills and in districts, forming part of the national boundary, have not been connected by roads (Table 13.4).

TABLE 13.5
District-wise Village Connectivity

| District | No. of Development Blocks | Total No. of Villages | Villages Connected | Percentage of Villages Connected |
|-------------------------|---------------------------|-----------------------|--------------------|----------------------------------|
| Uttarkashi | 6 | 682 | 350 | 51.32 |
| Dehradun | 6 | 728 | 561 | 77.06 |
| Haridwar | 6 | 510 | 483 | 94.71 |
| Tehri Garhwal | 10 | 1801 | 1115 | 61.91 |
| Pauri Garhwal | 15 | 3137 | 2067 | 65.89 |
| Chamoli | 9 | 1154 | 560 | 48.53 |
| Rudrapur | 2 | 658 | 451 | 68.54 |
| Total Garhwal region | 54 | 8670 | 5587 | 64.44 |
| Pithoragarh | 8 | 1579 | 689 | 43.64 |
| Champawat | 4 | 651 | 258 | 39.63 |
| Almora | 11 | 2158 | 1041 | 48.24 |
| Bageshwar | 3 | 875 | 397 | 45.37 |
| Nainital | 8 | 1065 | 817 | 76.71 |
| Udham Singh Nagar | 7 | 658 | 630 | 95.74 |
| Total Kumaon region | 41 | 6986 | 3832 | 54.85 |
| Total Uttarakhand state | 95 | 15656 | 9419 | 60.16 |

Source: Uttarakhand State Public Works Department, Dehradun.

As per the Road Development Plan of the state government, villages with population above 1,000 were to be connected by year 2003. Villages with population between 500 and 1,000 by year 2007 and villages with population below 500 were to be connected by the year 2010. Statistics on road connectivity of villages classified according to population sizes is presented in Table 13.6. It can be noticed that population size of the village is directly linked to the road connectivity. Villages with population of more than 1500 have got road connectivity to the extent of 97 per cent. On an average 69 per cent of villages with population size of 250 or more are connected by roads, while roads connected are only about 53 per cent of villages with population size of less than 250.

TABLE 13.6
Villages Connected with Roads (2005)

| Category of Villages as per Population | Total No. of Villages | Villages Connected till September 2005 | Per cent of Connected Villages |
|----------------------------------------|-----------------------|----------------------------------------|--------------------------------|
| Above 1500 | 657 | 635 | 97 |
| 1000 to 1499 | 509 | 434 | 85 |
| 500 to 999 | 1890 | 1336 | 71 |
| 250 to 499 | 3528 | 2169 | 61 |
| Total | 6584 | 4574 | 69 |
| 0 to 249 | 9072 | 4849 | 53 |
| Grand total | 15656 | 9423 | 60 |

Source: Uttarakhand State Public Works Department, Dehradun.

Thus, larger villages are better connected than smaller villages. Thus, the policy has prioritised the connecting larger villages with roads over the smaller villages. Though this is the normal practice in plains, in hills smaller villages indicate the presence of more hostile terrain and hence, more difficult life than those in bigger villages. Medical facilities, marketing of household items, schools and agriculture extension and administrative services are all located in bigger places. Therefore, in order to correct this bias as well as to join the isolated habitations with mainstream, constructing roads to smaller villages must have been prioritised in view of the peculiarities of Uttarakhand state.

3. Schemes for Road Connectivity

3.1 Pradhan Mantri Gram Sadak Yojna (PMGSY)

The Pradhan Mantri Gram Sadak Yojna (PMGSY) has been the main scheme designed to provide roads in rural areas. Under PMSGY, between March 2002 and November 2005 (the date of latest information available

to this Study) about INR 57 crore were spent and 67 works were completed leading to construction of 299 km of village roads during 2001/02 and November 2005 (Table 13.7).

3.2 Role of SPWD in Spreading Road Network in Uttarakhand

District-wise percentage share of roads built by PWD is presented in Table 13.8. It can be noticed that 76 per cent of existing roads in Uttarakhand are built by PWD. Of the roads built by PWD, only 59 per cent are surfaced. Thus, more than 40 per cent of the roads built by PWD cannot be used round the year. In Rudrapur only 35 per cent of the roads built by the PWD are surfaced.

3.3 Role of MORTH for Development and Maintenance of National Highways

As per the statistics supplied by the SPWD, Uttarakhand has 1328 km of national highways passing through the state as compared to 1208 km of Himachal Pradesh. The state-wise allocations from the Ministry of Road Transport and Highways (MORTH) for development and maintenance of national highways for the year 2004-2005 for Himachal Pradesh were INR 45 crore and INR 17.15 crore, respectively. As against this the corresponding figures for Uttarakhand were INR 25.44 crore and INR 13.34 crore, respectively.¹ Given the fact that Uttarakhand had higher share in national highways (2.03 per cent) as compared to Himachal Pradesh (1.81

TABLE 13.7
Progress of Work under PMSGY

| Year | Expenditure (INR Lakh) | Cumulative Expenditure (INR Lakh) | Physical Progress | | Cumulative Physical Progress | |
|----------|------------------------|-----------------------------------|-------------------|------------------------|------------------------------|------------------------|
| | | | Km | No. of Works Completed | Km | No. of Works Completed |
| 2001-02 | 2004 | 2004 | 14 | - | 14 | - |
| 2002-03 | 2398 | 4402 | 148 | 37 | 162 | 37 |
| 2003-04 | 988 | 5390 | 129 | 26 | 291 | 63 |
| 2004-05 | 200 | 5590 | 6 | 3 | 297 | 66 |
| 2005-06* | 74 | 5664 | 2 | 1 | 299 | 67 |

Note: *Data for 2005-06 only up to November 2005.

Source: PWD, Dehradun.

TABLE 13.8
PWD and District-wise Road Length

| District | Roads Under PWD (Km) | Roads Under Other Departments (Km) | Total Road Length (Km.) | Percentage of PWD Roads | Percentage of Surfaced Roads Built by PWD |
|-------------------------|----------------------|------------------------------------|-------------------------|-------------------------|-------------------------------------------|
| Uttarkashi | 1077 | 148 | 1225 | 88 | 53 |
| Dehradun | 2198 | 975 | 3173 | 69 | 60 |
| Haridwar | 992 | 676 | 1668 | 59 | 97 |
| Tehri Garhwal | 1843 | 544 | 2387 | 77 | 42 |
| Pauri Garhwal | 2914 | 496 | 3410 | 85 | 42 |
| Chamoli | 1060 | 296 | 1356 | 78 | 47 |
| Rudrapur | 688 | 106 | 794 | 87 | 35 |
| Total Garhwal region | 10772 | 3241 | 14013 | 77 | 52 |
| Pithoragarh | 1125 | 182 | 1307 | 86 | 55 |
| Champawat | 612 | 186 | 798 | 77 | 56 |
| Almora | 1810 | 263 | 2073 | 87 | 61 |
| Bageshwar | 531 | 49 | 580 | 92 | 62 |
| Nainital | 1823 | 1339 | 3162 | 58 | 70 |
| Udham Singh Nagar | 1634 | 641 | 2275 | 72 | 100 |
| Total Kumaon region | 7535 | 2660 | 10195 | 74 | 70 |
| Total Uttarakhand state | 18307 | 5901 | 24208 | 76 | 59 |

Source: Uttarakhand State Public Works Department, Dehradun.

1. <http://morth.nic.in/annualreport04-05.pdf>, pp. 64-65.

per cent), the allocation for maintenance should have been higher for Uttarakhand. Allocation of funds by MORTH for the maintenance and development of national highways in Uttarakhand and Himachal Pradesh were 1.79 and 2.30 per cent of total allocation for the whole country (Tables 13.9 and 13.10).

TABLE 13.9

Length of National Highways in Uttarakhand and Himachal Pradesh

| State | National Highway No. | Total Length (in km) | Percentage Share in All India Length |
|------------------|----------------------------------------------------|----------------------|--------------------------------------|
| Uttarakhand | 58,72,72A, 73,74,87, 94,108,109,119,121, 123 & 125 | 1328 | 2.03 |
| Himachal Pradesh | 1A, 20, 21,21A, 22, 70,72,73A and 88 | 1188 | 1.81 |
| All India | | 65569 | 100 |

Source: Department of Road Transport and Highways.

3.4 Roads under Ninth and Tenth Plan Programme

The physical targets set for the Ninth Plan and achievements are given in Table 13.11. Clearly, achievements of the state have exceeded the targets in the case of new construction of new roads. Similarly, targets

towards constructing bridges set under the road development programmes were also achieved. However, in the case of reconstruction and improvement of the existing roads there was a shortfall in the achievements to the extent of 20 per cent over the targets. Therefore, while new roads, and bridges were constructed, improvements of the existing roads were neglected during the Ninth Plan.

During the Tenth Five Year Plan (2002-2007) there is an expected INR 1523 crore of investment taking place in the Uttarakhand roads sector. Of this amount, INR 615 crore were allocated from the state's budget while INR 908 crore were estimated to come from sources external to the state. The investment programmes prepared by the state included building roads and bridges in the chronic slip zones, reconstruction of road damaged by landslides and floods and construction of bridges. Programmes funded by Central government include interstate connectivity projects, development of roads in economically important areas and PMSGY. Among the external sources INR 600 crore were expected to come from multilateral funding agencies and private sector.

A summary of work done in the roads sector of the state during the Tenth Plan (till August 2005) with state and the Central government funds is presented in Table

TABLE 13.10

Allocation of Funds by MORTH for Development and Maintenance of National Highways during 2004-05

(In INR crore)

| State/All India | Development Allocation | | | Percentage Share in All India Allocation | Maintenance Allocation | |
|------------------|------------------------|------|-------|------------------------------------------|------------------------------------------|------------------------------------------|
| | NH(O) | PBFF | Total | | Percentage Share in All India Allocation | Percentage Share in All India Allocation |
| Uttarakhand | 24.0 | 1.44 | 25.44 | 1.43 | 13.34 | 1.79 |
| Himachal Pradesh | 45.0 | 0 | 45.0 | 2.53 | 17.15 | 2.30 |
| All India | 1692 | 90 | 1782 | 100.00 | 745.56 | 100.00 |

Note: NH(O): From Plan Fund; PBFF: Permanent Bridge Fee Fund.

Source: Department of Road Transport and Highways.

TABLE 13.11

Performance of the Roads Sector in the Ninth Five Year Plan

| Item | Unit | Target Ninth Plan | Achievement | | | | | Total Ninth Plan |
|------------------------------|------|-------------------|-------------|---------|----------------|--------|------------------|-------------------|
| | | | 1997-98 | 1998-99 | 1999-2000 | 200-01 | 2001-02 | |
| New Construction | Km | 1705 | 571 | 492 | 678+ 2 bridges | 719 | 583 + 10 bridges | 3043 + 12 bridges |
| Reconstruction & Improvement | Km | 1168 | 212 | 130 | 194 | 247 | 140 | 923 |
| Bridges | Km | 170 | 22 | 40 | 46 | 46 | 43 | 197 |

Source: Uttarakhand State Public Works Department, Dehradun.

13.12. First, looking at the state government's efforts, as against the targeted 1650 km (1200 km of motor roads plus 450 km of other roads) of roads, 1337 km have already been completed by August 2005 (latest information available as of May 2006). Of this, 1003 km are of motor quality. In the case of reconstruction and improvement of the existing roads, roads of 2154 km were completed as compared to the targeted 1380 km. During this period, 264 bridges were constructed as against the target of 230 bridges. The information thus shows that state government schemes are aimed mainly towards reconstruction and improvement of existing roads rather than the construction of new roads, a fact noted earlier.

Under the Centrally sponsored schemes, about 144 km of roads and 2 bridges were constructed. The Central government schemes consist of roads constructed with Central Road Fund and importance is given to interstate connectivity and schemes of economic importance.

TABLE 13.12

Performance of State and Central Government Sponsored Road Schemes during Tenth Plan

| Sl. No. | Name of the Scheme | Target | Total Physical Achievements (04/2002-8/2005) |
|---------|------------------------------------------------------------------------------------|-------------------|----------------------------------------------|
| I | State sector/district sector roads and bridges | | |
| I. | New construction:- | | |
| a. | Motor road (km) | 1200 | 1003 |
| b. | LVR (km) | 400 | 321 |
| c. | Bridle road (km) | 50 | 13 |
| | Total newly constructed roads | 1650 | 1337 |
| 2. | Reconstruction & improvement (km) | 1380 | 2154 |
| | Bridges (No.) | | |
| | Motor | 130 | 191 |
| | Bridle | 100 | 73 |
| | All bridges | 230 | 264 |
| II | Centrally sponsored schemes (reconstruction & improvement) (km) | | |
| a. | Central road fund | 403.5 + bridge | 144.3 km + 2 bridges |
| b. | Economically important scheme (50 per cent state + 50 per cent Central government) | 197 km + 1 bridge | 82 km |
| c. | Inter state connectivity | 305 km | 105.5 km |

Source: PWD, Dehradun.

4. Recent Initiatives and Policy Framework of the State Government

The Uttarakhand state has stated that providing safe, affordable, reliable and timely public transport services is

an area of key importance. Towards achieving these policy objectives, a three-pronged strategy has been evolved. First, introduction of an optimal mix of public-private and multi mode transport services will take place. Second, 'Road Master Plan' that will focus on providing appropriate connectivity to different destinations in the state, dovetails and integrates the Central government funded schemes to the priorities of the state. Third, developing the most appropriate institutional arrangement for transport management in order to ensure safe, timely and cheaper transportation. Towards the implementation of these strategies, the state government has initiated the following measures.

4.1 New Institutions and External Assistance

Uttarakhand government has incorporated Uttarakhand Infrastructure Development Company Limited (UDEC) as a joint venture between the government of Uttarakhand (GoUA) and the Infrastructure Development Finance Company Ltd. (IDFC), to assist Uttarakhand government and its agencies in developing policies and strategies for infrastructure development, and render assistance in project selection, development and implementation. UDEC was incorporated on November 18, 2002 with the following shareholding:

- Government of Uttarakhand (GoUA): 49.0 per cent
- Infrastructure Development Finance Company Ltd.: 49.9 per cent
- Infrastructure Development Corporation (Karnataka) Ltd.: 1.1 per cent

The government has initiated exercise for constructing 4000 km of roads with the help of UDEC by tapping following external assistance as an important means of developing road network in the state.

1. Funding of INR 2000 crore for the connectivity by bridges and village roads, light vehicle roads and other district roads from Asian Development Bank, expected to be received in 2006-07.
2. State government has selected a consultant to undertake the pre-feasibility study for the project.
3. The Strategic Option Study (SOS) for seeking financing of improvement, widening and up gradation of state highways, major district roads and other district roads from World Bank is also explored.

4.2 Private Sector Participation

The public private partnership is the hallmark of new

strategy in road building across all the states and the government of India. In Uttarakhand the private sector is to be involved through built own and transfer (BOT) approach in the following three projects to provide 300 km roads:

1. Roorkee–Chutmalpur; Rishikesh–Nepalifarm; Rishikesh–Bhaniawala; Dehradun (Sahranpur Chowk)–Tunnel (Datwali)
2. Bazpur Doraha–Kaladhungi; Thakurdwara–Kashipur–Ramnaga–Dhagadi Gate; Kaladhungi–Nainital
3. Pulbhatta–Kitcha Haldwani; Rudrapur–Matkota Haldwani; Kaladhungi–Haldwani

Detailed projects reports (DPR) are under preparation for each of the above project. After the finalisation of DPR, the financing under BOT mode will be explored.

4.3 Reforming the Procedures

The state government, in order to improve present status of roads, has initiated specific policy measures, which are still in the pipeline. These measures include, preparing a Road Master Plan that ensures integrating state priorities and funds from the Central government; inviting private capital in public-private partnership (PPP) mode; and developing suitable institutional structure that helps pursue the strategy of development. Finally, it has introduced some degree of transparency into the functioning of the bureaucracy by introducing the following norms:

1. Tendering process has been made more transparent. Tenders are being sold and received in four offices. For projects costing above INR 40 lakh, tenders are being invited through National Competitive Bidding.
2. New technology being explored. In this context, use of plastic waste in bitumen is permitted and micro-surfacing by polymer based cold emulsion is recommended in roads sector.

5. Conclusion and Strategic Recommendations

To summarise, the present status of roads in the state is lower than the all-India average in both the ways of defining density, namely kilometres per thousand people and kilometre of road in every 100 square kilometre of area. Investment in the state highways and major district roads is still insufficient. About 40 per cent of the villages in the state are not connected with all weather roads. Priority has been given to the population size with regard to village connectivity. About 40 per cent of the roads

built by PWD are not surfaced and the upgradation of these roads into surfaced roads is an important programme aspect of road development strategy in the state. The state policy aims at connecting bigger villages first and smaller villages later rather than adopting an approach of providing road lifelines to villages located in isolated and far-flung areas. State government's schemes mainly concentrate on reconstruction and improvement of the existing roads.

Infrastructure development is essentially addressing the issues that are associated with the special characteristics of infrastructure. These are natural monopoly having inelastic demand, joint consumption, and huge sunk costs. In order to address the issues that come in the way of development of roads sector in the state, reforms are needed in the existing policies that are to be complemented with suitable capacity building in the form of institutions and finances.

5.1 Furthering the Policy Reforms

The state can take lead in preparing and implementing infrastructure development programme through a comprehensive policy document. As the first step a transport policy document need to be prepared making clear the objectives of the road development programme. Integration of priorities of the state with the Central programmes needs to be addressed, identification of projects and scheduling of these projects should be taken up, and a policy framework required for attracting private sector participation needs to be spelt out clearly. In addition, measures to streamline institutional framework and establish accountability in construction and maintenance of roads need to be built in the Public Works Department.

With regard to village connectivity, the state government's strategy was to prioritise larger villages in providing road connectivity. However, in view of the difficult geographic conditions prevailing in the state, it could be argued that the social benefits of roads connectivity to an interior village outweigh that of road connectivity to the bigger and better connected villages. Therefore, the strategy should be to connect far-flung villages with equal importance as that of connecting larger villages.

5.2 Developing Institutions

A regulatory mechanism has to be introduced in the roads sector in order to promote operating efficiency, specify and monitor service standards, and to ensure responsiveness to final customer needs. The Gujarat

Infrastructure Development Act-1999, and the Infrastructure Development Enabling Act of Andhra Pradesh are good models to follow for this purpose. Similarly, establishment of Special Purpose Vehicles for funding infrastructure at state level is required. Also, on the lines of Central Road Fund (CRF), a State Road Fund needs to be set up for complementing the allocations from CRF in improving the road connectivity in the state.

5.3 Promoting Investments

The PPP model of infrastructure development is motivated by three distinct factors: (1) public resources are limited, (2) state of the art technologies are needed to build better road more quickly, and (3) private sector is

equipped with better and efficient management techniques as compared to public sector. Capital intensity of infrastructure projects, long gestation periods, requirement of huge working capital requirement and uncertainty on returns are the major issues associated with investment decisions in infrastructure. Therefore, multilateral financing, consortium with government guarantees and tax incentives etc., are the ways followed for this purpose. Addressing the abovesaid three areas of concern are the objectives of infrastructure reforms introduced in other states. Uttarakhand has to seriously pursue sector specific reforms judging their appropriateness from the experiences of the states that have followed them earlier.



Chapter 14

Water Resources

1. Introduction

Uttarakhand is located in the Himalayan region with mighty glaciers from which emerge the great and perennial rivers like the Ganges and the Yamuna. Very heavy rainfall is received in this region; the state average annual rainfall of Uttarakhand has been assessed around 1700 mm/year (from active monsoon of hardly 100 days). The average volume of water received/year from rainfall comes out to be 9.46 2 mha-m (94.62 BCM). Of this 17.5 per cent goes as evaporation loss, 29.55 per cent as absorption in soil, 15.45 per cent infiltration as groundwater and only 37.50 per cent is there as flow in rivers. According to the State Water Policy of Uttarakhand, only 3 per cent of annual rainfall in the state will suffice to meet the state's total water needs for all purposes.

Yet, shortage of water is felt in both the Kumaon and Garhwal regions. With growing population and rising standards of living, the demand for water is increasing more than the assured supply, thus exacerbating the shortages further. The greatest threat is faced by the agriculture sector, which account for about 75 per cent of the total demand. With more emphasis on tourism, the pressure on the management of water resource is likely to increase further. The reason of scarcity of water in most of the year is unsystematic distribution of water and/or poor development/management of water resources. Studies undertaken by external agencies support that around 40 per cent of water resources tapped for feeding water supply sources are environmentally vulnerable with respect to depleting water discharge (yield) especially that of springs. Most of the drinking water sources developed previously have either dried up or are nearing to their extinction possibly due to weaknesses in planning and poor management of discharge of the perennial and seasonal rivers/rivulets and *gadheras* of the state. While

government is grappling to modernise the water management systems, local people are searching for solutions in traditional systems of storage and application.

In addition to the Ganga, the Yamuna and its tributaries, there are several small rivulets and *gadheras* in different parts of the state on which local population depends for its waterneeds, but there are no authentic records of seasonal and annual flow data of these sources. Therefore, the management of water resource is guided by several factors *inter alia* the geographical conditions; hydrological status of surface and groundwater; water rights and priority of allocation; engineering possibilities and other specific needs. Irrigation being fundamental to agricultural growth, judicious planning and development of water resources occupy centre stage in the overall development plan.

The objective of this chapter is to analyse institutional framework for governance of water resources in Uttarakhand, with particular emphasis on irrigation and drinking water and develop a strategy for water conservation and its sustainable utilisation at the state level. Accordingly, the discussion is organised as follows. Section 2 presents an overview of the water management system and the organisational set-up in the state. Water requirement for irrigation and non-irrigation application is collated in Section 3, while Section 4 presents resource availability. Section 5 presents the problems and issues related to irrigation and non-irrigation water resource management. Finally, the conclusions and recommendations are made in Section 6.

2. Organisational Set-up and Management of Water Resources

Water is a state subject and the administrative control and responsibility for development of water resources rests with the various state departments and

undertakings. The Central Ministry of Water Resources, responsible for national policy on water resources development, provides technical assistance to states and oversees the regulation and development of interstate rivers. However, the central Ministry of Urban Development, Department of Drinking Water under Ministry of Rural Development, Ministry of Environment and Forests and the Ministry of Power also have role in developing water resource related areas such as urban and rural water supply and hydro-based power generation.

At the state level in Uttarakhand, the responsibility of irrigation lies with two departments, viz., irrigation and minor irrigation.¹ The public health department looks after urban water supply while *panchayats* take care of rural water supply. Government tubewells are constructed and managed by the two irrigation departments or by tubewell corporations set-up for the purpose. Hydropower is the responsibility of the Uttarakhand Jal Vidyut Nigam Ltd.

2.1 Organisation

Similar to all other states in India, the management of water resources in Uttarakhand at the state level is concentrated in the hands of the state. There is no Public Health Engineering Department in the state. There are three main departments of government to oversee six organisations, dealing with water resources. These are:

- 1) Department of Irrigation & Energy
 - Irrigation Department
 - Minor Irrigation
 - Uttarakhand Jal Vidyut Nigam Ltd.
- 2) Department of Drinking Water
 - Peyjal Vikas Evam Nirman Nigam
 - Uttarakhand Jal Sansthan
 - Swajal Project
- 3) Department of Rural Development
 - Watershed Management

Irrigation Department: Irrigation Department in Uttarakhand, took shape in the composite U.P state with Chief Engineer (Uttarakhand) heading the civil works of multipurpose and hydropower projects. The department now has some 500 engineers and a supporting set-up comprising huge number of other technical and non-

technical staff. The major responsibilities entrusted on Irrigation Department, Uttarakhand are as follows:

- i. Construction, maintenance and restoration for major/medium and minor irrigation channels and various flood and anti-erosion works.
- ii. Design and research works for various hydro-electric and multipurpose projects in Uttarakhand and other states in addition to survey and investigation for exploring hydro-electric potential works. Irrigation Research Institute, Roorkee is functioning since 1954 and is engaged in research and development activities for almost all multipurpose river valley projects in northern India.
- iii. Construction/maintenance and restoration of various hydro-electric and multipurpose projects for the speedy development of state. It also plans, executes and maintains civil works of hydro-electric projects. (Works of hydropower related to maintenance and operation of electrical plant and equipment rests with the Uttarakhand Jal Vidyut Nigam Ltd., which also functions under the same department).
- iv. *Training:* State Engineers Academy imparts training to new and serving engineers of the state and has till now trained about 4500 trainees through Induction, Foundation and Refresher courses.

Minor Irrigation Department: Minor irrigation works in Uttarakhand has special significance due to its importance. After the formation of the new state, the government of Uttarakhand has strengthened the cadre-structure of the department from 335 to 541 including 173 engineers, which is now headed by a Chief Engineer. Minor irrigation department constructs *gule* (irrigation channel), tanks, wells, hydrams, surface pump sets, boring pump sets, deep wells and artesian schemes, which facilitate irrigation in Uttarakhand state. Minor irrigation schemes constitute nearly 80 per cent of total irrigation potential generated in the state and make irrigation possible in the high altitudes and remote places in Uttarakhand.

Uttarakhand Jal Vidyut Nigam Ltd. (UJVNL): UJVNL is a wholly owned corporation of the government of Uttarakhand set-up for managing hydropower generation at existing power stations and development, promotion of new hydro projects with the purpose of harnessing the known, and yet to be known, hydro power resources of the state. Currently,

1. Irrigation projects are classified into three categories, viz., major, medium and minor. Projects that have a Cultivable Command Area (CCA) of more than 10,000 hectare, are termed as major projects, those which have a CCA of less than 10,000 hectare but more than 2,000 ha, are termed as medium projects and those which have a CCA of 2,000 hectare or less are known as minor projects. Minor irrigation (MI) projects have both surface and groundwater as their source, while major and medium projects mostly exploit surface water resources. In Uttarakhand, MI projects are implemented by minor irrigation corporations, *Zila Parishads/Panchayats* and also by other departments such as agriculture.

UJVNL operates hydropower plants ranging in capacity from 0.2 MW to 240 MW, totalling 1,132.9 MW (May 2006).

Uttarakhand Peyjal Vikas Evam Nirman Nigam (UPJN): UPJN is responsible for planning and construction of water supply and sewerage systems in urban and rural areas of the state. It also maintains some of the piped water supply schemes of rural areas. The major role of Peyjal Nigam is to prepare, execute, promote and finance schemes and also to operate, run and maintain schemes if and when directed by the government

Uttarakhand Jal Sansthan: Uttarakhand Jal Sansthan (UJS) is in charge of operating and maintaining water supply and sewerage facilities in urban and rural areas. This institutional structure was inherited from the undivided Uttar Pradesh state. The works of reorganisation, strengthening, rejuvenating, source augmentation and source recharge works of water supply scheme are both done by Jal Nigam and Jal Sansthan.

Watershed Management Directorate: Watershed Management Directorate plans and executes the watershed management programme in the state for using a holistic management approach of soil, water and vegetation in the watershed area in order to increase agricultural productivity and conserve natural resources without damage to the environment. The scope of work includes soil conservation, water harvesting, storage and distribution, increasing vegetative cover and farming system improvements.

SWAJAL: In addition to the two above-mentioned agencies dealing with drinking water in the state, Project Management Unit (PMU/SWAJAL), a registered society under the Societies Registration Act, 1860 is also playing a vital role in promoting community-based operation and maintenance of rural water supply schemes through cost sharing by the beneficiaries. Prior to the bifurcation of Uttar Pradesh state, 10 District Project Management Units supported the SWAJAL Project (see Appendix A-14.1 for details). A separate Project Management Unit (PMU) was registered on 5th March 2001 for the management of the project in Uttarakhand state, which started functioning from 1st June 2001. This society was formed under the Department of Drinking Water, government of Uttarakhand. At present there are 13 District Project Management Units, one in each district to assist the PMU in monitoring and facilitate various project activities.

2.2 Management and Status of Irrigation Development

In 1989, the Central Planning Commission had estimated the ultimate irrigation potential that can be created from the available surface water resources in U.P as

13.7 million-hectare (12.5 million-hectare from major and medium schemes and 1.2 million hectare from minor schemes). The undivided state's assessed potential accounted for about 18 per cent of the ultimate irrigation potential from surface water for the country as a whole (75.9 million-hectare). In the newly formed Uttarakhand state, agricultural land (1.250 million hectare) accounts for 22.5 per cent of the total geographical area (5.5658 million-hectare). Another estimates of Planning Commission shows the potential to be 3.46 lakh ha and 5.18 lakh ha for major and medium irrigation and minor irrigation respectively. Against this potential created (as reported by Uttarakhand) is 2.89 lakh ha under major and medium irrigation and 5.18 lakh ha under minor irrigation.

As of March 2005, the command areas under Uttarakhand Irrigation department and Minor Irrigation department were 0.194 million hectare and 0.338 million hectare respectively. Total cultivable area in hilly part of the Uttarakhand state works out to around 7.17 lakh hectare of which only about 23.4 per cent (1.676 lakh hectare) has been covered with irrigation facilities (all types) till March 2004.

Minor irrigation and the private sector form the backbone of the irrigation facility in Uttarakhand. The summary of performance in terms of potential created in irrigation sector and command area under irrigation and minor irrigation department of Uttarakhand indicates latter to constitute about 63.4 per cent (Table 14.1). At the aggregate level this distribution is alike both in hills and plains. The facilities of irrigation department are heavily concentrated in plains of Dehradun, Nainital and Rudraprayag.

Irrigation Department

Irrigation department of Uttarakhand has been entrusted to plan, execute and maintain civil works of hydro-electric projects (Works of Hydropower particularly related to E&M and Operation of plants rests on the Uttarakhand Jal Vidyut Nigam Ltd.). Hydro-electric projects constructed by irrigation department has been responsible for creating about 780 MW Hydroelectric Projects between 1965 and 1988 under Yamuna Hydrel Schemes. Another 4469 MW capacity projects are under construction, which will cover 273 thousand hectare of irrigation in Uttarakhand and 611 thousand hectare of irrigation in Uttar Pradesh (Table 14.2). In addition, the irrigation department is also responsible for flood control projects (Table 14.3).

Annual budget provision for irrigation department has registered marked increase in the last two years. As

TABLE 14.1
Irrigated Area/Created Irrigation Potential as on 3/2004 (Unit: Hectares)

| S. No. | District | Total Cultivable Area | Total Irrigated Area | By Irrigation Department | By Minor Irrigation /Private | Share | |
|--------|-----------------------|-----------------------|----------------------|--------------------------|------------------------------|-----------------------|---------------------------|
| | | | | | | Irrigation Department | Minor Irrigation /Private |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1. | Haridwar | 180490 | 84794 | 0 | 84794 | 0.0 | 100.0 |
| 2. | Dehradun(total) | 78087 | 37212 | 28000 | 9212 | 75.2 | 24.8 |
| | Dehradun(hills) | 20000 | 10174 | 2804 | 7370 | 27.6 | 72.4 |
| | Dehradun(plain) | 58087 | 27038 | 25195 | 1842 | 93.2 | 6.8 |
| 3. | Pauri Garhwal | 125307 | 25870 | 8500 | 17370 | 32.9 | 67.1 |
| 4. | Chamoli | 51044 | 12687 | 4900 | 7787 | 38.6 | 61.4 |
| 5. | Rudraprayag | 29061 | 5032 | 3900 | 1132 | 77.5 | 22.5 |
| 6. | Tehri Garhwal | 97166 | 27568 | 5100 | 22468 | 18.5 | 81.5 |
| 7. | Uttarkashi | 41056 | 17909 | 7000 | 10909 | 39.1 | 60.9 |
| 8. | Nainital(total) | 84891 | 51158 | 37800 | 13358 | 73.9 | 26.1 |
| | Nainital(hills) | 36000 | 22808 | 11455 | 1135 | 50.2 | 5.0 |
| | Nainital(plain) | 48891 | 28350 | 26345 | 2005 | 92.9 | 7.1 |
| 9. | Udham Singh Nagar | 246189 | 224502 | 84900 | 139602 | 37.8 | 62.2 |
| 10. | Almora | 138228 | 16244 | 5000 | 11244 | 30.8 | 69.2 |
| 11. | Bageshwar | 45272 | 8404 | 3200 | 5204 | 38.1 | 61.9 |
| 12. | Pithoragarh | 89251 | 14911 | 4400 | 10511 | 29.5 | 70.5 |
| 13. | Champawat | 44394 | 6029 | 2000 | 4029 | 33.2 | 66.8 |
| | Uttarakhand (total) | 1250436 | 532318 | 194700 | 337618 | 36.6 | 63.4 |
| | a. Uttarakhand(hills) | 716779 | 167635 | 58259 | 109376 | 34.8 | 65.2 |
| | b. Uttarakhand(plain) | 533657 | 364684 | 136441 | 228243 | 37.4 | 62.6 |

Source: Minor Irrigation, Uttarakhand.

TABLE 14.2
Hydro Electric Projects under Construction

| Name of Project | Project Progress Status | Anticipated Benefits | |
|--------------------------------------|----------------------------------------------------------------------------|--------------------------------|----------------------|
| | | Power Generation Capacity (mw) | Irrigation (hectare) |
| Maneri Bhali Hydel scheme (stage-ii) | Advanced stage of construction | 304 | — |
| Lakhwar Vyasi dam project | Construction held up | 420 | 40000 in UP |
| Kishau dam project | Detailed investigations in progress | 600 | 211000 in UP |
| Srinagar Hydel project | Construction to be started shortly by M/S Duncan North Hydro Power Company | 330 | — |
| Vishnu Prayag hydro-electric project | Advance stage of construction by m/s Jai Prakash Power Ventures Ltd. | 400 | — |
| Jamrani dam project | Construction held up | 15 | 3115 |
| Tehri dam project | Advance stage of construction m/s thdc ltd. | 2400 | 270000 |

Source: (basic data) Department of Irrigation and Energy, Uttarakhand.

TABLE 14.3
District-wise Status of Ongoing/Sanctioned Flood Protection Works

| S. No. | District | No. of Flood Protection Works | Cost (INR Lac) | Progress upto 3/04 | Cost of Remaining Works after 3/04 | Released in the Year 2004-05 | Progress up to 12/04 |
|-------------------|---------------|-------------------------------|----------------|--------------------|------------------------------------|------------------------------|----------------------|
| 1. | Dehradun | 6 | 316.12 | 131.46 | 184.66 | 65.03 | 69.30 |
| 2. | Uttarkashi | 5 | 131.82 | 46.39 | 85.43 | 59.77 | 31.49 |
| 3. | Pauri Garhwal | 1 | 172.23 | 84.50 | 87.73 | 37.50 | 30.09 |
| 4. | Chamoli | 5 | 217.63 | 147.92 | 69.71 | 44.79 | 33.20 |
| 5. | Haridwar | 1 | 51.54 | 27.0 | 24.54 | 41.80 | 41.06 |
| 6. | Tehri | 3 | 438.71 | 314.44 | 124.27 | 48.61 | 24.89 |
| Total Garhwal | | 21 | 1328.05 | 751.71 | 576.34 | 297.50 | 230.03 |
| 7. | Nainital | 4 | 244.20 | 40.93 | 203.27 | 60.50 | 25.97 |
| 8. | U.S. Nagar | 2 | 117.94 | 26.50 | 91.44 | 31.50 | 14.90 |
| 9. | Almora | 4 | 87.94 | 20.13 | 67.81 | 48.90 | 6.60 |
| 10. | Bageshwar | 2 | 117.60 | 25.68 | 91.92 | 38.68 | 32.30 |
| 11. | Champawat | 1 | 43.92 | - | 43.92 | 13.00 | — |
| Total Kumaon | | 13 | 611.60 | 113.24 | 498.36 | 192.50 | 79.77 |
| Total Uttarakhand | | 34 | 1939.65 | 864.95 | 1074.70 | 490.00 | 309.80 |

Source: (basic data) Department of Irrigation and Energy, Uttarakhand.

shown in Table 14.4, NABARD has stepped in with significant lending support for the state's water resources development. Irrigation department is seeking enlarged share of NABARD funds in its project activities in canal construction tubewell and flood protection projects. In addition to the budgeted amounts tabulated above, there are several centrally funded programmes that provide funding for water resources projects of different types. Important among these is the Accelerated Irrigation Benefit Programme (AIBP) that supports implementation of ongoing irrigation/multipurpose projects on which substantial progress has been made and which are beyond the resource capability of the state governments. The Central Relief Fund (CRF) provides funding for restoration works of natural calamity affected irrigation and flood protection works.

TABLE 14.4
Budget Provision for Irrigation Works

| | (INR Lakhs) | | | |
|-----------------|-------------|---------|---------|----------|
| Fund source | 2002-03 | 2003-04 | 2004-05 | 2005-06 |
| State budget | 2764.40 | 3890.33 | 5653.88 | 6897.00 |
| NABARD (loan) | | | | 6345.00 |
| Total provision | 2764.40 | 3890.33 | 5653.88 | 13242.00 |

Source: (basic data) Department of Irrigation and Energy, Uttarakhand.

Minor Irrigation Department

Minor irrigation works in Uttarakhand has special significance. After the formation of new state, the government has strengthened the cadre structure of department from 335 to 539 including 202 engineers, which is now headed by a Chief Engineer. In the state as a whole, Minor Irrigation department has completed the construction of 15.2 thousand km *gule* (irrigation channel), 22730 tank, 33 wells, 644 (1383 unit) hydram schemes, 150 surface pump sets, 53,531 boring pump sets, 688 deep wells, 177 artesian schemes, which facilitated the irrigation of 3.57 lakh hectare land till 31 March 2006. Under the district sector schemes in Uttarakhand, mainly the construction of *gule*, tank, pipeline, hydram, small barrages, tubewells and artesian wells are carried out in Kumaon and Garhwal zones.

In year 2004-05 the sanctioned budget of INR 923.29 lakh was utilised to provide 75.067 km *gules* (irrigation channel), 24 tanks, 19 hydrams and 8 artesian wells. Irrigation potential of 1026.454 hectare was created. In the year 2006-07, department has constructed 1979.265 km *gule*, 767 tanks, 23 hydram, 6 artesian well and 164 pump sets from which 18828.339 hectares irrigation potential was created by February 2007.

The schemes like *gule*, tank, pipeline, hydram, boring pump set, small barrages (gated weir) have special

components, which benefits land of scheduled castes and scheduled tribes on the basis of 100 per cent subsidy through state sector.

Accelerated Irrigation Benefits Programme (AIBP) and Flood Protection

Funds are being obtained from Government of India and efforts are being made to implement participatory irrigation management (PIM) as per guidelines of Government of India. Additional funds through AIBP schemes are meant to promote irrigation facilities in remote areas and also for completing the schemes remaining incomplete for want of fund previously. Up to 2003-04, irrigation potential of 1174 hectare was created through projects under AIBP and those with potential of 2531 hectare were under execution. For 2005-06, schemes that would add a further potential of 3121 hectare were proposed. In the area of flood protection schemes, projects valuing INR 19.91 crore are currently under implementation and additional schemes costing INR 35.95 crore have been drawn up.

As with state irrigation, the centrally sponsored AIBP also supports MI schemes. Funds received under AIBP have been disbursed to the Minor Irrigation department for the construction of minor irrigation projects from the year 2002-03. The total allotment sanctioned for subsequent two years (2004-05 and 2005-06) was INR 10010.762 lakh, which was earmarked for the construction of 226 single/group projects, related to minor irrigation. Upto March 2005, 668.618 KM *gule* and 141 no. of irrigation tanks were constructed from which 15011.828 hectare irrigation potential was created and Rs. 5000.00 lakh was spent till March 2005. The total allotment sanctioned for subsequent two years (2005-06 and 2006-07) was INR 24612.07 lakh, which was earmarked for the construction of 502 single/cluster schemes, related to minor irrigation. Up to February 2007 2863.08 km *gule*, 882 tanks and 23 hydrams were constructed which created the irrigation potential of 29223.29 hectare and 188.95 lakh were spent on this till February 2007.

Bharat Nirman Yojana (BNY)

Another funding source for MI is available through the recently launched BNY. Under this scheme, total 72799.00 ha irrigation potential is planned to be created by minor irrigation during the four years 2005-06 to 2008-09 for which funds totaling Rs. 498.39 crore are required. Year-wise irrigation potential to be created and budget required is as Table 14.5.

TABLE 14.5

Proposed Outlays under BNY

| Sl. No. | Year | Irrigation Potential to be Created in HA | Budget Required in (INR Lakhs) |
|---------|---------|------------------------------------------|--------------------------------|
| 1. | 2005-06 | 19520 | 12704.00 |
| 2. | 2006-07 | 24194 | 14314.80 |
| 3. | 2007-08 | 14425 | 11343.00 |
| 4. | 2008-09 | 14660 | 11477.00 |
| 5. | Total | 72799 | 49838.80 |

Source: Report of Minor Irrigation Department, Uttarakhand (June 2005).

As noted earlier, minor irrigation potential is immense in Uttarakhand due to its topographical conditions. The hilly region of the state has about 7,16,779.00 ha cultivable area, of which only 1,67,634.83 ha has been provided with irrigation facilities through MI by 3/2004, leaving a gap of about 5.50 lakh ha. Bharat Nirman Scheme of Government of India can have a major role in realising the potential and needs to be strengthened. Although the AIBP projects are taken up in all the 13 districts of the state the target fixed under the scheme is too meagre to keep pace with mission commitment. Keeping in view of the wide scope and demand of irrigation schemes from all districts, a revised demand of INR 580 crores for year 2007-08 and 2008-09 with irrigation potential of 58570 hectares is sent under 11th Five Year Plan.

2.3 Management and Status of Drinking Water

Supply of safe drinking water in adequate quantities to all communities has been recognised as the basic need worldwide. A notable initiative in this area in India was the National Drinking Water Mission established in 1986 as one of the five technology missions. Currently, the Government of India supplements efforts of state governments in the area of drinking water by providing financial assistance under the centrally sponsored Accelerated Rural Water Supply Programme (ARWSP). State-wise allocations are made by Government of India under ARWSP wherein weightage is given to rural population, extent of arid/hill area and number of not covered (NC), partially covered (PC) and quality-affected villages. State government provides matching state share equal to allocation made by Government of India.

Government of India earmarks 20 per cent of ARWSP funds for sector reforms/Swajaldhara, 5 per cent for DDP areas and 5 per cent for meeting contingencies arising out of natural calamities. Remaining ARWSP funds are allocated to states and of these 15 per cent of funds are to

be utilised by states for quality affected habitations, 15 per cent for operation and maintenance, 5 per cent on sustainability of sources and the rest for providing water to NC/PC habitations.

A community-based, demand driven rural drinking water supply and environment sanitation programme termed the Sector Reforms Project, Swajal was launched in 1996 in 12 districts of Uttarakhand. Government of India assisted sector reform project was taken up in Haridwar district in 2002. In December 2002, these reforms of which a crucial feature was cost sharing by communities, were scaled up to cover the entire country through Swajaldhara. Basic principles of Swajaldhara are:

- Demand responsive, participatory.
- Full ownership of Panchayati Raj Institutions over rural drinking water assets.
- Partial capital cost sharing by community.
- Full O&M charges to be borne by community.

Swajaldhara funds are also allocated to states as per the ARWSP allocation criterion.

State Government Vision and Strategy

The general vision of the GoUA towards drinking water for the people in the state is to: 'provide access to safe and potable water to every household in the state by 2012; make the service delivery system self-sustaining with local government, PRIs support and public participation; and ensure protection, preservation and recharge of water sources surface and under ground.' In order to meet the vision objective the state government has embarked upon the following strategies:

1. All single village schemes will be planned, designed, constructed, operated and maintained by communities through Panchayati Raj Institutions (PRIs).
2. As far as possible, community participation will be ensured in high cost, pumping and multi-village schemes.
3. Urban water supply and sewerage system will be managed to the extent possible through Jal Sansthan.
4. State government will act as support organisation and co-financier with communities and will cater for smaller construction works and sectoral contingencies. Larger construction works will be done through sector institutions.

5. Multi-village and pumping schemes shall be constructed and maintained by the state agencies and efforts will be made to involve communities gradually.
6. Integrate sanitation with water supply.
7. Thrust on rainwater harvesting, construction of small check dams, *chal-khal* (ponds), and afforestation in the catchment area and groundwater recharge (considering the local condition of the area *chal-khal* has to be included).
8. As far as possible, increase in tariff as per actual O&M cost.

Institutional Set-up of Water Supply Sector

The present institutional structure of water supply in Uttarakhand is inherited from the undivided Uttar Pradesh state. The Uttar Pradesh Water Supply and Sewerage Act of 1975 identified Jal Nigam and Jal Sansthan as prime institutions in the sector. The Act specified *inter alia* the following functions for these institutions:

- *Jal Nigam*: To prepare, execute, promote and finance schemes and also to operate, run and maintain schemes if and when directed by the government.
- *Jal Sansthan*: To plan, promote and execute schemes and to operate an efficient system of water supply.

In November 2002, GoUA constituted Uttarakhand Peyjal Vikas Evam Nirman Nigam (UPJN) through an ordinance. UPJN, headed by a managing director, took over the offices and cadre (now comprising about 650 engineers at various levels) of erstwhile U.P. Jal Nigam. Uttarakhand Jal Sansthan (UJS) was constituted in August 2002, through a GoUA notification; it has a cadre of about 260 engineers. Both are statutory bodies.

The two agencies responsible for water supply and sewerage in the state has been assigned almost overlapping responsibilities particularly in maintenance works in the same sector causing conflict and rivalry at various fronts. UPJN is responsible for planning and construction of water supply and sewerage systems while UJS is in charge of operating and maintaining water supply and sewerage facilities in urban and rural areas.

In addition, the legacy of pricing deficiencies, largely un-metered supply and high system losses continue to haunt both the institutions. Current water charges were low with the water charge being no more than one-fourth of the water production cost, not counting replacement costs. Metering is restricted to the commercial sector customers; supply to domestic users is un-metered.

The main contributing factors to the high production cost appear to be the high salary bill of the staff due to a large establishment, system losses reaching 30-50 per cent and additional costs associated with pumping water in a mountainous terrain. The agencies are not able to effectively respond to citizen's demands and problems of water leakage, sewage overflow and flooding due to paucity of fund and other institutional infirmities. Allocations made to the budget of the UJS and UPJN for capital works and maintenance were reportedly diverted towards salary and other establishment expenses starving the funds for capital and O&M. There is need to enhance the efficiency of water and sewerage operations through institutional overhauling, appropriate pricing and effective financial management systems. Other problems that are affecting the effectiveness of the sector performance include duplication of the responsibilities assigned and poor coordination between PJN and UJS. The present status of water supply in urban and rural areas is summarised in Table 14.6.

Urban Water Supply

A large number of project have been planned with a vision to create world-class infrastructure in urban areas of Uttarakhand under ADB's support and matching support of the state and the Central governments under urban infrastructure development programmes (Table 14.6). The current position of the availability of facilities in urban areas is very inadequate as compared to the national level. Out of 63 towns in Uttarakhand, number of towns having water supply of more than 135 lpcd are 15 only. Twenty-five towns are getting water supply between 70-135 lpcd and the rest 23 towns are hardly getting water supply even at 70 lpcd. (Fuller details relating to urban water supply are given and examined in the separate chapter on Urban Area Development). This section covers mostly rural drinking water.

Rural Water Supply

As of March 2004, 52 per cent of the rural habitation in the state had been fully covered and another 36 per cent partially covered (Table 14.7). Actual achievement in financial year 2004-05 at 393 habitations has been slightly better than the target of 384 habitations. But at this rate of progress, the aim spelt out in Vision 2012 of ensuring universal availability of safe and sufficient drinking water in the state on sustainable basis will not be realised. About 18,824 habitations (48 per cent of the total) of 39,142 lakh habitations still remain deprived of adequate water. Shortage of water is different in different part of the region ranging from moderate to acute. The Tehri

Garhwal in general and some part of Pauri Garhwal division is also facing problem of water supply. While a number of piped water supply schemes have been prepared for implementation during next Five Year Plan, the institutional arrangements suffer from the weaknesses noted earlier.

TABLE 14.6

Physical Status of the Schemes (as on 31st May 2004)

| S.N. | Particulars | No. |
|------|-------------------------------------------------------------------|---------------|
| 1. | Schemes Maintained by Uttarakhand Jal Sansthan | |
| | Single village schemes | 2440 |
| | Multi-village schemes | 3385 |
| | Urban schemes | 57 |
| | Total | 5882 |
| 2. | Schemes constructed by Swajal and maintained by WATSAN Committees | 815 |
| 3. | Schemes maintained by Uttarakhand Peyjal Nigam | 732 |
| 4. | Schemes maintained by <i>Gram Sabhas</i> | 2766 |
| | Grand total | 10,195 |

Source: Government of Uttarakhand.

TABLE 14.7

Status of Rural Drinking Water Supply Coverage as on 3/2004

| | |
|--------------------------------------------------|---------------------|
| Total no. of habitations | 39142 |
| No. of habitation benefited (FC) | 20318 (52 per cent) |
| Remaining habitations not covered (nc) < 10 lpcd | 4784 (12 per cent) |
| Partially covered (pc) < 40 lpcd | 14040 (36 per cent) |
| Target for 2004-05 | 384 |

Source: ARWSP Norms and Habitations Survey 2003.

Sector Reform in Rural W/S Sector and SWAJAL Project)

The state of Uttarakhand was a recipient (together with Uttar Pradesh) of the World Bank assisted Uttar Pradesh and Uttarakhand Rural Water Supply and Environmental Sanitation (SWAJAL) Project Loan Number 4056-IN. This project pioneered many policies and reforms that later became the basis for the national policy in rural drinking water supply and sanitation in the form of sector reform project and Swajaldhara programmes of Government of India. ARWSP programme run hitherto, meant for supporting state governments on partnership basis to provide minimum need of water supply to all the people in rural areas will gradually be replaced by Swajaldhara project which shall ensure

sustainability of rural schemes with help of communities/ PRIs on cost sharing basis. Another feature of Swajal project is six-monthly sustainability evaluation exercise (SEE). Villages with score of less than 49 per cent are considered unsustainable and are required to be on special attention. However, there is hardly any SEE posted on the net for the recent years. The early report (2003) was sceptical of sustainability. The Seventh SEE was conducted from 28th June 2004 to 17th July 2004 after an interval of 14 months of withdrawal of project authorities, in approximately 10 per cent of the total 657 villages. About 7 per cent of the villages have scored less than 49 and are categorised least sustainable. About 64 per cent of the villages have scored between 50-74 per cent and are placed under moderate sustainability category and 21 per cent of the villages have scored about 74 per cent and are justifying to be as highly sustainable.

The Project Management Unit (PMU), headed by a full time Director has a team of professionals with a skill mix of both the public and private sector. Thirteen District Project Management Units assist the PMU. Through a government order of 24 February 2004, PMU is designated to function as State Water and Sanitation Mission (SWSM). It will coordinate and monitor the implementation of Swajaldhara and TSC project in the State.

The scope of the project is being scaled up progressively. The GoI has converted Sector Reform project into Swajaldhara-II from 2004-05. Swajal Project Phase-II has been proposed to cover entire districts covering 1000 villages with provision of Rs. 600 lakh in the financial year 2005-06 only. 150 villages are targeted in the year 2005-06. Presently the scheme is run in 11 districts of Uttarakhand with the financial assistance of GoI. World Bank has agreed to support proposed Second Uttarakhand Rural Water Supply and Environmental Project, which is estimated to cost about \$100-\$130 million, of which World Bank loan will be \$75-\$100 million. The project would cover all 13 districts of the state. The project envisages in upgrading, no or partial coverage of water supply to full coverage with sustainable service, benefiting at least 1-2 million people or about 20 per cent of the rural population. The project will also improve sanitation about 30 per cent of the rural communities, to be declared free of open defecation. It was originally proposed to cover 3000 GPs, involving 5000 project communities. The Medium Term Development Plan projects the sector investments for the next five years to be around \$350 Million. On this \$224 million (64 per cent) will be for the new investments that fall under the SWAP basket and \$126 million (36 per cent) will for the ongoing investments that fall outside the SWAP basket. State government acts as a support. However, the World Bank

Mission and the SWSM agreed that in order to implement the project in an efficient and effective manner, it might be necessary to increase project duration and reduce the number of GPs etc. The main components of the project are sector development, rural infrastructure investments. 'Bharat Nirman Yojana' which has been started for 2005-2009 to create necessary infrastructure related to water supply, irrigation, roads and power generation etc., for rural areas will also look into the gaps.

3. Water Requirement

Planning for balanced development of the state through sectoral development like that of agriculture, horticulture, industry, hydro-power and tourism etc., needs water resource planning as the primary task due to its pivotal role in all developmental steps. In order to assess the water requirement for different uses currently and in future, it is necessary to keep in mind the present status of land uses and future planning thereof and population growth trend. The details of these governing parameters are given in the following pages.

3.1 Water Required for Irrigation

Demand for irrigation water is basically dependent upon the landmass to be irrigated. The current land use statistics of Uttarakhand is given in the Table 14.8. Land use projection for the year 2025 can be made on the basis of the sector wise and region-wise possible development potential of the Uttarakhand state, which is estimated and is presented in Table 14.9 based on the following assumptions.

- a) Net sown area in all regions will be more or less stationary but a small increase of about 10 per cent in hilly area in 2025 is projected, whereas net sown area in the plain part of the state is assumed as stationary.
- b) About 60 per cent of the net sown area in hilly part is assumed to be covered by minor irrigation whereas, 100 per cent irrigation in the plain part of the state is assumed.
- c) The gross irrigated area is pegged as about 170 per cent of the net irrigated area.

Thus, availability of land would be an important constraint operating in Uttarakhand's agriculture and irrigation sectors. A few points to note about this land use plan:

- a) In this calculation, the GIA for Uttarakhand comes to around 9.29 lakh ha. It is felt that land (net sown area) and the sustainability consideration may not allow GIA to increase beyond 9.29 lakh ha.

b) In the hills, there are many higher lands or plateau lands between the numerous valleys, which cannot be reached by surface irrigation canals. Even after presuming some extension of irrigation and pumping from canal etc., the natural recharge in these upland areas would not be sufficient to irrigate these areas by groundwater, whereas the irrigation induced recharge would be available only to the lower commands. Thus, in these areas, the rain-fed agriculture would continue on significant scale even in the future until the Minor Irrigation department creates sufficient storage through rainwater harvesting structures and *gules*/hydrants/pumpsets/artesian wells etc. Even within the irrigated area, there would be a constraint on the ratio of GIA to NIA from both the sustainability and the water availability points of view. In general, the *Kharif* irrigation is easier because water availability is larger and only supplemental irrigation is required. *Rabi* is possible in areas, depending on non-monsoon runoff and storage and groundwater availability. Considering the economic and other factors, the farmers' preference is for *Rabi*, which is the main irrigation season. Considering this situation, the plain part of Uttarakhand like that of U.P. has developed the concept of *Kharif* channels, so that the surface water gets used in *Kharif* and *Rabi* irrigation is through groundwater.

TABLE 14.8
Land Use Pattern (1999-2000)

| S. No. | Category | Area (Hectares) | Per cent (to Total) |
|--------|-------------------------------------------------------------|-----------------|---------------------|
| 1. | Total reported area | 55,65,804 | 100 |
| 2. | Forests | 34,66,152 | 62.28 |
| 3. | Barren & uncultivable land | 2,94,936 | 5.30 |
| 4. | Land put under non-agricultural uses | 1,66,768 | 3.00 |
| 5. | Cultivable waste | 3,22,510 | 5.79 |
| 6. | Permanent pastures and other grazing land | 2,22,958 | 4.01 |
| 7. | Land under misc. tree crops and groves etc. | 2,16,260 | 3.89 |
| 8. | Current fallows | 13,743 | 0.25 |
| 9. | Other fallows | 69,236 | 1.24 |
| 10. | Net area sown | 7,93,241 | 14.25 |
| 11. | Area sown more than once | 4,57,145 | 8.21 |
| 12. | Cropping intensity (per cent) | - | 158 |
| 13. | Ratio of gross irrigated area to gross sown area (per cent) | - | 24.6 |

Note: * In hills only 12 per cent, plain 88 per cent (assumed).

Source: Uttarakhand statistics and Irrigation/Minor Irrigation Departments.

TABLE 14.9
Possible Land Use Projection (2025)

(Figures in lakh hectare)

| S. No. | Particulars | Hills | Plain (UA) | Total |
|--------|--------------------------------------------------------------------------------------------|-------|------------|-------|
| 1 | Total reported area | - | - | 55.66 |
| 2 | Cultivable area | 7.17 | 5.33 | 12.50 |
| 3 | Net sown area (1999-2000) | 3.33 | 4.60 | 7.93 |
| 4 | Gross sown area (1999-2000) (158 per cent of net sown area) | 5.26 | 7.27 | 12.53 |
| 5 | Net sown area (2012)-(assumed 5 per cent increase in hills) | 3.50 | 4.60 | 8.10 |
| 6 | Net sown area (2025)-(assumed 10 per cent increase in hills) | 3.66 | 4.60 | 8.26 |
| 7 | Gross sown area (2012)-assumed (160 per cent CI) | 5.60 | 7.36 | 12.96 |
| 8 | Gross sown area (2025)-assumed (170 per cent CI) | 6.22 | 7.82 | 14.04 |
| 9 | Net irrigated area (2004-05) | 1.68 | 3.64 | 5.32 |
| 10 | Net irrigated area (2012) (assumed 100 per cent in plain and 10 per cent increase in hill) | 1.85 | 4.60 | 6.45 |
| 11 | Net irrigated area (2025) (assumed 100 per cent in plain and 20 per cent increase in hill) | 2.02 | 4.60 | 6.62 |
| 12 | Gross irrigated area (2012)-assumed 20 per cent increase in the net irrigated area in 2012 | 2.22 | 5.52 | 7.74 |
| 13 | Gross irrigated area (2025) assumed 20 per cent increase GIA of 2012 | 2.67 | 6.62 | 9.29 |
| 14 | Ultimate cropping intensity (per cent) -2025 | | | 170 |

Source: Compilation for this report.

It is assumed that minor irrigation will meet the increased irrigation demands in highlands and plateaus in the ultimate period (2025) whereas sufficient groundwater exploitation possibilities in the plains part of the state will look after the increased demand of the irrigation in this area. Hence, the ratio of groundwater irrigation to the surface water irrigation will remain almost same i.e., 1:2 as it is at present (2003-04) and the same is presented Table 14.10. The NCIWRD (1999) projected the national average values of Gross Irrigation Requirement (GIR) as shown in the Table 14.11. With the above break-up of GIA, the surface and groundwater requirement for irrigation purposes at the ultimate stage (2025) can be worked out as presented in Table 14.12.

TABLE 14.10

The Break-up into Surface and Groundwater Irrigation

| <i>Break-up of Gross Irrigated Area</i> | |
|-----------------------------------------|-------------------|
| Ultimate GIA of | 9.29 lakh hectare |
| Surface water irrigation: | 6.29 lakh hectare |
| Groundwater irrigation: | 3.00 lakh hectare |

Source: (basic data) NCIWRD (1999).

TABLE 14.11

Average Gross Irrigation Requirements*(Depth in metres)*

| Source of Water | Estimated by CGWB | Assumed Depth of Irrigation | | |
|---------------------------|-------------------|-----------------------------|------|------|
| | | 2010 | 2025 | 2050 |
| NIR | 0.36 | | | |
| Groundwater assumed GIR | | 0.52 | 0.51 | 0.49 |
| Surface water assumed GIR | | 0.91 | 0.73 | 0.61 |

Source: (basic data) NCIWRD (1999).

TABLE 14.12

Required Water for Irrigation (2025)

| | |
|------------------------------------------------------------------|---------------------------------|
| Irrigation water requirement | |
| a) Gross withdrawals for surface irrigation of @ 0.73m | 6.29 lakh hectare = 4.59 BCM/yr |
| b) For groundwater irrigation of @0.51m | 3.00 lakh hectare = 1.53 BCM/yr |
| c) Net consumption 9.29 lakh hectare @ 0.36 m (as per CGWB norm) | = 3.34 BCM/Yr |
| Total | = 6.12 BCM/yr |

Source: Computation.

Live storage created till March 2005 in form of canals, tubewells, *gules* (irrigation channels), tanks, hydrams etc., to meet irrigation demand in the state is sufficient to serve the command area of about 6.07 lakh hectare, consuming about 4.0 BCM/yr in withdrawal terms. Out of the total balance requirement for ultimate period (2025) of 2.12 BCM/yr for irrigation, about 1.0BCM could be met from GW exploitation and remaining about 1.12 BCM/year by developing MI potential through watershed management and rainwater harvesting schemes on higher plateaus.

3.2 Water Requirement for Municipal (Domestic) Use

The Central Public Health Environmental Engineering Organisation (CPHEEO), World Health Organisation (WHO) and U.P. Jal Nigam use different norms for rural and urban water supply purposes depending upon the population and geographical conditions of the area ranging from 40 lpcd to 200 lpcd. For calculating the domestic water requirement in Uttarakhand state for different stages, the NCIWRD norms as given in Table 14.13 have been followed. In order to use the aforesaid norms, the projected population has to be divided between urban and rural and also between Class I and other cities. In terms of NCIWRD projection of urban and rural population on all India basis, the urban population is assumed to be 37 per cent, 44 per cent and 55 per cent of the total in years 2010, 2025 and 2050 respectively (detailed in Appendix 14.2). It is assumed that this would be equally divided between class-I and other cities and also the urban and rural population will be nearly equal by 2050. The domestic water requirements as shown below were worked out on this basis.

TABLE 14.13

Water Supply Norms*(in lpcd)*

| S.No. | Population Type | Year 2010 | Year 2025 | Year 2050 |
|-------|---------------------------|-----------|-----------|-----------|
| 1. | Class I cities | 220 | 220 | 220 |
| 2. | Other than class I cities | 150 | 165 | 220 |
| 3. | Rural | 55 | 70 | 150 |

Source: NCIWRD (1999).

TABLE 14.14

Domestic Water Demand (Withdrawals) Uttarakhand*(in million)*

| Population | Year 2010 | | Year 2025 | | Year 2050 | |
|---------------------------|-----------|-------------|-----------|-------------|-----------|-------------|
| | U.P. | Uttarakhand | U.P. | Uttarakhand | U.P. | Uttarakhand |
| | 198.20 | 9.62 | 245 | 10.74 | 305.90 | 12.62 |
| Water Demands (in BCM/Yr) | | | | | | |
| i) Urban | 4.95 | 0.243 | 7.77 | 0.33 | 13.50 | 0.57 |
| ii) Rural | 2.50 | 0.120 | 3.52 | 0.15 | 7.53 | 0.31 |
| Total | 7.45 | 0.363 | 11.29 | 0.48 | 21.03 | 0.88 |

Source: WAPCOS study (1999).

Water Demands for Electric Power, Industrial and Environmental: The water demands for electric power and industrial uses were computed for U.P. (undivided) but no estimates or norms for low flow requirements for maintenance of river ecology exist (Table 14.15).

TABLE 14.15
Non-irrigation Demands of Uttarakhand

| Use | (in BCM/Yr) | | |
|----------------------------------------------------|------------------------------------------|-------|-------|
| | 2010 | 2025 | 2050 |
| Domestic | 0.363 | 0.48 | 0.88 |
| Electric power | 0.50* | 1.50* | 2.83* |
| Industrial | 0.10 | 0.20 | 0.30 |
| Environmental | Nil, since considered in D/S obligations | | |
| Total | 0.963 | 2.18 | 4.01 |
| Returns at 50 per cent for domestic and industrial | 0.23 | 0.34 | 0.59 |
| Net in consumptive terms | 0.73 | 1.84 | 3.42 |

Note: These projections do not take into account environmental needs because no estimates or norms for low flow requirements for maintenance of river ecology exist. The International Water Management Institute estimated these flow ranges in between 20-50 per cent of total mean annual flow of a river. Though in India we are yet to develop a norm, this should be accounted for in the water demand calculations, *Consumptive use.

Source: NCIWRD (1999).

3.3 Water Requirement (2025) Summary

The annual consumption of water at ultimate stage has been assessed on the basis of foregoing discussion and estimates and the aggregate demands in withdrawal terms are presented in Table 14.16.

TABLE 14.16
Ultimate Water Demands (2025) for Irrigation and Non-irrigation Purposes

| Demands | (Figures in BCM/Yr) | | |
|------------------------|---------------------|----------------------------------|-----------------|
| | Withdrawal | Return Flows | Net Consumption |
| Domestic w/s | 0.48 | (50 per cent of withdrawal) 0.24 | 0.24 |
| Industrial | 0.20 | (- do-) 0.10 | 0.10 |
| Power | 1.50 | - | 1.50 |
| Environmental | - | - | - |
| Agriculture/irrigation | 6.12 | - | 3.34 |
| Total | 08.30 | 0.34 | 5.18 |

Source: Tables 14.14 and 14.15.

4. Resource Assessment

Uttarakhand state is endowed with fairly large water resources emanating from the Himalayas. Most of the major rivers and its tributaries are perennial in nature. River Ganga, Yamuna, Ramganga, Gomti and Sharda etc., fall in this category. The state of Uttarakhand is entirely within the Ganga sub-basin of the Ganga-Brahmaputra-Meghna (GBM) basin, which is shared by India with China, Nepal, Bhutan, Myanmar and Bangladesh. Deciding the availability and utilisability of sub-basin entity is simple due to having structured data of the flow measured at certain selected terminal sites during monsoon and non-monsoon seasons. But the decisions about non-basin entities become not only problematic but complex also due to several legal and administrative reasons that add to the hydrologic complexities.

In order to assess the availability of water for state of Uttarakhand for use in different sectors, the following issue needs to be considered:

- Average natural availability of water from all the major streams up to their last sites beyond which Uttarakhand cannot effectively use the water.
- Average seasonal and annual availability of water from the numerous rivulets/*gadheras* scattered in different parts of the state wherever flow data are available and rainfall-runoff relationship where flow data are meager or not available.
- Likely and reasonable upstream uses that may take place in other states/adjacent countries upstream of these sites.
- Downstream obligations, which Uttarakhand may have to fulfil on the basis of treaties and agreements etc.
- Available remaining water free from all burdens.
- Large return flows also need to be accounted for, as these will either lend themselves for re-use in the same command area or at other places.
- Flow data of non-monsoon season for the purpose of assessing the water availability during most critical period when different areas of the state suffer from serious water scarcity.
- Rainfall data to calculate availability of water from smaller streams whose flow data is not available.

For calculating the total water availability from major streams as above, the flow data have been recorded by the CWC at different measuring sites located in the state. The

Irrigation department of Uttarakhand and other related departments could not provide any data related to natural annual availability of water in the state in form of annual discharges of major and minor rivers. Even Minor Irrigation department of Uttarakhand does not maintain proper data on discharges of rivulets and *gadheras* distributed in the state that cater for water needs of the locals and play vital roles in economy of the villages. Hence, the natural annual water availability of water in the Uttarakhand state has been assessed indirectly based on secondary data or previous studies carried out by WAPCOS/NCIWRD etc., of the erstwhile-undivided Uttar Pradesh.

Uttar Pradesh made its estimates regarding availability of water for its own use out of the total available flow in the Ganga basin. Out of about 336 BCM water that flows through the state the utilisable quantity was estimated as 200 BCM. With this availability the state had planned to achieve an irrigation intensity of 200 per cent over the net sown area with help of available groundwater.

As more observation data at the terminal sites of 5 rivers of the state became available from studies done by MoWR, Government of India, the surface water resource availability for the state of Uttar Pradesh was estimated as 121.8 BCM (Table 14.17). Water resources already developed by way of storage and diversion schemes till the period of observations accounted for about 39.9 BCM, thus making the gross availability as 161.7 BCM out of which the net utilisable water for Uttar Pradesh and Uttarakhand states has been estimated as 118.4 BCM after allowing for the needs of upper and lower riparian states. This assessment is based on 75 per cent dependable flow from the observed data.

TABLE 14.17
Flow Rate of Rivers of Uttar Pradesh (Undivided)

(Figures in BCM)

| Sl. No. | River | Discharge Observation Site | Annual Dependable Flow | Share of Uttar Pradesh (Undivided) |
|---------|---------|----------------------------|------------------------|------------------------------------|
| 1. | Ganga | Varanasi | 67.0 | 42.8 |
| 2. | Gandak | Walmikinagar | 32.9 | 10.4 |
| 3. | Ghaghra | Turtipar | 62.2 | 62.2 |
| 4. | Sone | Chopan | 11.4 | 1.25 |
| 5. | Gomti | Maighat | 4.9 | 4.9 |
| Total | | | 178.4 | 121.8 |

Source: WAPCOS Study (1999).

Groundwater

The region-wise breakup of the resource is as shown in the table below. The available data has been processed to separate the Uttarakhand (Table 14.18). Out of the total replenishable groundwater resources the new state of Uttarakhand has only about 2.10 BCM of groundwater resource in the districts Dehradun, Nainital, Udham Singh Nagar and Haridwar. Except Haridwar and some part of Udham Singh Nagar, groundwater is under-exploited.

TABLE 14.18
Region-wise Status of Groundwater (BCM)

| Sl. No. | District | Annual Replenishable Groundwater Resources | | | |
|--------------------------|-------------------|--------------------------------------------|-------------------------------------|----------------|---------------------------------------|
| | | Total Recharge from Rainfall | Total Recharge from other Resources | Gross Recharge | Stage of Ground Water Development (%) |
| 1. | Dehradun | 0.5 | 0.04 | 0.54 | 6 |
| 2. | Haridwar | 0.42 | 0.55 | 0.97 | 96 |
| 3. | Nainital | 0.09 | 0 | 0.09 | 28 |
| 4. | Udham Singh Nagar | 0.48 | 0.18 | 0.66 | 79 |
| State total (BCM) | | 1.49 | 0.77 | 2.26 | 66 |
| India's total (BCM) | | 289.86 | 142.78 | 432.64 | 58 |
| Share of Uttarakhand (%) | | 0.51 | 0.54 | 0.52 | |

Source: CGWB (2004). State Reports.

Surface Water

Water availability can be compared more easily for a basin, which is an independent hydraulic unit. For the Ganga sub-basin, the NCIWRD estimates the average water availability as 525 BCM. Of this 250 BCM are estimated as utilisable [withdrawal terms] from surface water. The portion, which can be utilised from groundwater, has been estimated as about 171.57 BCM.

The problem is of deciding the available and utilisable water for Uttarakhand as a part of the Ganga sub-basin. This problem is complex, conceptually and also because much of the data is classified. However the problem can be approached using a method similar to that adopted by the Uttar Pradesh perspective plan 2025. They compiled the water available to Uttar Pradesh as follows:

The U.P. (undivided) Perspective Plan mentions that the observed dependable flow from 5 sites was 178.4 BCM. If one corrects these for upstream uses, as also

from dependable to average, the natural flow at the 5 sites [which will already include the groundwater base flow component] would be about 250 BCM.

The UP Perspective Plan makes a total reserve of 56.6 BCM for upper and lower states. We accept these but add another 10 BCM reserve for Ghagra up to Turtipar taking the figure to 66.6 BCM. An average flow of about 2000 m³/sec for 150 days of low flow period represents a low flow volume of about 28 BCM. The five terminal sites together may have to contribute about 15 BCM towards this. In respect of Uttarakhand, the downstream obligation shall be counted keeping in view the share of Uttar Pradesh in the surface water flowing through Uttarakhand. The share is yet to be decided finally.

Downstream Obligations: The five terminal sites may have to contribute to an un-utilisable spill of say 4000 m³/sec average in the three monsoon months, thus discharging about 30 BCM.

Un-utilisable Spills: Net water available to UP plus Uttarakhand would then be approximately:

| | |
|-----------------------|------------|
| Natural flow | 250 BCM |
| Upstream reserves | (-) 66 BCM |
| Downstream obligation | (-) 15 BCM |
| Un-utilisable spill | (-) 30 BCM |
| Net | 139 BCM |

Net Uttarakhand (taking share in the ratio of groundwater): 4.76 BCM.

After deducting all obligations arising out of several interstate and international agreements/treaties, it is contemplated the state of Uttarakhand would have sufficient quantity of water to meet all the requirements for different uses like irrigation, drinking, industrial, tourism/navigation etc. Return flows are accounted for while calculating the balance of demand and supply. The live storages created in form of dams, diversions etc., for irrigation/domestic/industrial and hydropower etc., add to the quantity of water available in the region.

The distribution of surface water of the Ganga and the Yamuna sub-basins between the two states has yet to be finalised by the two governments by mutual agreements. The talks are on.

Water Balance: Current and ultimate (2025) water requirements of the state for irrigation and non-irrigation purposes have been calculated. But due to lack of the data related to annual availability of natural water from all the sources existing in the state, the water balance could not be worked out on the realistic basis. The distribution of water of the Ganga sub-basin has yet to be decided among

them by the mutual consent of the beneficiary states or through intervention by the Central government. Presuming that the distribution of water of the Ganga, the Yamuna and their tributaries shall be judicious and equitable and also, rainwater harvesting projects shall be given due priority and weightage; the water availability shall be more than sufficient for all consumptions in the state. Groundwater exploitation possibilities are also very high particularly in Dehradun, Nainital and Udham Singh Nagar, which could be utilised at any developmental stage.

5. Problems and Key Issues

While there is no dearth of natural water in Uttarakhand state, shortage of water is noticed both for irrigation and drinking purposes due to unequal distribution of water spatially and periodically, lack of live storages of the desired capacity and poor maintenance of infrastructure created. Most of the *gadheras* and rivulets are drying up gradually resulting into non-functional status of the facilities created. The remote areas of the hills have sparse and scattered population and single village schemes for them do not remain a viable solution. Only multi-village schemes are the solution to such areas. The Swajal Project aided by World Bank is proposing a project costing nearly \$224 million covering about 3347 GPs in which multi village schemes for scarcity areas have been considered. The Watershed Management and development of MI facilities in such areas of water scarcity are the solutions to solve the scarcity problems and problems related to sustainability of water resources.

Augmentation of irrigation potential (in form of drilling of new TWs, augmentation of the canal capacity, development of MI facilities and constructing watershed/rainwater harvesting structures etc.) to meet the balance demand in the ultimate period (2025) will need to be ensured in phases. For covering all the cultivable land up to 3500 ft altitude with the irrigation facilities as envisaged in vision (2012) of Uttarakhand government, almost all the cultivable area in the plains part of Uttarakhand measuring about 5.34 lakh ha and some part of hilly region in addition would be needed to be covered. The present status of coverage is 3.65 lakh ha which means that 100 per cent coverage of plain area as assumed in projected land use plan will take account of remaining 1.69 lakh ha of the cultivable land.

Official data presents a partially satisfactory picture of the drinking water supply situation in Uttarakhand state particularly in rural areas. But report of field visits made by World Bank Mission Officials (March 2004) and studies

conducted by Development Centre For Alternative Policies (DCAP) New Delhi (Evaluation of varied approaches for enabling sustainable and equitable access to drinking water in Uttarakhand in 2003-04 at the instance of Planning Commission, Government of India) and DHV Consultants BV in 2001 narrate different stories in regard to status of water supply in Uttarakhand villages. According to these reports, O&M of single and multi-village schemes particularly in remote part of Kumaon and Garhwal regions is not satisfactory. According to the field studies in 30 villages in Kumaon and some in Garhwal, by the DCAP, New Delhi, even the performance of Swajal type of work is ranked poorly, keeping in view the money and participatory approach involved. Similarly, sector study for UP conducted by WAPCOS in 1999-2000 observed several weakness in water supply and sewerage sector. The discussion in rest of this section heavily draws from the above reports and the ground reality checks conducted by this study. Uttar Pradesh has embarked on a major water-sector-restructuring project with a long-term perspective. (Box 14.1)

As for the government agencies, PJJ and JS do not generally take up water-recharging projects except some projects of watersheds by Watershed Management Directorate, Dehradun in selected places. No comprehensive long-term plan is there in the pipeline as yet to fulfill this objective as envisaged in the vision of Drinking Water Department, Uttarakhand.

5.1 Issues in Irrigation Water Management

(i) Structural problems requiring replacement

At many places the old structures have either out lived their physical life and are under distress or are not able to meet the present day operational requirement. Head works of some of the canal system need replacement.

(ii) Considering new information in regard to design

Design standards may have to be changed, say due to unexpected earthquake and dams may have to be strengthened. A dam safety programme to tackle such problems is under process in the state and rehabilitation of dams under distress has been included in Tenth Five Year Plan programme.

(iii) Meeting increasing demand

The increase in demand for water may be due to additional irrigation areas or changing cropping patterns, particularly due to crop varieties requiring larger amount of water. It may be possible to meet such demands after modification that enables improved management. Improvement in irrigation management would *inter alia* require following specific actions to conserve the resource and optimise its use efficiently.

a) *Reducing water losses*: Selective lining in reaches of high seepage is a measure of conservation of water;

BOX 14.1

Water Sector Restructuring Project, Uttar Pradesh

Fundamental reforms are required in planning and management of water sector and irrigation and drainage sub-sector to help improve rural livelihoods in a sustainable manner. Such reforms can be made by a flexible long-term programme approach with a vision covering a 15 to 20 years horizon. Uttar Pradesh has started a Water Sector Restructuring Project with assistance of World Bank. The estimated cost of the project is in the amount of SDR 117 Million (US\$ 149.2 Million equivalent). The project development objectives are:

- i) To set up an enabling institution and policy framework for water sector reform in the state for integrated water resource management; and
- ii) To initiate reform in irrigation and drainage sub-sector to increase and sustain water and agricultural productivity.

The main sector issues incorporated to be addressed are:

- a. Lack of institutional coordination.
- b. Inadequate mechanisms and knowledge base for planning, allocating, developing and managing water resources in each basin.
- c. Lack of appropriate legal, regulatory and administrative framework required for a financially sustainable water sector.
- d. Lack of effective user participation and private sector involvement leading to poor services.
- e. Low productivity of water due to the unreliable irrigation and inadequate extension services, poor adoption of available technology, input and diversification.
- f. Large establishment costs in the sub-sector, and
- g. Resource augmentation to meet the real need.

recharge to the groundwater should be carefully looked into before deciding on lining proposals.

b) *Providing control structures:* Provision of suitable and better control structures on the canal distribution systems may ensure better water distribution.

c) *Installation of conjunctive use component:* As demands grow or as need for vertical drainage is felt, conjunctive use of groundwater in the commands will be required to be adopted, particularly in the districts of Dehradun, Nainital and Udham Singh Nagar where there is scope for further exploiting GW potential. This can be achieved through action of individual farmers installing their private tubewells as has happened in most of the western Uttar Pradesh. However, in such hypotheses large-scale public efforts are necessary.

d) *Provision of better distribution network:* Some of the old systems in U.P. did not have any field channels beyond the outlet catering for areas up to 40 ha. But now water is provided to 5 to 8 ha blocks beyond which the farmers will have their own field channels. Such extensions have been done mostly through command area development authorities and few others. The like establishments need to be created in Uttarakhand for developing effective network in plain part of the state to cover almost all cultivable area up to altitude of 3500 ft.

e) *Lack of maintenance:* The canal systems of Uttarakhand are still being maintained by Uttar Pradesh, which lacks proper maintenance for want of sufficient funds.

5.2 Improving Canal System Operation

The essential constituents of a large irrigation distribution system are as follows.

1. Primary system- For water conveyance (main and branch canals)
2. Secondary system- For water distribution (distributaries and minors)
3. Tertiary system- For water delivery field channels

Normally the primary system runs continuously, throughout the irrigation season, at full or partial discharges. The secondary system can also be planned to run continuously throughout the irrigation season. However, more often (and in all cases in Uttar Pradesh and Uttarakhand), these are run for only part of the time. The field channels serve only on time-sharing basis. This

is necessitated by the minimum discharge i.e., around 30 lit/sec, which channels can carry.

Where the *warabandi* method of water allocation (Box 14.2) is not functioning well, the main difficulty is traceable to deliberate malfunctioning of the secondary system during partial discharges, where the head secondary system can still draw 100 per cent by manipulating the cross and head regulators and causing serious equity problems on the downstream. Three broad methods have been advocated to avoid this situation.

1. Actively involve farmers in management of not only tertiary (which is the present norm) but also secondary system. Have deliberative committees where farmers of manipulation. This method lays stress on PIM (see Box 14.3).
2. Avoid partial running. All systems should run at 100 per cent discharge and cuts can be imposed in time (say two weeks running in one month). Also have proportionate distributors instead of head and cross regulators on secondary system, of that only specified percentage flow can be taken in an off taking channel.
3. Have a full-scale automated system with computerised controls.

BOX 14.2

In UP, *warabandi* is practised at the of irrigated *chak*, serving say 10 to 15 holdings totaling 5 to 8 ha. The field channels run continuously during the week when the secondary system is carrying water and consequently all *chaks* on that part of the secondary are receiving water. The *chaks* are ungated, and as the *chaks* supply water this is shared on time-sharing basis by all land holdings.

Currently, in Uttar Pradesh, the situation is that in west Uttar Pradesh, because of water stress and larger awareness, *warabandi* works fairly well. But in other parts, where *warabandi* does not work very well, the U.P. government is trying to encourage PIM to make it work.

5.3 Issues Related to Sustainability of Irrigation Programme: Participatory Irrigation Management (PIM)

For the equitable and optimal utilisation of canal irrigation there is urgent need to evolve a strategy for community participation. There is a general consensus now that the participation of the users in irrigation management has improved the efficiency of the systems.

BOX 14.3

P.I.M.

Participatory irrigation management is not a new concept. There are instances of locally managed irrigation systems, which are centuries old in Northern India, in the Atlas mountain range of North Africa and in the semiarid regions of Pakistan. The *subak* system of Indonesia is another example. However, in the present context, these systems exist in isolation. Once government willingness is there, such systems do have the capability to encompass a wide area and encourage participation by users.

Two of the most dramatic management transfer programme has been undertaken in Mexico and Turkey. In many of the developed countries participatory irrigation management has been in practice since long time, e.g., Australia, U.S.A, Japan and Spain. In India PIM initiative has started in some of the states. For example, whereas Maharashtra and Gujarat have taken up the programme in a phased manner, Andhra Pradesh has through an Act of the legislature turned over the canal systems to farmer organisation for management. Tamil Nadu and Madhya Pradesh have enacted similar Acts.

In the irrigation sector, the trend is clearly toward reducing the role of government in operation and maintenance. Portions of the systems are being turned over to associations of farmers to manage, in some countries on a pilot basis, in others, on a large scale. In India, the appropriate division of management responsibility between the users and the agency varies. The transfer can be at the level of distributaries (15,000-25,000 ha) or of a minor (up to 500 ha), or it can be done in stages. There are no predetermined norms for the association of farmers, which are to be governed by their own by-laws.

Following are the salient features of the policy resolution of Uttar Pradesh government to introduce PIM on the minors of canal systems in a phased manner:

1. Government invites water users (farmers) association belonging to canal commands on minors and having membership of at least 51 per cent water users (covering at least 51 per cent of area also) to come forward to take responsibility of irrigation management of the command.
2. Water users, association should be registered under U.P. Cooperative Act, 1965 or Societies registration Act. However in the initial phase the WUAs may be given recognition as a proposed society by U.P. Irrigation Department.

3. Before turnover of the minor, the executive engineer of UPID shall sign a MoU with WUA.
4. The ownership of canal systems and appurtenant structures shall be vested in state government. Whereas WUAs will be responsible for water distribution. O&M, irrigation charges recovery, etc., government will continue to be responsible for providing technical guidance and financial assistance towards essential construction, additions, alterations and modernisation as well as rehabilitation.
5. WUAs would be expected to adopt appropriate water economising measures including installation of water saving devices such as drip and sprinkler irrigation and also crop varieties, which are less water intensive.
6. Initially farmers' participation in management shall cover selected canal projects and 'Bundhis' of district Marzipan and Sonebhadra etc.

UP has designated a nodal agency for training of representatives of WUA, UPID and other line agencies. In Uttarakhand too, Participatory Irrigation Management (PIM) through Water Users Associations is an urgent need particularly in managing the MI facilities on hilly parts. Though Water User Associations are active on some part of the state particularly in Udham Singh Nagar and Nainital districts but more emphasis needs to be given for sustainability purposes. Sector reform in irrigation and MI sub-sectors seems essential to solve the irrigation problem in hills, which is a big challenge. Supply-driven projects on traditional pattern would not yield the desired results if communities/users are not sensitised intensively to participate in the total project cycle. Sector reform programme run in rural drinking water subsector through Swajal has already created some impact and example. Thus, there is a strong case that reform in the entire water sectors altogether should be taken up under single umbrella of one ministry (i.e., Water Resource Ministry—to be constituted).

5.4 Issues with Rural Water Supply Sector

Most villages in the state have access to drinking water. However, there continues to be poor recovery of O&M. cost. Continuity of source is a major problem affecting the schemes that often necessitates connection to distant sources. There is need for more multi and larger-village schemes. At present much of the investment goes into recurrent rejuvenation and upgrading of the existing schemes. There are several causes behind this ineffectiveness.

- a) *Uneconomical level of investment in the schemes:* Apparently, if the need for upgrading to meet basic needs could be eliminated, and responsibility for the schemes would be left to the local communities, all investment could go into development of new schemes. However, rejuvenation/upgrading of schemes are necessary because the government attempts to make expenditure as effective as possible in the short term (more water supply for less money) without regard for the long-term capital costs this engenders.
- b) *Inefficient operation of the centralised water supply development institutions:* The setting up of a corporate entity like Peyjal Nigam presupposes feasible financial viability of the undertaking. But in practice, the establishment cost of Peyjal Nigam consumes all of its entire income, i.e., including the revenues that are supposed to cover the cost of O&M and maintenance grants received from the government. Moreover, the PJN has no autonomy at all in respect of any kind of decision. The functioning of PJN is heavily controlled and governed by the state government absolutely and also, it is the government, which takes decisions about work distribution among different water sector agencies in the state. This totally defeats the aim of the corporative structure.
- c) *Lack of willingness to charge the cost of water supply:* Non-functional or partly functional schemes contribute significantly to the dismal financial performance of PJN and UJS. It provides users an accepted excuse not to pay their water charges, which in any case are not adequate to cover the cost of operation. The willingness to pay will remain too low to make effective collection possible. Higher charges are therefore unavoidable to create a sound basis for better performance and hence, better revenue collection.
- d) *Cost recovery:* The Government of India has declared basic norms for cost sharing; communities must bear 10 per cent of capital cost and 100 per cent of O&M cost. In the Swajal experiment, these norms are rigidly applied for the public handpumps and standpipes, while owners of private connections must also bear 100 per cent of the cost of connection to the mains plus Rs. 1,000 as a proxy for the additional system cost.

Cost recovery must take place through implementation of effective rate structures and regular collection efforts.

In the non-Swajal schemes these are often absent and these schemes generally show very poor cost recovery. A major reason for this is poor quality of service. It would therefore appear that improvement in cost recovery would only emerge following significant investment in quality and reliability of services. Although this investment will be expensive, the improved service quality should improve the users' willingness-in-principle to pay.

5.5 Issue with Drinking and Waste Water Management

The key issues related to drinking and the wastewater management are generally common in UP and Uttarakhand states which formed a single state till recently. While some issues figure differently in Uttarakhand due to its unique geographical/geological conditions, shared problems include:

- Poor maintenance of piped water supply schemes due to paucity of O&M funds,
- Lack of coordination among the agencies responsible for water supply and wastewater disposal works,
- Poor database of discharges of perennial and seasonal rivulets and *gadheras*,
- Poor recovery of water/sewerage charges from the beneficiaries, and
- Drying up of water sources (*gadheras*).

The status of availability of water in rural gravity water supply schemes indicates that water facility available at present is sufficient to meet the rural drinking water requirement except in some pockets of the remote districts. While these shortages can be made good through various proposed schemes, sustainability of such schemes is possible only through community participation, which is being looked into actively by the Swajal. Creation of watershed/rain water harvesting structures and their proper maintenance at community level will be long run solution of this problem. (The water problem of urban areas of scarcity districts are proposed to be tackled by way several water supply projects with help of Urban Development Ministry Government of India and ADB etc. This is dealt with in Chapter 15–Urban Development.)

5.6 Water Pricing

Water resources have been developed mostly in the public sector. A free competitive water market cannot exist in water sector due to the area specific nature of the resource and deep involvement of people directly.

Therefore, water prices are the administered prices. Fixing of water charges norms is a crucial issue and has been center of attention of state and Central governments for a long time now. Several committees were also formed to recommend the rates but the socio-political considerations have invariably dominated the judgment-making process except in the case of few states.

Recommendation of 11th Finance Commission

The Tenth Finance Commission had adopted a norm of Rs. 300 per ha for utilised potential and Rs. 100 per ha for the unutilised part. The commission had also followed the past practices of enhancing the norms by 30 per cent for hill states. Thus, based on the recommendation of Ministry of Water Resources, 11th Finance Commission adopted the norms of Rs. 450 per ha for maintenance of the utilised potential and Rs. 150 per ha for the unutilised ones. Additional provision of 30 per cent had been made for hill states. An increase of 5 per cent per year has been made to take care of the possible price escalation.

The water charges for domestic purposes are different in rural and urban areas but they are not sufficient to meet the O&M expenses required for piped water supply schemes. However, the rates of water for domestic purposes in urban and rural areas have been revised through Government Order on 9 October 2003 and again on 3 October 2006. Some of the recommendations are:

- Some water supply schemes are years old and had completed their designed period. The pipes of such schemes are corroded and need replacement.
- Uttarakhand Jal Sansthan has developed Man Portable Rig Machines. So it is now possible to construct hand pumps away from the motor roads. Handpumps are more sustainable and useful for areas having no sources of water.
- Quality control is an essential part of water supply. To remove the turbidity and other impurities, Uttarakhand Jal Sansthan has designed Uttarakhand Koop and auto wash filters. Installation of these is essential in the existing schemes.
- Automation of water supply schemes is essential to provide satisfactory services to the consumer.
- Since the numbers of schemes for maintenance are increasing every year, Jal Sansthan also needs additional engineers to provide better services.
- There are many shrines and spots of tourist importance, which need special arrangements for drinking water.

- High cost of electricity also causes problems both in urban and rural water supply schemes.
- Inadequate discharges of sources to meet the summer demand (Mussoorie, Pauri Garhwal and Almora) need construction of reservoirs of large capacity.

5.7 Funds Requirements

The National Drinking Water and Sanitation Mission has begun a sector reform programme under which funds would be provided for institutionalising community participation. The Mission foresees that, as community participation gradually becomes institutionalised in all districts, traditional ARWSP funding may cease to exist as a centrally sponsored scheme. For now, 20 per cent of ARWSP funds are reserved for states undertakings pilot projects under the Mission's guidelines for sector reform. A Note on Funds requirement for Uttarakhand water sector is provided in Appendix A-14.3.

5.8 Other Issues

(a) *Interstate Disputes*—Division of assets and liabilities: There are two issues needing to be resolved:

- Some land and buildings in geographic area of the district of Champawat, Udham Singh Nagar, Pauri Garhwal and Haridwar are still in the control of UP.
- According to Notification dated 07.11.2000 issued by Government of India, many head works and canal network are still in the control of UP irrigation department. The notification requires amendment.

(b) *Water-related Disputes*

- Distribution of water (4.032 BCM) of river Yamuna at Tajewala between UP and Uttarakhand could not be settled amicably. The matter is referred to Government of India (see Appendix A-14.4).
- There are divergent views of UP and Uttarakhand on formation of the Ganga management board. The matter is referred to Government of India.

(c) *Interlinking of Rivers*: The national water development agency has identified 30 river links, out of which one (Sharda–Yamuna link) falls in Uttarakhand. This linkage does not fall in the priority at the national level. Government of India has not taken government of Uttarakhand into confidence so far in

this matter. However, it is important to note that due consideration has to be given for rehabilitation of displaced persons and the state of Uttarakhand should be suitably compensated.

6. Conclusion and Recommendations

6.1 Single Water Resource Ministry

There are six departments in Uttarakhand at present, dealing with water resources but working under different administrative controls in the government. Due to this reason the water resource planning for different purposes falls mostly into the abyss of dispute causing bottle-neck in the pace of development. To establish synchronisation, all the water resource agencies viz., Irrigation Department, Minor Irrigation Department, Watershed Management Directorate, Jal Vidyut Nigam, Peyjal Nigam and Uttarakhand Jal Sansthan should be brought under single administrative umbrella of a Water Resource Ministry.

6.2 Discharge Database of Water Sources

No database related to discharges of small rivers/rivulets/*gadheras/naulas* flowing seasonal and perennial is available with either MI/Irrigation Departments or Peyjal Nigam/Uttarakhand Jal Sansthan. Minor irrigation does only need based/demand driven work in some specified areas while Irrigation department confines itself to only maintenance of canals and civil structures of Jal Vidyut Nigam. Jal Sansthan and Peyjal Nigam too do not maintain this record on regular basis. Due to these lacunae, preparation of Integrated Resource Management for the state is difficult. Discharge data of the Ganga/Yamuna and its tributaries are not obtainable from CWC due to various reasons. Hence, picture of natural water availability status in the state is bleak and shady rendering water balance computation erroneous and any development report faulty. So it is strongly recommended that a comprehensive source study and data collection of seasonal discharges with water quality thereof must be carried out through a trusted agency involving sector specialists including social and environmental scientists.

6.3 Restructuring of Irrigation System

More thrust on source identification and its sustainable development strategy has to be given to solve the water supply problem of rural areas of Uttarakhand state.

Like UP, Uttarakhand should also prepare restructuring projects based on community/farmers' participation in order that operation and maintenance of the tail ends of the canals and channels/*gules* are made properly and also cost sharing is done by the farmers.

Emphasis on Participatory Irrigation Management (PIM) is a must in Uttarakhand as is being practised in UP through Water Restructuring Projects envisaged for Sector Reform. It is to actively involve farmers in management of not only in tertiary (which is the present norm) but also in secondary system. Have deliberative committees where farmers can participate in deliberation about improvement of irrigation water management.

6.4 Canal Automation

In conventional design of a canal system, steady state conditions with a steady (time invariable) flow in all elements are assumed. In actual field conditions, water demands change from day to day to weather conditions, rainfall and field operations.

The supplies from the head works take considerable time to reach the place of demand, thus balancing supplies and demands becomes difficult when demands reduce. Even if supplies are reduced after receiving the reports of rainfall, the reduction may take 3 to 4 days to be effective in the command.

Canal automation saves considerable water and affords 'on demand' irrigation. Such automated projects may be of much use where:

- The system is storage based.
- Water scarcity conditions exist and importance of water is realised, and
- Water distribution system is lined and well maintained.

Canal automation upgrades the system and provides better match between the canal deliveries and current demands. Automation works on the principle of 'on demand deliveries, to the user'. Thus, any one who wants water gets it from the storage in the canal. Similarly in case of any breach, or even a quick reduction in demands, the water flowing in the upstream canals gets stored and this reduces wastage. In this method the canal system serves both as a conveyance and a storage element.

Pilot implementation of such operational practices is highly recommended. Apart from that, other methods like PIM and water distribution at local level through PRI Samitees or Water Users Association etc.

6.5 Institutional Reform of Drinking Water Sector

To overcome the several inefficiencies in the sector that have been discussed above, policy changes as well as institutional reforms are needed. We shall look first at the proposed institutional reform which is based on a few principal observations:

- Water supply and environmental sanitation is in principle a local issue, which requires local solutions. This is also the spirit of the thrust towards community involvement in development and operation of water supply schemes.
- Existing institutional arrangements place responsibility for water supply at the *Panchayat* level, but most of the authority, especially those concerned with decisions having financial implications, remain with the state government. Without appropriate authority and capacity, the *panchayat* cannot properly discharge their responsibilities. Moreover, the lack of local authority results in lack of accountability. This is not conducive to developing community involvement (sense of ownership).
- The Swajal model differs from the sector reform program under ARWSP in some of the financial guidelines—most notably that it demands a 10 per cent capital contribution for basic need schemes whereas ARWSP does not. Institutionally, the Swajal model is still in the experimental stage, whereas the ARWSP sector reform guidelines already identify specific institutional entities, responsibilities and procedures.
- The expressed preference of the NDWSM is for a single department looking after both water and sanitation. Uttarakhand has established a unified Drinking Water Department, responsible for both the urban and rural sectors. However, the relevant responsibilities and institutional allegiances remain divided. PJN is the prime organisation charged with development and operation of water supply schemes, both urban and rural. Jal Sansthans exist with similar responsibilities in all but one district. There is thus, duplication of organisational capacity, particularly regarding management and administration.

In the light of these observations, the sector study makes the following recommendations for institutional reform of Drinking Water Sector:

- There are two main departments that deal with water supply and wastewater management works in Uttarakhand. They are Peyjal Nigam and Uttarakhand Jal Sansthan. The two departments have their own intrinsic problems related to their identity and expertise. Peyjal Nigam (erstwhile Jal Nigam) has more technical workforce as compared to Jal Sansthan, which is simply a maintenance

body but due to several reasons, it does not seem to be in concordance with the former.

- Merger of the two organisations to improve the organisational efficiency by shedding duplications in the respective establishments is an option to be considered. This should be attempted only if the combined entity is granted greater autonomy.
- Besides the mandate for development of schemes the PJN also has sector-level responsibilities (planning, monitoring and evaluation, HRD, R&D, etc.). Moreover, there may be tasks that even the enlarged JSs could not perform without some technical assistance of a more sophisticated level from a centralised organisation like PJN. To carry out these sector-level tasks it will be necessary to retain at least some of the capacity of the divisions of PJN that are not being integrated into the JSs. This capacity could be incorporated into the DWD as a WSS Directorate.
- While merging the Jal Sansthan into Peyjal Nigam as a maintenance wing thereof, one chief engineer (maintenance) and two general managers one each for Kumaon and Garhwal should be given to maintenance wing (excluding other necessary subordinate positions) of Peyjal Nigam. This will solve staff problems of the two departments also adequately.

6.6 Water Conflict Related Issues

Conflicts between uses and users are likely to grow. The main concerns are:

- i) Irrigation *versus* domestic use
- ii) Irrigation *versus* hydro-power, and water use *versus* ecologic flows.

Water rights of individuals and groups of individuals need better delineation through a legalised process of allocations and review of allocations. This system needs to cover returned waters, water quality and meeting demands through waters of a quality appropriate to the demand.

Water rights of individuals and groups need to be linked with obligation to return a predetermined quantity of acceptable quality to the system. The “user pays-polluter pays” principle needs to be adopted.

Water management for hydrologic unit like basins/sub-basins needs to involve stakeholders. For homogenous areas with only irrigation use, WUAs could be the vehicle for management. For heterogeneous uses, stakeholder

committees would have to be formed and empowered to manage the resource, within allocations and financial sustainability.

In the area of interstate issues, a large number of storage dams including those under construction and proposed, would be located in Uttarakhand, with benefits shared by UP. Joint actions would be required in implementing such projects.

6.7 Need to Price Water Resources

Uttarakhand is blessed with adequate water. However, such advantage cannot be guaranteed for all times to come. Efficient use of water is of paramount importance and the economic theory suggests that freely available utility are the ones, most misused and wastefully exploited. It need to be emphasised that water has an economic value in all its competing uses and should be recognised as economic good. The scarcity value of water and the cost of administering the supply can form important basis to calculate the price of supply. However, an intensive analysis with proper documentation of procedures of calculating the price for different users, methods of collection and formulae to revise the prices needs to be worked out, including subsidies that should be designed to motivate users in different classes of income to participate in water market.

6.8 Factoring in Climatic Changes on Water Resources

With increasing knowledge about the climate change hypothesis, it has become almost mandatory for long-term planning process to take into account factors that are responsible for climate change and the likely inter-temporal consequences of plausible deviations in climatic conditions on projects. More recently, a study sponsored by the Public Interest Energy Research programme (PIER), California Energy Commission and authored by

Michael Kiparsky, Peter H. Gleick (Kiparsky and Gleick, 2004), has brought forward several risks to water resources due to climate change. Such risks have become important consideration in planning process for water resources. In fact, climate change has imposed yet another dimension of uncertainty on the planning process. Therefore, water industry professionals are getting increasingly engaged in analysing the effects of unanticipated variability of climatic conditions, particularly, those of temperature and precipitation on the availability and quality of water resources. Such studies also include the effect of extreme variation on operations of water/utility related projects in order to plan the risk and remedial measures.

Specific attention needs to be paid for the mountainous regions, where likelihood of shorter snow accumulation periods, particularly at lower elevation areas, would result in reduced annual snow-packs, earlier spring melting and reduced late summer flows. In the context of California, Miller and Yates (2005) note the following: Warmer temperatures during the winter will affect the form of precipitation, with a larger fraction of total precipitation coming as rain rather than snow. However, when it does snow, warmer temperatures and increased moisture availability may result in heavier snowfalls. A temperature change of only a few degrees during the melting season would have a substantial effect on the timing of spring runoff. Less snow-pack in the late spring means that there will be a smaller supply in late summer, when water is scarcest and demand is high. All these factors are now part of planning process for water resource at Energy Commission, California.

Uttarakhand can take lead in starting such a planning process in Indian context. In fact, it is desirable for the state of Uttarakhand to take note of future climatic condition in any long-term planning process for water resources.

References

NCIWRD (1999). *Integrated Water Resource Development: A Plan for Action*. Report of NCIWRD. Vol. 1. Ministry of Water Resources, Government of India.

WAPCOS (1999). *Integrated Management and Development of Water Resources in Uttar Pradesh and Uttaranchal*.

APPENDIX A-14.1

**Functions Assigned to Project Management Unit of
Swajal Project**

The PMU shall carry out the following functions (as mentioned in the Memorandum of Association):

- (a) To undertake all activities that may be necessary for the implementation of the project;
- (b) To coordinate and monitor the activities for implementation of the project;
- (c) To coordinate and monitor setting of Uttarakhand water quality laboratories including procurement of lab equipment and instruments;
- (d) To obtain assistance of consultants for the following activities:
 - i. Review of water supply scheme designs;
 - ii. Environmental sanitation designs;
 - iii. Water quality monitoring system;
 - iv. Training;
 - v. Any other activities;
 - vi. Various studies;
- (e) Construction supervision, monitoring of leak detection, survey;
- (f) Coordination and management of training programmes for personnel of PMU, District Project Management Unit (DPMU) and others e.g., village water and sanitation committees, village facilitators, support organisations and village communities including members of *Gram Panchayat* and Jal Prabhandan Samities, primary school teachers;
- (g) To secure activities involvement and participation of NGOs committed to the cause of rural water supply and environmental sanitation;
- (h) To organise conferences on matters related to the project;
- (i) To make rules and regulation for the conduct of the affairs of the PMU and add or amend, vary or rescind them from time to time;
- (j) To establish its salary structure and benefit structure and to employ, retain or dismiss personnel as required in PMU and DPMUs;
- (k) To accept, make enclosed or otherwise execute cheques, drafts, receipts, bills of exchange or other instruments and securities as are required for the conduct of the PMU's business;
- (l) To undertake any legal actions that may be necessary to ensure the fulfilment of contracts made between the PMU and others;
- (m) To enter into contracts without a requirement for government approval, other than that by government representative on the PMU's Executive committee;
- (n) To accept or to provide any grant of money, loan, securities or property of any kind and to undertake and accept the management of any endowment trust, fund /or donation not inconsistent with the objectives of the PMU;
- (o) To incur expenditure after drawing up a budget and with due regard for economy and propriety;
- (p) To prepare annual report and accounts of the PMU;
- (q) To purchase, hire, take on lease, exchange or otherwise acquire properly, movable or immovable and construct, alter and maintain any building or buildings as may be necessary for carrying out the objectives of the PMU;
- (r) To take all such action and to enter all such actions as may appear necessary or incidental for the achievement of the objectives of the PMU.

Current Mandate as notified by GoUA

- (a) The major objective of the PMU was to coordinate and monitor the implementation of the World Bank Project, which was successfully followed till the closure of the Project on 31st May 2003. However later the GoUA vide G.O. No. EQ 010&53@ukS&2¼01 is0 ½/2001 dated 25th June 2003 took a decision that the PMU established under the Swajal Project Phase-I will continue with government funding.

The current mandate of PMU include the following:

- to prepare the follow-on-project of Swajal Project (Phase-I);
 - to do loan closing of Swajal Project Phase-I and sustainability monitoring of assets created therein;
 - to provide technical assistance for community development and to do monitoring and evaluation of implementation of Swajaldhara programme;
 - to act as HRD Cell under GoI's funding;
 - to implement Information, Education & Communication (IEC) programme;
 - to implement Total Sanitation Campaign (TSC) programme;
 - to oversee the implementation of Sector Reform Project, Haridwar; and
 - to do any other work assigned by the GoI and GoUA.
- (b) The GoUA vide GO NO -475/N-2-04 (25PAY)/2003 dated 24 Feb 2004 has also designated PMU to function as State Water and Sanitation Mission (SWSM) to coordinate and monitor the implementation of Swajaldhara and TSC project in the state.

APPENDIX A-14.2

Population Trends

All the developmental activities are done putting human being in the centre. Population growth trend and its spatial and temporal distribution are necessary before going into any developmental efforts meant for people in the region. The water requirement for irrigation and non-irrigation purposes keeping in view the food requirement for the current and future population is to be assessed judiciously before arriving at ultimate development scenario of water resource development. The population of the Uttarakhand state and its decadal growth trend is given below in Table A-14.1 as per statistical data of the state.

APPENDIX TABLE A-14.1

Population Trend of Uttarakhand

| S. No. | Year | Population (lakh) | | Population Density (per sq. km) | |
|--------|---------------------|-------------------|-------|---------------------------------|-------|
| | | Uttarakhand | India | Uttarakhand | India |
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | 1901 | 20 | 2384 | 37 | 77 |
| 2 | 1911 | 22 | 2521 | 40 | 82 |
| 3 | 1921 | 21 | 2513 | 39 | 81 |
| 4 | 1931 | 22 | 2790 | 42 | 90 |
| 5 | 1941 | 25 | 3187 | 47 | 103 |
| 6 | 1951 | 29 | 3611 | 53 | 117 |
| 7 | 1961 | 37 | 4392 | 69 | 142 |
| 8 | 1971 | 46 | 5482 | 86 | 177 |
| 9 | 1981 | 48 | 6833 | 90 | 216 |
| 10 | 1991 | 71 | 8463 | 133 | 274 |
| 11 | 2001 | 85.67 | 10270 | 159 | 324 |
| 12 | 2005 (Projected) | 91.55 | | | |
| 13 | 2012 | 101.16 | | | |

Source: Statistics Department, Uttarakhand.

The density of population in Uttarakhand is 159 persons per sq. km (all-India 324). However, the spread of population is fairly uneven. For instance, the districts of Haridwar and Dehradun together account for roughly 32 per cent of the state's population whereas district Champawat accounts for only 2.65 per cent of the males, up from 936 in 1991. It is also interesting to note that in 8 out of the 13, around 74:26, the SC population stands at 17.4 per cent and the ST population stands at 3.45 per cent of the total population. The state has inherited a huge financial deficit. Even though the non-tax revenues and tax revenues have shown significant remarkable improvements in the last year and a half of the state's existence, there would be limits to the elasticity of such increase. The projected population of Uttarakhand state by the end of 11th Five Years Plan (i.e., 2012) will be approx. 10.116 million.

The NCIWRD report (1999) has some of the important studies in the area of population growth projections. The details of studies reviewed and the projection of all India population are as given below:

All India Population Growth Projections

NCIWRD, going through several studies carried out by different agencies, has examined these standards keeping in view their rationales while calculating population of India for different periods.

Table A-14.2 shows the different standards and population projected for different periods.

The NCIWRD after examining the latest trends and views expressed by different demographers have decided to use the following estimates:

NCIWRD (Low) : Corresponding to U.N.(1994)
Low Variant

NCIWRD (High) : Corresponding to Visaria and Visaria
(Standard)

APPENDIX TABLE A-14.2

All India Population Projection

(in million)

| S.No. | Reference | All India Population in Year | | | | | |
|-------|-----------------------------------|------------------------------|--------|--------|--------|--------|--------|
| | | 2000 | 2010 | 2016 | 2020 | 2025 | 2050 |
| 1. | Natrajan 1993 | 1020.5 | 1183.1 | - | 1301 | - | - |
| 2. | United Nations-1994 Revision | | | | | | |
| | a. Low variant | 1013.5 | 1156.6 | - | 1249.7 | 1286.5 | 1345.9 |
| | b. Middle variant | 1022.0 | 1189.0 | - | 1327.1 | 1392.0 | 1640.0 |
| | c. High variant | 1030.5 | 1221.7 | - | 1406.1 | 1501.5 | 1980.0 |
| 3. | Registrar General of India | 997.0 | 1162.0 | 1263.5 | - | - | - |
| 4. | Visaria and Visaria Standard 1996 | 995.0 | 1146.0 | - | - | 1333.0 | 1581.0 |

Source: NCIWRD (September 1999).

In regard to Uttarakhand, the growth rates have been similar, for 1980-1990 as also for 1990-2000, to those of all India. The rate for 1990-2000 has in fact been less than all India. Due to continued growth of education, prosperity as also due to migration, we assume that the decadal growth rate for Uttarakhand will continue to be 2 to 1 per cent lower than all India.

As per WAPCOS studies, the growth rate of population and the estimates at the end of decades up to 2050 as discussed in above paras show that the total population of erstwhile states, in 2025 would be around 255 million as against the projection of 301 million made by U.P. in its perspective plan. The NCIWRD has also made assumptions regarding lower limits of all India

population as per United Nations 1994 revision. According to this assumption the all-India population in 2025 and 2050 is projected as 1286.5 million and 1345.9 million respectively. These figures are respectively 3.5 per cent and 15 per cent lower than the high variant scenarios. Based on this approach and keeping all other variants as same the population of Uttar Pradesh and Uttarakhand in 2050 will be around 260 million and 10.73 million respectively. However looking to the trend of decadal growth rate of population in Uttar Pradesh and Uttarakhand, the assumptions made seem to be plausible and can be relied upon for assessment of food demand and water requirements etc. Summarising the population projections being adopted by us are as follows:-

APPENDIX TABLE A-14.3
Decadal Growth Rate Projection

(in million)

| Year | Actual (In million) | All India | | Uttarakhand | |
|------|------------------------|------------------------------------------|-----------------------------------|----------------------------|-----------------------------------|
| | | Projection (NCIWRD High) (In million) | Decadal Growth Rate (per cent) | Projection (In million) | Decadal Growth Rate (per cent) |
| 1990 | 846 | - | 23.86 | 7.1 (actual) | 24.23 |
| 2000 | 1027 | 995 | 21.55 | 8.5 (actual) | 19.2 |
| 2010 | - | 1146 | 15.2 | 9.62 | 13.2 |
| 2020 | - | 1283 | 12.0 | 10.7 | 10.7 |
| 2030 | - | 1390 | 8.3 | 11.34 | 6.5 |
| 2040 | - | 1488 | 7.0 | 11.49 | 5.8 |
| 2050 | - | 1581 | 6.2 | 12.62 | 5.2 |

Source: Computation.

APPENDIX TABLE A-14.4
Population Projection For Uttarakhand

(in Millions)

| Year | Uttar Pradesh (Residual) | | | Uttarakhand | | |
|------|--------------------------|-------------|---------|--------------|-------------|---------|
| | High Variant | Low Variant | Average | High Variant | Low Variant | Average |
| 2010 | 198.2 | 194.2 | 196.2 | 9.62 | 9.44 | 9.53 |
| 2020 | 219.9 | 213.3 | 216.6 | 10.65 | 10.33 | 10.49 |
| 2030 | 257.5 | 244.6 | 251.0 | 11.34 | 10.44 | 10.89 |
| 2040 | 285.5 | 256.9 | 271.2 | 11.49 | 10.54 | 11.02 |
| 2050 | 305.9 | 260.1 | 282.9 | 12.62 | 10.73 | 11.69 |

Source: Basic data NCIWRD (1999), WAPCOS (1999).

APPENDIX A-14.3

Note on Fund Requirement

A. Irrigation

The tentative average cost per ha for irrigation potential development can be assumed based on field experiences, as about Rs. 60,000 (at 2005 Price).

Thus the required capital investment for development of irrigation potential at ultimate stage for Uttarakhand can be assessed as follows:

Total assumed GIA to be covered by the ultimate stage(2025) is 9.29 lakh ha of which about 6.07 lakh ha have so far been covered by the existing infrastructure. There is a need to develop irrigation potential as follows:

- i) Total GW Potential available to be exploited = 0.68 BCM/YR= 1.34 lakh ma-m
- ii) Requirement of surface water irrigation potential development= 1.44 BCM/YR= 2.0 lakh ha (GIA)

Grand total requirement for irrigation potential (major and minor both) development at ultimate stage (2025)= 3.34 lakh ha.

Investment Required

Assuming at present rate of average cost for irrigation potential development and total requirement for irrigation potential development at ultimate stage = 60,000 × 3,34000 = Rs. 20.04 billion.

This investment over 20 years would require at a rate of about 1.0 billion/year (2005 prices).

B. Requirement for Rural Water Supply and Urban Water Supply and Sewerage:

To cover all NC/PC villages through Single and Multi-village Schemes and to cover all the 63 towns with sufficient w/s and sewerage facilities.

Requirement of Funds for Rural and Urban Towns

| <i>Head</i> | <i>Total Requirement of Funds</i> | <i>Per annum Reqmt. For Next 8 yrs (for up to 2012)</i> |
|----------------------------------------------------------------|-----------------------------------|---------------------------------------------------------|
| Funds required to upgrade the w/s @135 lpcd in 63 towns | Rs. 365 crore | Rs. 46 crore |
| i) Total requirement of capital investment funds for rural SVS | Rs. 782.44* crore | 97.81 crore |
| ii) Total requirement of capital investment fund for MVS | Rs. 1554.38* crore | Rs. 194.30 crore |
| Funds required for sewage disposal | 561 crore | 70 crore |

Note: * Assessment made in Medium Term Development Programme for SVS/MVS (2005-12)/ (2005-17).

Source: Peyjal Nigam, Uttarakhand (2004-05).

APPENDIX A-14.3a

Uttarakhand RWSS Medium Term Development Programme (MTDP): Baseline Data and Assumptions

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 1. All SVS (Single Village Schemes) will be implemented under a consistent policy framework based on demand responsive approach | |
| 2. No. of NC habitations | 5329 |
| 3. No. of PC habitations | 13899 |
| 4. Total no. of NC & PC habitations | 19228 |
| 5. Per cent of SVS habitations | 40 per cent |
| 6. Per cent of MVS (Multi Village Schemes) habitations | 60 per cent |
| 7. Total no. of NC & PC habitations served by SVS | 7691 |
| 8. Total no. of NC & PC habitations served by MVS to be covered by UA Peyjal Nigam | 11537 |
| 9. No. of SVS habitations to be covered by Swajal II | 3300 |
| 10. No. of SVS to be transferred/phased out to GPs by UA Peyjal Nigam | 286 |
| 11. No. of SVS habitations to be transferred/phase out to GPs by UA Jal Sansthan | 2432 |
| 12. Balance NC/PC SVS habitations to be covered by UA Peyjal Nigam under state or centrally sponsored programmes | 1673 |
| 13. The average water supply coverage of habitations by UA Peyjal Nigam has been around 400 per annum despite shortage of staff and other issues due to creation of the new state. Recently, the government has filled up most of the vacancies including at junior engineers level. With the increased institutional capacity of the organisation, it is expected that it should be able to cover at least 800 habitations per year. Accordingly, the coverage capacity for UA Peyjal Nigam has been assumed as 600-800 per annum. | |
| 14. Average population per habitation in Uttarakhand | 160 |
| 15. Average population per household in Uttarakhand | 5 |
| 16. Average no. of household per habitation | 32 |
| 17. Average no. of habitations per SVS | 2 |
| 18. All costs are at 2005 prices | |
| 19. Notional unit rates per habitations for capital investments in SVS are based on the estimated rates for the proposed Swajal II Project | |
| 20. Notional unit rates per habitations for capital investments in MVS are based on the estimated rates for the recently completed/ongoing MVS by UA Peyjal Nigam Notional unit rates for capital investments | |
| 21. Average notional unit cost of capital investments per revenue village for SVS | INR 1340710 |
| 22. Average notional unit cost of capital investment per habitation for SVS | 5.59 INR lakh |
| 23. Average notional unit rates for capital investment in SVS to be 50 per cent of the notional transferred to GPs unit capital cost of new scheme | |
| 24. Average notional unit cost of capital investment per habitation for MVS | 15.00 lakh |
| 25. Average notional unit capital cost per village for Catchment Area Conservation and Management Plan (CACMP) | 258000 INR |
| 26. Average cost per habitation for Catchment Area Conservation and Management Plan (CACMP) | 1.075 INR lakh |
| 27. Per cent on NC/PC habitations/village to be covered by CACMP | 50 per cent |

| | |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 28. User's contribution to capital Investments to SVS has been considered @ 10 per cent of the estimated capital cost of the scheme | |
| 29. Per cent of stand post users | 70 per cent |
| 30. Per cent of house connection user | 30 per cent |
| 31. Notional unit rate for water supply | INR 1.178 lakh per institution |
| 32. In case of SVS, the GPs/Community shall bear | 100 per cent operation and maintenance |
| 33. Average annual operation and maintenance | 3-4 per cent of the capital cost |
| 34. Assumed per cent of revenue from water tariff | 40 per cent of total revenue receipts |
| 35. Assumed per cent of revenue from water tariff | 60 per cent of total revenue receipts |
| 36. In case of MVS, the water tariff shall be as fixed by the Department of Drinking | |
| 37. Annual escalation in water tariff for MVS | 7.50 per cent |
| 38. Assumed water tariff from MVS stand post per month users | 5 INR per household |
| 39. Assumed water tariff from MVS house connection users | 45 INR per households per month |
| 40. Assumed per cent of revenue from water tariff | 12 per cent of total revenue receipts |
| 41. Assumed per cent of revenue from water tariff revenue receipts | 88 per cent of total |
| 42. Total 12 th Finance Commission Grant | 16200 INR lakh |
| 43. Per annum 12 th Finance Commission Grant | 3240 INR lakh |
| 44. Per annum per khabitatation 12 th Finance Commission Grant | 0.08 INR lakh |

APPENDIX A-14.4

Note on Water Related Disputes between UP and Uttarakhand

Dispute between UP and Uttarakhand states are generally related to the distribution of the asset and liabilities and also in respect of distribution of the Ganga and Yamuna water between the two states. The brief of the agenda regarding Yamuna Water is given below.

On 12th May 1994, a Memorandum of Understanding for distribution of surface water of River Yamuna was signed by the Hon' ble Chief Ministers of the five basin states. Out of total 11.983 BCM surface water, UP has been allotted 4.032 BCM only. After creation of the State of Uttarakhand, it has also been included as the 6th Member of the Upper Yamuna River Board vide Government of India Gazette Notification dated 7th April 2001.

Consequent thereof, state of Uttarakhand has placed its claim of 1.369 BCM of the Yamuna water to UP from its share of 4.032 BCM vide its letter No. 306\Camp\UKS-1-Sin\2000, dated 31.3.2001. Thereafter, a meeting of Officials of Irrigation Department of Uttarakhand and UP was held at Lucknow on 8.1.2001, wherein it has been disclosed by UP that as per their record, share of hill canals water is only 0.176 BCM and it is very difficult for them to entertain such a high demand of Uttarakhand state. In this light, again the actual demand for Uttarakhand canals, which are directly withdrawing water from River Yamuna or from its perennial distributaries like Asan and Tons, has been worked out and it is found to the order of 0.38 BCM and adding in it, 25 per cent more for future irrigation and drinking water, it

comes out to the order of 0.475 BCM only. In the meetings of Upper Yamuna River Board, which were convened earlier in New Delhi, the same demand has been raised by Uttarakhand and Upper Yamuna River Board found it quite convincing because of the fact that whatever benefits are being taken before the creation of the Uttarakhand state, cannot be lowered down later on, as no further addition of canals took place. But in the meetings of UYRB, UP State adhered to 0.176 BCM only to meet out Uttarakhand's share. In the 24th Meeting of UYRB held on 7.3.2003, the Chairman of the Board contended that the Board's function is to regulate the agreed water distribution and so far as allocation of water is concerned, it is for the states to decide and accordingly it has been directed by the Chairman that the members of both the states get expedited the matter and inform the status by 15th April 2003. After finding no response from UP state, the government of Uttarakhand through Principal Secretary (Irrigation & Power) requested Government of India vide its letter No. 14\ix\1\Irri\03, dated 6.11.2003 to intervene in this matter and determine the allocation by awarding 0.475 BCM (on the basis of existing withdrawal and future requirement) share to Uttarakhand state and remaining 3.557 BCM share to Uttar Pradesh. Meanwhile, on 01.07.2004, a meeting between the Principal Secretary of Uttar Pradesh and Uttarakhand was held at Okhla, New Delhi, wherein the matter was discussed and to resolve the matter, it has been decided to form a committee of Chief Engineers of both the states and the same has been established also, but no meeting of the committee was held so far.



Chapter 15

Urban Area Development

1. Introduction

Growing towns and cities are integral developments to economic growth. Between the 1991 and the 2001 censuses, the country's urban population increased by 68 million as against the total population increase of 183 million and the share of urban population in the total rose from 25.8 per cent to 27.8 per cent. Cities hold tremendous potential as engines of economic and social development, creating jobs and generating wealth through economies of scale. It is estimated that the contribution of the urban sector to the GDP is currently in the range of 50 to 60 per cent.

Growing urbanisation inevitably brings in its train a host of problems associated with the adequacy of basic infrastructure to support the quality of life and thereby the productive potential of the urban population; where basic urban infrastructure like power supply, water and sanitation and transport facilities are already constrained by shortages and inefficiencies of delivery, and their negative impact on the performance of the economy becomes significant. Conversely, if these problems are addressed efficiently, urbanisation contributes to accelerated growth of the economy.

The general pattern of urban issues is well known. In basic terms, a vicious circle is noticed in providing services in urban areas of the country. This circle starts with inadequate infrastructure assets and inability of Urban Local Bodies (ULBs) and its organs to maintain them efficiently, leading to low urban service levels and in consequence low willingness to pay for these services by consumers. The resultant low collection recovery leads to insufficient revenues causing in turn low investments in infrastructure and low standards of maintenance. Corrective action is hampered by a variety of factors including bureaucratic limitations, resource constraints

and last but not the least, conditioned low standards and expectations of both the service providers and the consumers themselves.

Like all other towns and cities of the country, urban areas of Uttarakhand are also affected by the above problems. However, Uttarakhand is better endowed in terms of resource like water and potential for abundant power supply. It is also a further advantage that even the larger towns of the state are of modest size and the incidence of problems of urbanisation like slums is not widespread. But there are some particular difficulties as well. Urban services in several towns of Uttarakhand have to cater not only to the normal growth of the urban population but also to the regular, massive influx of visitors from other parts of India and abroad, to the well-known pilgrimage centres in the state. We may also note at this point that in the decade between the last two censuses, the rate of urban growth in the area that now constitutes Uttarakhand exceeded the national rate.

The focus of urban infrastructure strategy is to bring a shift from the prevailing vicious circle to a virtuous circle situation in this sector. The virtuous circle starts with high level of infrastructure and high level of its technical standards and management that help provide high quality services. High quality services generate higher willingness to pay by consumers that would lead to high collection/recovery and further improvements and higher investments in the services.

The rest of the chapter is organised as follows: Section 2 that follows is an overview of the status of urban infrastructure in Uttarakhand. It presents basic data on towns and cities, the population trends, shortages currently experienced, issues unique to the state and the administrative and management structure. Section 3 details the several initiatives taken in recent past both at

national and at state level, relating to the urban area. Key issues for action are identified in Section 4 and the recommended strategies are detailed in Section 5.

2. Overview of Urban Issues

2.1. Pattern of Population Growth in Uttarakhand Towns

The Census of India 2001 has identified 76 urban areas in Uttarakhand as fitting its definition of 'statutory' towns/municipalities or 'additional census towns'. (For the census definition of towns refer Appendix A-15.1).

The breakup of the 76 towns—five more than that in the previous census—by class was as below:

TABLE 15.1

Distribution of Towns by Class and Population

| Size of Town by Population | Class | 2001 Census | 1991 Census |
|----------------------------|-------|-------------|-------------|
| 100,000 and above | I | 4 | 3 |
| 50,000-99,999 | II | 3 | 4 |
| 20,000-49,999 | III | 14 | 12 |
| 10,000-19,999 | IV | 13 | 14 |
| 5,000-9,999 | V | 26 | 14 |
| Less than 5,000 | VI | 16 | 24 |
| Total | | 76 | 71 |

Source: Census of India, 2001.

The four class I towns with population above one lakh are: Dehradun, Haridwar, Haldwani-cum-Kathgodam and Roorkee. There are three class II towns i.e., with population ranging between 50 thousand and one lakh. These are Kashipur, Rudrapur and Rishikesh. Nearly half the number of towns in the state had a population of less than 10 thousand each.

In addition to the 76 towns referred above, the state also has 9 cantonment towns and 2 industrial townships.

As per the 2001 Census, about 26 per cent of Uttarakhand's total population stays in urban areas. This was below the all-India level of 28 per cent in 2001 census which was up from 26 per cent as per 1991 census. The corresponding share of the areas now forming Uttarakhand was 23 per cent in the 1991 census. However, in terms of share of urban population, the state ranked higher than its parent state of Uttar Pradesh as well as the neighbouring state of Himachal Pradesh whose urbanisation figures are 21 per cent and 10 per cent respectively as per 2001 Census. (Table 15.2).

TABLE 15.2
Level of Urbanisation

| India/State | Urban Population as Per cent of Total Population | |
|------------------|--------------------------------------------------|-------|
| | 2001 | 1991 |
| India | 27.78 | 25.71 |
| Uttarakhand | 25.59 | 22.97 |
| Uttar Pradesh | 20.78 | 19.68 |
| Himachal Pradesh | 9.79 | 8.69 |

Source: Census of India 2001, "Provisional Population Totals", Paper 2 of 2001 on Rural-Urban Distribution.

Because of the state's geographical features, there is a sharp regional bias in urbanisation. The districts falling in the southern part of the state, lying mainly in the plains, Tarai or Doon Valley area, are marked by high levels of urbanisation. The four districts of Dehradun, Haridwar, Udham Singh Nagar and Nainital together account for more than 80 per cent of total urban population of the state. Development of trade and commerce, transport, industry and diversification of economic activities are the main responsible factors for this trend. The urban areas of southern part of the state are under pressure mainly due to migration of population to these areas either from the mountainous areas or adjoining districts due to the level of economic activity and job opportunities. At the other extreme, the four least populated districts each account for less than two per cent of urban population. (Table 15.3).

TABLE 15.3

Distribution of Urban Population by Districts in Uttarakhand

| District | Population | Per cent Share |
|--------------------------|----------------|----------------|
| Dehradun | 677118 | 31.20 |
| Haridwar | 445663 | 20.53 |
| Udham Singh Nagar | 403141 | 18.58 |
| Nainital | 269786 | 12.43 |
| Pauri Garhwal | 90222 | 4.16 |
| Tehri Garhwal | 58475 | 2.69 |
| Pithoragarh | 56124 | 2.59 |
| Almora | 53949 | 2.49 |
| Chamoli | 49585 | 2.28 |
| Champavat | 32734 | 1.51 |
| Uttarkashi | 22924 | 1.06 |
| Bageshwar | 7803 | 0.36 |
| Rudraprayag | 2721 | 0.12 |
| Total Uttarakhand | 2170245 | 100.00 |

Source: Census of India 2001, Final Population Totals, Uttarakhand.

TABLE 15.4
Population and Degree of Urbanisation in 2001

| District | Total Population (Lakhs) | Population Density per Sq. km | Rural Population (Lakhs) | Urban Population (Lakhs) | Degree of Urbanisation (Per cent) |
|-------------------|--------------------------|-------------------------------|--------------------------|--------------------------|-----------------------------------|
| Uttarkashi | 2.95 | 37 | 2.72 | 0.23 | 7.77 |
| Chamoli | 3.70 | 48 | 3.20 | 0.51 | 13.69 |
| Rudraprayag | 2.27 | 120 | 2.25 | 0.03 | 1.20 |
| Tehri Garhwal | 6.05 | 148 | 5.45 | 0.60 | 9.90 |
| Dehradun | 12.82 | 414 | 6.03 | 6.79 | 52.94 |
| Pauri Garhwal | 6.97 | 129 | 6.07 | 0.90 | 12.89 |
| Pithoragarh | 4.62 | 65 | 4.02 | 0.60 | 12.94 |
| Bageshwar | 2.49 | 108 | 2.42 | 0.08 | 3.13 |
| Almora | 6.31 | 205 | 5.76 | 0.55 | 8.64 |
| Champawat | 2.25 | 126 | 1.91 | 0.34 | 15.04 |
| Nainital | 7.63 | 198 | 4.94 | 2.69 | 35.27 |
| Udham Singh Nagar | 12.36 | 424 | 8.33 | 4.03 | 32.62 |
| Haridwar | 14.47 | 612 | 10.01 | 4.46 | 30.84 |
| Total | 84.89 | 159 | 63.10 | 21.79 | 25.67 |

Source: Census of India 2001, Final Population Totals, Uttarakhand.

2.2 Degree of Urbanisation

Table 15.4 gives the district-wise status of the degree of urbanisation (per cent of urban population to total), according to 2001 census. The four districts accounting for the largest share of the state's urban population are also the most populated ones. Of these, Haridwar had the highest population of 14.47 lakhs; population density was also highest in Haridwar and lowest in Uttarkashi.

There is a wide disparity among the districts with regard to degree of urbanisation. Only 5 out of 13 districts have a degree of urbanisation greater than 15 per cent. Dehradun, which has the largest urban population, has a degree of urbanisation of 52.94 per cent, more than double the state average. The degree of urbanisation is higher than the state average (25.67 per cent) also in three other districts Nainital (35.27 per cent), Udham Singh Nagar (32.62 per cent) and Haridwar (30.84 per cent); all other districts are predominantly rural.

We conclude this analysis of trends in urbanisation with a review of the district-wise growth in urban population over the decade 1991-2001. This analysis bases on the compounded average rate of growth. The total urban population of the state was 16.38 lakhs in 1991 and grew annually by an average 2.9 per cent over the ten-year period. Six out of thirteen districts recorded a growth rate above the state average. Notably, the highest rate of increase was registered by two of the less urbanised districts—Tehri Garhwal (6.17 per cent) and Pithoragarh (5.3 per cent). The more urbanised districts of Dehradun,

Nainital, Haridwar and Udham Singh Nagar all registered compounded annual growth rates in the medium range of 2.5 to 3.5 per cent. (Table 15.5)

TABLE 15.5
District-wise Growth in Urban Population in Uttarakhand

| District | Urban Population | | CARG (Per cent) |
|-------------------|------------------|--------------|-----------------|
| | 1991 (Lakhs) | 2001 (Lakhs) | |
| Uttarkashi | 0.17 | 0.23 | 2.88 |
| Chamoli | 0.39 | 0.51 | 2.74 |
| Rudraprayag | 0.02 | 0.03 | 4.01 |
| Tehri Garhwal | 0.33 | 0.60 | 6.17 |
| Dehradun | 5.15 | 6.79 | 2.79 |
| Pauri Garhwal | 0.81 | 0.90 | 1.02 |
| Pithoragarh | 0.36 | 0.60 | 5.30 |
| Bageshwar | 0.06 | 0.08 | 3.06 |
| Almora | 0.48 | 0.55 | 1.34 |
| Champawat | 0.30 | 0.34 | 1.20 |
| Nainital | 1.91 | 2.69 | 3.49 |
| Udham Singh Nagar | 2.92 | 4.03 | 3.26 |
| Haridwar | 3.48 | 4.46 | 2.51 |
| Total | 16.38 | 21.79 | 2.90 |

Source: Census of India 2001, Final Population Totals, Uttarakhand and Census of India, 1991, General population tables, Ser.25-UP.PT.II-A.

The town-wise decadal growth between the two censuses is detailed in Appendix A-15.2. This again shows a few towns of very small population recording high rates of growth. We conclude from this that any trend towards

accelerated growth of larger urban centres had not yet manifested itself in Uttarakhand, till the 2001 census.

Top Towns by Population

Table 15.6 lists the top 10 towns of Uttarakhand in terms of population estimated in the year 2004 and in the year 2014 at the estimated decennial growth rate of 19.20 per cent.

TABLE 15.6
Top Ten Towns by Population

| Name of the Town | Population (Present and Projected) | |
|------------------------|------------------------------------|------------------|
| | Actual (2004) | Estimated (2014) |
| Dehradun | 474671 | 743356 |
| Haridwar | 185508 | 290514 |
| Haldwani cum Kathgodam | 168559 | 263971 |
| Roorkee | 121698 | 190585 |
| Kashipur | 98556 | 154342 |
| Rudrapur | 94042 | 147274 |
| Ramnagar | 49924 | 78184 |
| Rishikesh | 63251 | 99053 |
| Ranipur | 45847 | 71798 |
| Manglaur | 45348 | 71018 |

Source: Government of Uttarakhand (2004). *Infrastructure Vision—Urban Development Report*, July, p. 66.

Based on the above population data for 2004, we tabulate below the more recent growth trends of the major towns of the state.

TABLE 15.7
Recent Population Trends of Major Towns

| Name of the Town | Population | | Increase (per cent) |
|------------------------|---------------|---------------|---------------------|
| | Census (2001) | Actual (2004) | |
| Dehradun | 426674 | 474671 | 11.25 |
| Haridwar | 175340 | 185508 | 5.80 |
| Haldwani cum Kathgodam | 129015 | 168559 | 30.65 |
| Roorkee | 97516 | 121698 | 24.80 |
| Kashipur | 92967 | 98556 | 6.01 |
| Rudrapur | 88676 | 94042 | 6.05 |
| Ramnagar | 46205 | 49924 | 8.05 |
| Rishikesh | 59540 | 63251 | 6.23 |
| Ranipur | NA | 45847 | — |
| Manglaur | 42584 | 45348 | 6.49 |

Source: Compiled for this Report, based on Census 2001 and Table 15.6 above.

Reasons for the very high growth rate registered by Haldwani cum Kathgodam are examined in Section 4 of this Report. It may also be observed that Roorkee is another town that has recorded exceptional growth rate after the formation of Uttarakhand.

2.3 Issue of Floating Population

Uttarakhand with its rich culture and religious heritage, fascinating scenic beauty and wonderful flora and fauna has immense tourist potential. Development of tourism in hills is very important which can play a vital role in the economy of the state. Mountain tourism is an area that has the potential for providing alternative environment-friendly income and employment generation opportunities. The impact of tourist income has a great significance in the local economic system. Towns that have become tourist centres or smaller roadside marketing or halting centres on pilgrimage routes or centres of trade and commerce are growing.

As the state has a number of pilgrimage centres that attract pilgrims from all over the country, moving population¹ constitute a major chunk of its total population. Table 15.8 presents the inflow of tourists in the districts of Uttarakhand in 2004. The state received a total of 139.05 lakh tourists in 2004, 99 per cent of them domestic. Haridwar recorded the maximum number of tourists while the lowest was in Champawat Janpad. The highest inflow was in Haridwar in case of domestic tourists and in Dehradun in case of foreign tourists. There were no foreign tourists in Udham Singh Nagar and Champawat Janpad in 2004.

TABLE 15.8
Inflow of Tourists by Districts in Uttarakhand in 2004
(Figures in lakh)

| Districts | Indian | Foreign | Total |
|-------------------|---------------|-------------|---------------|
| Dehradun | 23.61 | 0.21 | 23.82 |
| Pauri Garhwal | 5.22 | 0.10 | 5.32 |
| Rudraprayag | 7.69 | 0.02 | 7.71 |
| Chamoli | 13.95 | 0.02 | 13.97 |
| Tehri Garhwal | 5.91 | 0.09 | 6.00 |
| Uttarkashi | 8.04 | 0.02 | 8.06 |
| Haridwar | 62.84 | 0.11 | 62.95 |
| Almora | 1.50 | 0.05 | 1.55 |
| Bageshwar | 16.52 | 0.02 | 16.53 |
| Pithorgarh Janpad | 15.36 | 0.01 | 15.37 |
| Champawat Janpad | 0.40 | 0.00 | 0.40 |
| Nainital | 6.17 | 0.13 | 6.29 |
| Udham Singh Nagar | 0.68 | 0.00 | 0.68 |
| Total | 138.30 | 0.75 | 139.05 |

Source: Ministry of Tourism, Government of India.

1. Moving population constitutes the part of population accounted for by pilgrims and tourists.

In terms of growth trends, the total inflow of tourists in Uttarakhand rose by 4.42 per cent (compounded annual rate of growth) over the period 2000-2004. The growth rate of foreign tourists (6.75 per cent) was higher than that of domestic tourists (4.41 per cent). All the districts except Chamoli experienced an increase in the flow of tourists. Disparity among the districts is evident in this area, with districts Bageshwar and Pithoragrah Janpad experiencing a much higher growth in tourist population as compared to other districts.

TABLE 15.9

District-wise Growth Rate of Tourists during 2000-2004

| District | CAGR (per cent) 2000-2004 | | |
|--------------------|---------------------------|---------|-------|
| | Indian | Foreign | Total |
| Dehradun | 9.09 | 1.30 | 9.01 |
| Pauri Garhwal | 10.16 | 87.98 | 10.54 |
| Rudraprayag | 7.23 | 32.74 | 7.27 |
| Chamoli | -4.06 | -9.39 | -4.07 |
| Tehri Garhwal | 8.75 | 3.51 | 8.66 |
| Uttarkashi | 7.48 | 5.11 | 7.48 |
| Haridwar | 3.40 | 7.53 | 3.40 |
| Almora | 3.35 | 1.14 | 3.28 |
| Bageshwar | 59.00 | 2.79 | 58.78 |
| Pithoragarh Janpad | 88.87 | 14.01 | 88.60 |
| Champawat Janpad | 3.57 | 15.29 | 3.61 |
| Nainital | 8.04 | 7.66 | 8.03 |
| Udham Singh Nagar | 1.96 | 20.67 | 1.99 |
| Total | 4.41 | 6.75 | 4.42 |

Source: Ministry of Tourism, Government of India.

2.4 Urban Administration

Uttarakhand has a total of 63 urban local bodies. (For discussion of urban issues, from here onwards—except where specifically indicated otherwise—we shall generally confine the examination to towns under ULBs.) ULBs are classified primarily on the basis of population. The state capital is administered by a Corporation (*Nagar Nigam*) and towns of 50,000 or more population have regular Municipal Boards (*Nagar Palika Parishad*—NPP). At the lowest tier is *Nagar Panchayat* (NP); towns having 10,000 or more population in hilly areas and 25,000 or more in plain areas have *Nagar Panchayats*. In addition to number of residents, the intensity of visiting population is taken into account in the decision to set up *Nagar Panchayats*, as also discernible trends of transition from rural to urban. Because of these factors, the important pilgrimage centre of Badrinath (resident population – about 750) is placed under a *Nagar Panchayat*.

TABLE 15.10
Classification of Urban Local Bodies

| Class | Classification Criteria | Nos. |
|------------------------------|---------------------------------------------------------------------|------|
| <i>Nagar Nigam</i> | | 1 |
| <i>Nagar Palika Parishad</i> | 50,000 and above | 31 |
| <i>Nagar Panchayat</i> | 10,000 and above in hilly areas; 25,000 and above in plain areas | 31 |
| Total number of ULBs | | 63 |

Source: Department of Urban Development, Government of Uttarakhand.

2.5 Management of Urban Infrastructure

In Uttarakhand, issues related to urban areas are dealt by the Department of Urban Development (DUD), Government of Uttarakhand. DUD functions as a policy maker, implementing agency and regulator. It has a decentralised structure of urban management that comprises of five organisations. These are: (i) *Jal Sansthan*, for water supply and sewerage services, (ii) *Nagar Nigam*, for sanitation, solid waste management, street lights, roads and footpaths, house tax, quality control of drinking water, (iii) Mussoorie Dehradun Development Authority, for housing, civic infrastructure and planning related to the development of Dehradun and Mussoorie, (iv) State Urban Development Authority and District Urban Development Authority, for dealing with urban slums, and (v) Elected Municipalities (*Nagar Nigam*, *NPP* and *NP*) at the local municipal level.

Water supply, sewerage and sanitation comprise three related areas in urban management that would demand a coordinated and integrated approach. Of these, in Uttarakhand only sanitation rests with the ULBs while different institutions are handling water supply and sewerage functions. To improve the functioning effectiveness of these three related aspects, it would be important to transfer responsibility for water supply and sewerage functions to the ULBs. It may be underlined that 74th Constitutional Amendment envisaged these two functions to be with the ULBs and had accordingly provided it as part of the 12th Schedule.

2.5.1 Water Supply, Sewerage, Waste Water Management

Two statutory bodies, Uttarakhand Peyjal Nigam (UPJN)—for planning and construction, Uttarakhand Jal Sansthan (UJS)—for operating and maintaining in urban and rural areas, are responsible for urban water supply and sewerage services. High operating ratios, high production costs and poor asset management have been challenging the sustainability of water supply and

sanitation projects in the state. Even without considering replacement costs, existing sewerage and water charges cover only about one fourth of water production cost. Metering of water supply is done for commercial users and does not cover domestic users. Salary bill of staff owing to oversized establishment, system losses as high as 30 to 50 per cent, and additional costs associated with pumping water in a mountainous terrain are contributing to higher production and maintenance costs. Budget allocations meant for capital works and maintenance are reportedly used to meet salary and other establishment expenses leaving insufficient funds for operation and maintenance. The reliable water supply and augmentation of facilities for water storage is a major issue. Besides the above, mainly owing to age-old water supply lines that are prone to leaking at as high as 30 per cent of the water they carry, water supply in some urban areas of Uttarakhand is falling short of demand by about 50 per cent.

Urban sewerage network is available only to a fraction of urban population. Lack of sewerage system to majority of population has adverse impact on environment as well as water bodies located around urban areas. Thus, the sources of drinking water are often becoming unfit for use.

Solid Waste Management: Official estimates are that about 50 per cent of the total waste generated in urban areas does not get collected and transported out. The problem is further compounded during the tourist season.

Power Supply and Public Lighting: Most of the urban areas in the state are left without streetlights. As a solution, official plans envisage that electricity distribution system needs to be reorganised by forming a ring type grid of all substations. It should also be noted that ULBs have a tradition (since UP days) of not paying electricity dues. GoUP had waived INR 550 crore dues relating to period till March 1997 (ref: para 7.11 of SFC report). But as we noted in the chapter on Power, where we dealt with electricity issues in detail, heavy arrears in payment of dues still remain.

2.6 Infrastructure Shortages: Drinking Water, Power and Sanitation Facilities

Viewed district-wise, drinking water deprivation is highest in the urban areas of Bageshwar and Chamoli districts, more than 25 per cent and 18 per cent of households respectively do not have drinking water source either within the house or nearer to the house. On the other hand, Rudraprayag, Udham Singh Nagar and Haridwar districts have less than 4 per cent of total urban households deprived of drinking water.

As for sanitation facilities, the level of deprivation is even larger than for drinking water. The range of this measure starts from 11 per cent in Tehri Garhwal district to about 33 per cent in Chamoli district.

Regarding availability of electricity, in the urban areas of Tehri Garhwal and Pauri Garhwal, only about 4 per cent and 5 per cent of households do not have access to electricity respectively. Deprivation was extreme in the case of Rudraprayag and Uttarakashi districts where more than 51 per cent and 38 per cent of urban households respectively do not have access to electricity. Table 15.11 has details.

TABLE 15.11
Deprivation of Urban Households by District
(Per cent of Deprived Households)

| Districts | No. of Urban Areas* | Drinking Water | Sanitation Facility | Electricity Connection |
|-------------------|---------------------|----------------|---------------------|------------------------|
| Almora | 4 | 15.2 | 15.0 | 7.2 |
| Bageshwar | 1 | 25.3 | 17.1 | 6.8 |
| Chamoli | 6 | 17.7 | 32.6 | 13.1 |
| Champavat | 4 | 10.7 | 21.6 | 11.9 |
| Dehradun | 14 | 5.4 | 19.6 | 6.9 |
| Pauri Garhwal | 7 | 6.1 | 17.0 | 5.3 |
| Haridwar | 10 | 3.2 | 16.5 | 17.7 |
| Nainital | 8 | 6.6 | 14.4 | 10.1 |
| Pithoragarh | 4 | 16.6 | 24.9 | 12.5 |
| Rudraprayag | 2 | 2.8 | 31.1 | 51.1 |
| Tehri Garhwal | 7 | 6.2 | 10.8 | 3.9 |
| Udham Singh Nagar | 17 | 3.2 | 24.4 | 23.4 |
| Uttarkashi | 3 | 8.6 | 21.1 | 38.1 |

Note: * Includes Cantonment Boards and Industrial Towns.

Source: Census of India 2001—Tables on Houses, Household Amenities and Assets.

As per the statutory classification of towns, the only Municipal Corporation of Uttarakhand, Dehradun, has minimum number of urban households deprived of these facilities. Cantonment Boards have lesser number of households deprived of drinking water and electricity facilities, but lag behind on sanitation facility aspect. Deprivation of all three services is most acute in urban households in *Nagar Palikas*. Please see Table 15.12 and 15.13.

Urban water supply status of major towns of the state is marked by acute shortages in most. Current status of water availability in main towns of Uttarakhand is shown in the Table 15.14.

TABLE 15.12

**Deprivation of Urban Households by Type of Urban Area
(Percentage of Deprived Households)**

| Urban Status | Urban Areas(No.) | Drinking Water | Electricity | Sanitation Facility |
|-----------------------|------------------|----------------|-------------|---------------------|
| Cantonment Board | 9 | 5.3 | 4.1 | 23.7 |
| Industrial Towns | 2 | 0.7 | 13.0 | 15.5 |
| Municipal Board | 31 | 6.1 | 9.2 | 13.0 |
| Municipal Corporation | 1 | 4.7 | 5.7 | 9.2 |
| Nagar Palika | 31 | 9.3 | 23.1 | 24.3 |

Source: Census of India 2001—Tables on Houses, Household Amenities and Assets.

TABLE 15.13

Overall Status of Towns having ULBs

| | | |
|-----|--------------------------------------------------------------|--------|
| 1 | Total no. of towns | 63 |
| 2 | No. of towns having water supply at the rate of | |
| 2.a | - more than 135 lpcd | 15 |
| 2.b | - 70 lpcd to 135 lpcd | 25 |
| 2.c | - less than 70 lpcd | 23 |
| 3 | No. of towns in which augmentation and extension is required | 54 |
| 4 | No. of town on which extension in the system is required | 9 |
| 5 | Total funds required (INR crore) | 546.34 |

Source: Urban Development Report, 2004.

TABLE 15.14

**Status of Current Availability of Water in
Main Towns of Uttarakhand**

| S.No. | Name of Town | Daily Requirement (Mld) | Daily Availability (Mld) | Shortfall (Per cent) |
|-------|---------------|-------------------------|--------------------------|----------------------|
| 1 | Dehradun | 127-00 | 95-39 | 25 |
| 2 | Mussoorie | 12-00 | 7-11 | 41 |
| 3 | Srinagar | 3-57 | 2-50 | 30 |
| 4 | Pauri Garhwal | 3-56 | 2-90 | 19 |
| 5 | Kotdwar | 3-20 | 2-11 | 34 |
| 6 | Uttarkashi | 4-50 | 2-30 | 49 |
| 7 | Haldwani | 31-50 | 31-50 | - |
| 8 | Almora | 9-37 | 6-50 | 31 |
| 9 | Ram Nagar | 8-15 | 6-00 | 26 |
| 10 | Haridwar | 62-83 | 48-00 | 24 |
| 11 | Roorkee | 15-71 | 13-80 | 12 |
| 12 | Rishikesh | 12-84 | 11-42 | 11 |
| 13 | Chamba | 01-70 | 01-40 | 18 |
| 14 | Pithoragarh | 05-30 | 05-64 | - |
| 15 | Nainital | 13-99 | 14-00 | - |
| 16 | Bhawali | 01-00 | 01-20 | - |
| 17 | Jaspur | 4-88 | 02-00 | 59 |
| 18 | Kashipur | 11-62 | 10-85 | 07 |
| 19 | Rudrapur | 11-16 | 04-80 | 57 |
| 20 | Bageshwar | 01-00 | 00-60 | 40 |

Note: The above towns get water supply at least two hours a day (morning and evening) to 10 hours (morning and evening).

Source: Uttarakhand Peyjal Nigam.

Sewerage System

The present status of sewerage system in towns is also quite inadequate for a healthy and hygienic environment. Only 20 towns have partial sewerage system cover, which is also insufficient for the present population. Out of these towns, only Haridwar and Rishikesh have sewage treatment plants, but they require further upgradation in the capacity and sewerage network extension to cope up with the increase in population and township area. Other towns also require upgradation and extension of the sewerage network supported by suitable sewage treatment plant.

TABLE 15.15

Status of Sewage System

| | | |
|-----|----------------------------------------------------------------------------------------|--------|
| 1 | Total no. of towns | 63 |
| 2 | No. of towns having partial sewage system (but requiring reorganisation and extension) | 20 |
| 3 | No. of towns having no sewage system | 43 |
| 3.a | No. of towns in which sewage system is under execution | 8 |
| 4 | Total funds required (INR crore) | 841.77 |

Source: Uttarakhand Peyjal Nigam.

The state is in the process of implementing large schemes funded through the Asian Development Bank and 'Ganga Action Plan-II' for revamping the water supply, drainage and sewerage facilities covering major towns of Uttarakhand. Details of these schemes are dealt with in the next section of this chapter.

3. Reform Initiatives**3.1. Initiatives at National level**

Post-economic reforms initiatives in the area of Urban Infrastructure at Central level go back a decade to the circulation, in August 1996, of the guidelines entitled 'Urban Development Plans Formulation and Implementation'. Among other things, these guidelines proposed that states should adopt innovative approaches for fiscal resource mobilisation, that subsidies needed to be rationalised and urban development plans and projects needed to be placed on a commercial format by designing commercially viable urban infrastructure services and area development projects. Ideas like resource mobilisation by using land as resource, increase in the non-property taxes and using public-private partnership in service delivery were mooted.

The process begun through the 'guidelines' of August 1996 reached a culmination in 2005 with Central government's proposal to merge all its urban

improvement schemes into three schemes: (i) the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), (ii) the Urban Infrastructure Development Schemes for Small and Medium Towns (UIDSSMT), and (iii) the Integrated Housing and Slum Development Programme. While JNNURM would deal with 63 identified larger cities of the country, the other two schemes would cover the remaining ULBs.

3.1.1 JNNURM

Subject to the provision of a reasonable amount of viability gap funding, urban infrastructure should be largely self-sustaining. This is a key assumption in designing the JNNURM, launched in December 2005 and intended to cover seven mega cities, 28 cities of million plus population and 28 other identified important urban centres of the country. JNNURM will have two submissions: 'Urban Infrastructure and Governance' under the Ministry of Urban Development and 'Basic Services to the Urban Poor' to be administered by Ministry of Urban Employment and Poverty Alleviation.

Covering projects in the areas of water and sanitation, education and primary health, social amenities, environmental improvement and urban transport in its fold, JNNURM will provide central financial assistance to urban renewal projects on condition that a set of identified reform measures is implemented at the ULB and state levels. (More details at Appendix A-15.3). The reforms are categorised into 'mandatory' and 'optional'. Mandatory reforms at ULB level include full O&M cost recovery of urban services (to be implemented in 5 years) municipal accounting reforms and e-governance. Key reforms at state level are the repeal of the Urban Land Ceiling and Regulation Act (ULCRA) and independent regulation for urban services. The set of 'optional' reforms include administrative reforms (chief among which is reduction in establishment by bringing out Voluntary Retirement Schemes) and encouraging public-private partnerships.

The state's capital, Dehradun and its second largest town, Haridwar, are included in the JNNURM in the category of 'identified important urban centres'. Financing of schemes for this category is to be shared between Centre, state and loans from F.I.s in the ratio of 80:10:10. (As a 'Special Category' State, the cost sharing for Uttarakhand will be 90 per cent as central grant funding and 10 per cent by way of loans.)

3.1.2 UIDSSMT

Central government has been assisting states financially through successive Five Year Plans for

improving the infrastructure facilities of small and medium towns. The overall Scheme—Integrated Development of Small and Medium Towns (IDSMT)—has been operational for over two decades and has supported improvement projects of towns of up to 5 lakh of population. Till March 2005, total Central assistance of INR 850.49 crore have been released for a total of 1854 towns. (This includes assistance totaling INR 3.50 crore for 15 towns of Uttarakhand). Effective from FY 2005-06, ongoing projects under IDSMT have been subsumed in the new refashioned scheme for small and medium towns UIDSSMT.

Among the aims of IDSMT in developing small and medium towns through increased investments, these towns were to slow down the growth of large cities. Apart from reducing migration from rural areas to large cities, it was also the aim that the development of small urban centres would help support the growth of surrounding rural areas as well.

Central funding assistance to projects under IDSMT has been guided, *inter alia* by the prospects for decentralised economic growth and employment opportunities that the projects open up and promoting dispersed urbanisation. The projects were also selected with the view to promoting resource—generating schemes for the urban local bodies to improve their overall financial position. In selecting the towns, preference was given to headquarters of districts followed by *mandi* towns and industrial growth centres, tourist places and pilgrim centres etc.

Over the course of the IDSMT, the share of Central and state assistance was increased and made available as grant. Assistance has also covered the expenditure on preparation of project reports (ranging in value from INR 3 to INR 6 lakhs). With the coming into force of the Constitution (74th) Amendment Act, 1992, it was stipulated that IDSMT Scheme would be applicable to those towns where elections to the local bodies are held and elected representatives are in position. The setting up of State Urban Development Fund and Municipal Revolving Fund for identified towns has also been encouraged through the Scheme.

The scope and nature of projects to be funded through UIDSSMT remain broadly the same as the Scheme it replaces and all the features mentioned above have been retained. In addition, there are some important new provisions that require note. These include:

- The incorporation of public-private partnerships as one of the measures to be promoted,

- The stipulation of conditions to be met for eligibility of grants and also a scheme of incentives for speedy implementation, and
- The mechanism of 'MoU' to govern the Scheme and the inclusion of the State Level Nodal Agency as a third party to the MoU (in addition to the Central and state governments).

As with the JNNURM, the scope of UIDSSMT is also comprehensive so as to cover urban improvement projects of diverse types, including:

- Water supply and sanitation;
- Sewerage and solid waste management;
- Upgradation of roads, highways;
- Parking lots and parking spaces (on PPP basis);
- Prevention and rehabilitation of soil erosion/landslides.

States' entitlement to funds through UIDSSMT would be in proportion to the ratio of a state's urban population (excluding cities covered under JNNURM) to total urban population in the country (again excluding cities covered under JNNURM). As the two larger towns of Uttarakhand are covered under JNNURM, it would seem that this allocation procedure would severely limit the importance of UIDSSMT as a funding source for the state's plans.

UIDSSMT directs that states may allocate funds to towns/cities based on similar formula. This introduces the risk of resources being spread too thin for any tangible impact, which would be more marked in the case of Uttarakhand because of the funding limitation just noted. The state would therefore do well to modify this provision and devise its own principles for funds allocation to towns. Here, it could take advantage of a further provision of UIDSSMT that allows state governments to prioritise towns and cities on the basis of their felt need.

The conditions of mandatory and optional reforms for drawal of funds under JNNURM are repeated in UIDSSMT with some minor modifications. (O&M cost recovery through user charges, to be effected over 5 years, may be initially limited to 50 per cent in the case of 'Special Category' States). The Scheme also carries a comprehensive monitoring procedure.

From information available at the Central Ministry's website, it is seen (September 2006) that only three States—Andhra Pradesh, Gujarat and Rajasthan—have so far framed and submitted projects for approval of funding under UIDSSMT.

3.1.3 National Urban Transport Policy

The quality of life of the urban population and urban productivity is determined to a great degree by the efficiency of urban transport. This close linkage is recognised through the National Urban Transport Policy (NUTP), notified in February 2006.

The objective of NUTP is spelt out as "to ensure safe, affordable, quick, comfortable, reliable and sustainable access for the growing number of city residents to jobs, education, recreation and such other needs within our cities". This comprehensive policy document addresses all the areas needing attention, starting with integrated land use and transport planning and equitable allocation of road space to all users to the approach towards public transport, measures to encourage non-motorised transport forms, financing, legal and administrative issues and capacity building.

The policy stresses the importance of providing reliable and efficient means of public transport and in that context focuses on issues of quality and pricing, integration of public transport forms and adopting modern technologies. Non-motorised transport forms have suffered through neglect; they are environment-friendly and hence, need to be promoted through provision of segregated rights-of-way for cycles and pedestrians.

The policy emphasises the importance of drawing upon private sector resources in providing public transport services, "under well structured procurement contracts". Further areas identified for public-private partnerships are the operation and maintenance of parking facilities, certification facilities, repair facilities, construction and management of terminal facilities, etc.

In the area of financing, apart from drafting private resources and the use of land as a financing resource, the policy recommends the levy of dedicated taxes to be credited to an urban transport fund and used exclusively to meet urban transport needs within the state. Such dedicated taxes could be in the form of a supplement to the petrol and diesel taxes, betterment levy on land owners or even an employment tax on employers.

Model legislation is to be drafted for adoption by states with such local variations as may be required. The policy breaks new ground in stressing the need for building public awareness and cooperation and in recommending the setting up of professional bodies that have the capacity to make scientific assessment of the demand on various routes and contract services that can be properly monitored. Larger cities should set up Unified

Metropolitan Transport Authorities and provide them with the needed statutory backing.

NUTP also highlights the importance of capacity building, both institutional and individual at state as well as city levels. It spells out specific measures in this direction, including the building up of a national database. Lastly, the Policy announces the intention to promote pilot projects in a sample set of cities drawn from different regions and different city types so that tested models of best practices can be established for replication in other cities.

We have covered the provisions of JNNURM and NUTP in some detail as they provide a ready reference point and check-list of reforms to evaluate the progress made by Uttarakhand and the areas that remain to be covered.

3.1.4 Model Municipal Law

The basic objectives of the Model Municipal Law (MML) finalised by the central ministry of Urban Development are:

- To implement in totality the provision of the 74th Constitutional amendment for empowerment of ULBs, and
- To provide the legislative framework for implementing the Ministry's urban sector reform agenda.

The document, which was finalised with the participation of experts and state governments, has two sections: (a) Policy options for framing municipal laws and (b) the Law. Among the more notable provisions of MML are:

- Five-year term of office for Mayor/Chairman.
- Municipal functions classified in terms of 'core', those assigned by government and others.
- Accounting reforms that would separate out capital and revenue items and provide separate accounting heads for water supply, roads, etc.
- Comprehensive debt limitation policy by state government.
- Enabling access to capital markets and financial institutions for capital investments.
- Reforms in assessment of property tax (PT) and provision for self-assessment system for PT.
- Participation of private sector, NGOs, community based organisations (CBOs) in delivery of services.

- Service charges to reflect O&M and capital cost recovery, and
- State level regulatory commission on municipal services.

While circulating the MML, the Ministry of Urban Development has suggested that states should draft new Acts after reviewing the existing acts and finalising a state-level agenda. (Uttarakhand is among the states that have set up committees to review the municipal acts and suggest revisions based on the MML.)

3.1.5 Municipal Solid Waste Rules

With the view to improving the urban environment, the Central Ministry of Environment and Forests (MoEF) notified a detailed set of 'Rules for management of Municipal Solid Waste' (MSW) in 2000. The notification made it mandatory for all municipalities in the country to implement the Rules in accordance with a set time table (by December 2003) and stipulated the responsibility for implementation at designated administrative levels. The main merit of the rules is that it differentiates MSW into biodegradable and non-biodegradable categories from the primary collection level itself and lays down processes by which each category could be processed to derive optimal environmental benefit. If the rules are enforced in earnest, not only environmental but also financial benefits could accrue through 'composting' of solid waste for agricultural use and conversion of 'Waste to Energy' (WTE) by adopting suitable technologies and the waste going to the landfill sites could be minimised as a result.

Not unexpectedly, the actual implementation of the rules across states has lagged behind the timetable notified, but as a notable exception, one medium-sized town in Maharashtra (Nashik) proved that the concept was doable by complying with the rules well ahead of the time limit set. Several major cities have also now developed successful functioning models of SWM, (Refer Box 15.1) and a number of states and municipalities that were lagging behind are recently stirring themselves to join the growing mainstream.

In this, they will be helped by several financial incentives that are available. Among the incentives is financial assistance offered by Central Ministry of Non-conventional Energy Sources (MNES) for projects on energy recovery from MSW and financial support and subsidies given by MoEF as well as Ministry of Agriculture (MoA) for setting up compost plants using MSW. (Again, the implementation has been lax and plan funds provided have remained unutilised. Through a recently notified amendment, the MoA support is now extended not only to

BOX 15.1

Models for Solid Waste Management through PPP

Several cities in the country have developed successful PPP models for Solid Waste Management. Among the notable gains are cleaner environment and significantly lower costs. Bangalore, Hyderabad and Chennai among the metro cities and Ahmedabad and Surat among other large urban centres have each developed functioning models of PPP.

Primary waste collection in two-thirds of Bangalore city and its transportation to the disposal site is handled by contractors, each of whom manages 2 to 3 health wards of the city. This arrangement, in which contractors use their own vehicles, has reduced the costs to about 50 per cent of what was incurred departmentally. A separate arrangement has also been tied up for treatment and disposal of waste for which the selected private operator is to invest about INR 25 to 30 crore in the treatment facility. No payment is to be made for the waste treatment. The municipal corporation will provide the land and pay a 'tipping fee' of INR 195 per MT of rejects.

In Ahmedabad, the door-to-door collection is entirely through RWAs, associations of sanitation workers and women's organisations. The municipal corporation gives grants for door-to-door waste collection and its supervision. The supervision has been contracted out to a training institution on condition that diploma holders who qualify from the institute would be posted for one year field training cum service, with the municipal corporation meeting half of the trainee's stipend. Waste treatment is entrusted to a private agency who has set up a mechanised compost plant on land given on token lease for 15 years. The municipal corporation expects to receive royalty at the rate of INR 35 per MT of compost produced by the agency.

Hyderabad has avoided the bidding process by allotting 'unit areas' (comprising 8 km of road length) to teams of 18 sanitation workers each through draw of lots. The teams receive payments at fixed rates (that differ for work during day and night cleaning, the latter for the wider busier streets). The collected waste is processed by a private agency that operates a WTE facility using RDF ('Refuse Derived Fuel') technology. The agency which has been allotted 10 acres of land on 30 year lease (and permitted to mortgage the leasehold land to FIs) also operates a power plant of 6.6 MW capacity fuelled by RDF mixed with agro-waste, outside the city.

Chennai has a very efficient arrangement for SWM in 3 out of the city's 10 zones, through a private agency selected through competitive bidding. The operator handles street sweeping, secondary storage at a transfer station and transportation to the disposal site and is paid at a rate per tonne with a built-in annual increase of 5 per cent. The contract, which has saved on waste collection costs by 50 per cent of that incurred departmentally, is to run for seven years. One weakness of the arrangement is that segregation of recyclable waste at source was not a condition in the contract.

Among smaller towns, North Barrackpore (population: over 2 lakh) and New Dumdum (pop: 85,000) in West Bengal have privatised primary waste collection through a model SWM demonstration project with 50 per cent cost sharing by the CPCB. The private agency is paid at a fixed rate per household covered. In North Barrackpore, the fee paid by household is shared among the sanitation workers, the supervisor and the municipality in the ratio of 8:1:1. In New Dumdum, the door-to-door waste collection is privately managed and the prescribed monthly charge per family is directly recovered by the sanitation worker.

Source: Asnani, P.U. (2006). "Solid Waste Management", *India Infrastructure Report 2006*, 3 I Network. Oxford University Press.

ULBs but also to private sector.) The MNES subsidy support for WTE projects is on a differentiated scale linked to the MW or equivalent of energy output for prescribed technologies adopted for energy recovery. Financial assistance to 'Special Category' States like Uttarakhand will be 20 per cent higher than for other states.

3.1.6 Twelfth Finance Commission Award

On the basis of a proposal put forth by the Central Urban Development Ministry, the 12th Finance Commission, in its award, has allotted INR 5000 crore for supplementing the resources of ULBs with the view to improving urban infrastructure across the country of which Uttarakhand's share is INR 34 crore. The award earmarks 50 per cent of this amount towards improving

Solid Waste Management (SWM). This is in addition to the SWM component in the government's Urban Renewal Fund. If the state government and the ULBs come up with matching funds, effective management of Municipal Solid Waste (MSW) will be possible.

3.2. State Level Initiatives

3.2.1 Urban Vision

Government of Uttarakhand had commissioned Crisil Advisory Services to prepare a ten-year 'Vision' document on urban infrastructure. Based on this Study (July 2004), GoUA has set the development of urban infrastructure as a priority goal and has approved the following guiding objective for the state's urban sector:

Living standards, productivity and sustainability of all towns and cities in the State to be enhanced with emphasis on preservation of their heritage character and environmental wealth.

The main strategies envisaged for achieving these objectives by the year 2014 are as follows:

- (a) Increased responsibilities on ULBs and measures to strengthen their capacity and functional efficiency.
- (b) Dehradun to be positioned as a leading city and one of the top ten cities of the country.
- (c) Upgradation of the core arterial network of the cities to at least 10 metres.
- (d) Provision of safe assured supply of drinking water to all towns.
- (e) Development of underground sewage system and treatment plants.
- (f) Development of an integrated municipal solid waste collection and disposal system involving local communities. (Landfill sites to be developed through private sector participation.)
- (g) Implement traffic management measures in key towns.

3.2.2 Strengthening Urban Local Bodies

Among the promising state level initiatives in this area, we may also count the recommendations of the First State Finance Commission (SFC-1), concerning in particular:

- (a) linking release of a specified part of the 'grant-in-aid' to local bodies to designated performance parameters, and
- (b) the skills upgradation of staff of local bodies, urban as well as rural.

SFC-1 has also recommended the setting up of a State Level Monitoring Committee (SLMC) to monitor the implementation of its recommendations by local bodies and other self-governing institutions.

As noted earlier, the state has set up a Committee to study the draft MML circulated by Central government for its adoption in the state.

GoUA has also decided that urban water supply and sewerage system will be managed to the extent possible through ULBs.

3.2.3 Major Urban Improvement Projects

In terms of actual project execution, open canals in Dehradun city have been re-laid underground in 2004-05

aiming to reduce pollution and to enable widening of roads to facilitate transport system.

ADB Funded Project

With the avowed vision of creating world-class infrastructure in the urban areas of Uttarakhand, the state has tied up financing support of Asian Development Bank for development of water supply, sewerage and storm water drainage in certain select towns of the state. Towns for funding under Asian Development Bank (ADB) have been selected on the basis of their importance from commercial, industrial, tourism and pilgrimage (*yatra* routes) point of view. A total of 38 towns, 25 in Garhwal region and 13 in Kumaon region are selected for this project. These towns accounted for a total population of 15.66 lakhs, which is about 72 per cent of the total urban population of the state.

The rate of water supply for the towns in which sewerage schemes is also contemplated is taken as 155.25 lpcd (135 lpcd + 15 per cent for unaccounted water line losses). Out of the 38 towns, 31 have deficit water supply which require source augmentation and reorganisation. Though the remaining 7 towns have sufficient water supply, the distribution network is not sufficient and requires reorganisation/extension. (Town-wise status showing present available water, design year demand and gap in between are given in Appendix A-15.4). For the 38 towns, it is estimated that 120 no. of source and treatment works, 1079 km of distribution and 57 no. of OHT/CWR are to be provided. For water supply sector, for all the 38 towns, the estimated project cost is INR 454.75 crore.

As noted in Section 2 of this chapter, only 19 towns in Uttarakhand have sewerage (partial) of which only two towns have sewage treatment plants. For all the 38 towns covered under the ADB-funded project, an estimated 538.50 km of sewer lines and 59 no. of STPs are being proposed. For sewerage sector, the total estimated cost for all the 38 towns is INR 603.28 crore.

The drainage component of the project envisages open channel drainage system to carry the storm water to the disposal site, so as to solve the problem of inundation of low land area in the cities and erosion of the topsoil in hilly towns. The drainage network for all the 38 towns will involve total 646 kms of drainage with disposal unit and is estimated to cost INR 520.80 crore.

Ganga Action Plan

Of the 38 towns covered under the ADB-funded project, sewerage facilities of 10 towns located along the river Ganges (total population: 3.17 lakhs) will be upgraded under the centrally funded GAP-II. The main

works under the programme are providing trunk sewer and sewage treatment plant (but excluding the internal sewerage network). The town-wise status of the towns—some of which have partial sewerage while others have no sewerage system—are presented in Appendix A-15.5.

The total estimated cost of all the three components, to be implemented through a special implementation unit formed out of the technical staff pool of Uttarakhand Peyjal Nigam, is INR 1578.83 crore. A five-year implementation and spending schedule has been drawn up. The first year of project cycle will be for the preparation of all the components, projects and its technical and financial appraisal. The next three years will be for the construction of different sector as integrated and simultaneous activities. The last one year will be for trial running and maintenance of work before handing it over to ULB/Uttarakhand Jal Sansthan for maintenance and revenue of collection. The agency responsible for maintenance shall work out economically viable tariff.

The completion date of the work is taken as year 2012, which is the millennium goal year for water supply and sanitation as fixed by the Government of India. The base year for the project is taken as year 2005-06 and it is assumed that works shall be initiated in the year 2006-07. The projects have a design period of 30 years. (Refer Appendix A-15.6).

Other Initiatives

The state has also taken several specific initiatives to implement the ideas spelt out in the Urban Vision. Some of the recent initiatives are highlighted here.

- A dedicated implementing agency—Uttarakhand Infrastructure Development Company (UDEc)—has been set-up as also a state ‘Infrastructure Fund’

(UDEc is a JV with GoUA, IDFC and Infrastructure Corpn. of Karnataka (1.1 per cent) as partners. UDEc will assist GoUA agencies to develop projects, enter into PPP arrangements, obtain funding and provide policy advice).

- ADB funded project for coordinated development of small and medium towns has been launched and UDEc has been provided with funds (INR 2.41 crore) for the preparatory tasks.
- Outsourcing of Urban Complaint Management System (on the Call Centre model) 12 hrs × 365 days—expression of interest invited January 2006.
- UNDP funded PPP model for developing Haridwar—Rishikesh Tourism Portal—eventually to be upgraded as Uttarakhand Tourism Portal—expression of interest invited January 2006.

(Proposed revenue streams for the PPP partners would be through advertisements, hotel reservations and such other applications of the portal. The expenditure stream would be in keeping the portal updated and operational round the clock, seven days of week.)

- Development of Commercial Complex at ISBT, Dehradun on BOT basis at total cost of INR 10 crore. This is the first undertaking of this type in the country. Similar projects are also planned for other key towns in the state.
- The State Industrial Development Corporation of Uttarakhand (SIDCUL) is taking the assistance of UDEc to award concessions for Solid Waste Management of Haridwar and Pantnagar Industrial Estates.

Attempt has also been made to involve the community in waste management by constituting resident welfare associations called ‘Mohalla Swachhata Samiti’ for every 250 households. This association has been given the power to appoint one sweeper for collecting separated garbage and attend to the other sanitation aspects of the locality. The relevant ULB pays INR 1500 per month for this sweeper.

4. Agenda for Action

Reform efforts in some infrastructure sectors (power, telecommunications, ports) were initiated in the early years of economic reforms. Setbacks, course corrections and a general pattern of ‘trial and error’ marked these earlier reform measures. In consequence, despite the early start, the gains expected of the reforms have not been fully realised and there are even a few policy gaps remaining to be bridged. Urban infrastructure, by contrast, is a late entry to the national reform agenda. One beneficial fall-out of this delay is that, gaining from the experience in other sectors, the policy changes needed have been clearly and comprehensively identified and endorsed through official documents.

The detailed agenda for action in urban infrastructure has been set out in the policy documents discussed in Section 3 of this chapter. In the specific context of Uttarakhand, the policy guidelines under the JNNURM and the UIDSSMT are the most relevant. In this section, we shall review to what extent these policy aims have been captured in the measures taken by GoUA so far and what more needs to be done urgently.

The state’s urban vision that we referred to in Section 3.2 covers five main priority areas:

- Strengthening ULBs,
- Water supply and sewage,
- Roads and urban traffic management,
- Solid waste collection and disposal, and
- Special attention to developing Dehradun as a leading city of the country.

Action needed in each of these areas is discussed next.

4.1 Strengthening ULBs

There are four specific components to this: (a) increased responsibilities to the urban body, (b) financial strengthening, (c) systems and processes and (d) capacity building. These components are inter-related and the success of the first two is also dependent on measures towards physical improvements in urban amenities like water supply and transport.

Increased Responsibilities: We noted earlier (in Section 2 of this chapter) that of the three related areas of water supply, sewerage and sanitation, only the third is the responsibility of ULBs at present. GoUA has decided in principle that the first two will also be managed through ULBs to the extent possible. The constraints on fast changeover in long-prevailing arrangements are understandable; at the same time, urgency for building up capacity—at least in the larger towns—so that ULBs assume responsibility for all civic areas, needs to be stressed. In fact, in the four largest towns of the state, the aim should be to bring also the power supply under the control and responsibility of the ULBs. (We have covered this issue in more detail in Chapter 12—Power).

To provide the legal supports for strengthening of ULBs, the model municipal law needs to be adapted to the state's requirements and brought into effect. While finalising the new state law, it will be useful to keep in view that ULBs need upgrading also from the point of attracting suitable political talent for their efficient management. Direct election to the office of mayor, provision of firm, longer fixed tenure (envisaged in the MML), enlarging the area of control and lastly, consultation with elected head in the matter of key civic appointments are measures that would help attract such political talent.

Financial Strengthening: The central schemes provide for progressive levy of reasonable user charges for civic services. But it is obvious that this would be contingent on physical improvements in quantity and quality of services, which in turn needs investing in projects that are implemented speedily. Uttarakhand has already developed

a large project with prospective ADB funding that would cater to the areas of water supply, sewerage and drainage. Similar projects need to be developed and implemented in other areas like roads and transport, waste management and power supply, in all of which scope exists for tapping private investment.

As for realising potential revenue, coverage and enforcement of municipal taxes on property and water, license fee and rationalising the advertisement tax rates, and rent structure of shops are envisaged.

Suggestions contained in UIDSSMT include creation of a “Revolving Fund” to leverage market funds for financing infrastructure projects. This is of particular relevance to Uttarakhand, which has the scope to set up town-specific funds of this type, part-funded through modest levies on visitors to pilgrimage centres like Haridwar. Such funds should be used exclusively on projects to upgrade the facilities of the particular town in the shortest possible time. Because of the assured regular inflow of this source of income to the fund, it would also be possible to leverage such funds for market borrowings.

Systems and processes: The central guidelines spell out a detailed agenda for modernising municipal accounting processes. These are in the ‘mandatory’ category of reforms for central assistance. One important gain by introducing ‘accrual-based’ accounting system would be improved accountability of civic officials; by placing limits on allowable municipal deficits through suitable provisions in the municipal law, this accountability could be made to cover elected officials as well.

Also in the category of ‘systems and processes’ are procedures for tightening the realisation of user charges and tax collections and to ensure transparency in the utilisation of funds and selection of private partners.

Some cities and municipalities have improved their finances by revamping the database of property ownership and efficient tax collections. It is obvious that major towns in Uttarakhand could emulate these models.

Capacity Building: The success of all the measures referred above are crucially dependent on upgrading of skills, imparting new skills through training and hiring of expertise, strengthening of cadres and all other measures that are covered through the term ‘capacity building’. This is a priority for urban infrastructure more than for any other infrastructure sectors. Also, the skills upgrading should cover the entire civic administrative hierarchy, including elected representatives. Because several innovations and initiatives have been reported from towns and cities across the country, measures for ‘capacity

building' should include planned field visits by Uttarakhand civic personnel to such locations and also obtaining services of pioneer innovators from other states on deputation terms.

4.2 Water Supply and Sewage

As noted earlier, Uttarakhand has already framed a major project that would cover 38 towns (covering 72 per cent of the state's urban population) and is in the process of implementing the same. While some preliminary measures have been taken, the funds approved so far make for only a fraction of the INR 236.82 crore slated for spending in the first year according to the spending programme. This is an indicator of the ground that remains to be covered.

The data for the towns selected shows that 31 of them have insufficient water resources; however, the gap is significantly large only for a few of these towns (Appendix A-15.4) and it would be feasible to overcome these also through augmentation schemes. This massive project is to be implemented through the Peyjal Nigam. In the Chapter on Water Resources (Chapter 14) we noted some institutional shortcomings of UPJN which needed to be overcome. The issue is whether the Nigam has the capacity to oversee so large a scheme from planning to implementation to operation and maintenance. To overcome the limitations in the particular context of the urban infrastructure agenda, appropriate sequencing of the project would be relevant. If major towns were tackled first, it would be possible to augment the institutional capacities in parallel and also to hand over completed schemes, along with the needed maintenance personnel to the ULBs concerned. In the alternative, work in some towns could be taken up *ab initio* on PPP basis so that the private party takes over the long term maintenance and operation.

There is also scope for differential treatment of water for different uses. Micro level systems need to be designed to recycle water at the household level. The supply should be metred to plug leakages. Pricing is to be on cost recovery basis in the long term or over the full life of the project.

4.3 Roads and Urban Traffic Management

There are three identifiable components to this: (a) planned upgrading of the physical infrastructure, (b) modernising traffic management, and (c) augmenting and modernising the public transport facilities and their delivery.

Planned Upgrading: ULBs need to be assisted with planning for the future development of the urban areas

that take all aspects of town development and transportation into account. Taking note of steady increase in population, planning has to be sufficiently in advance of the demand to enable an effective response. This is especially important in a state like Uttarakhand, which is situated in an environmentally sensitive region. Unplanned and haphazard development and poor transportation could pose a severe ecological challenge in later days. It should also be recognised that by planned location as also re-location of major transport amenities like rail and interstate bus terminals, the pattern of future growth of an expanding town could be determined and influenced.

Network and route design for public transport in major towns is an expert task for which services of specialist agencies should be obtained. NUTP envisages special attention to the needs of non-motorised transport forms. This is to be taken into account from the initial planning stage itself so that dedicated road space is provided for such transport.

While planning has necessarily to remain with public authorities, in the case of larger towns, the needed expertise and resources for project implementation could be obtained from private sector, as envisaged in NUTP. Construction of new roads, widening and improving the existing roads as black topped or cement reinforced, construction of bye-pass/fly-overs in the cities to ease the traffic congestion are the required measures in urban transport infrastructure. Besides these, creating parking places, bus terminals, and tourist terminals with modern civic amenities are other requirements.

For widening of roads and their proper maintenance, speedy implementation of underground sewerage and drainage schemes is a prerequisite.

Modernising Traffic Management: On the traffic management front, reducing traffic congestion is an important aspect. Hence, provision of adequate fixed physical infrastructure, as well as vehicular assets, is a precondition to be met. If the problems of select larger towns were addressed first, it would be easier to replicate the successful models in other towns.

A few large towns in India are going in for substantially higher capacity road vehicles for public transport and the initial reactions are very favourable. Along with higher capacity buses, dedicated bus lanes are also being provided on busy routes. These are models for consideration for the two largest towns of Uttarakhand.

Public Transport Facilities and their Delivery: In this area, a differentiated approach between the larger towns and

smaller ones is justified. In both cases, improvement of the road infrastructure is the first step, which needs to be taken up by the government.

For larger towns, there are three provisioning and delivery models for public transport to choose from. The first is of a fully integrated monopoly public service provider that is loosely regulated (in matter of fixing of tariffs) by government that makes good revenue shortfall. Most city transport services follow this pattern. In the second model, there is a large major service provider but also smaller private agencies that are contracted by the main service provider. Here, the private agencies function on commercial basis and the main public-owned service provider bears the burden of providing the below-cost services which are subsidised by government. In the third model, there are several service providers and all operate on equal footing, with regulation by an independent agency so as to ensure a 'level playing field'. The possibility of starting with model two and eventually moving over to the third model is also a viable option.

The choice of which of the models to adopt is to be determined on two concerns: (a) the financial support that government can extend—which would be highest for the 'monopoly' model and lowest for model three, and (b) the existing institutional structures and which of the models would involve least dislocation in changing over.

For smaller towns, while the road infrastructure needs to be upgraded by the government, private agencies could be inducted for both service provision as well as setting up new terminals. Uttarakhand already has pioneered one such privately provided bus terminal; so the feasibility of this arrangement and its attraction to private promoters (commercial exploitation of terminal buildings) especially in the towns along the pilgrim routes do not need elaboration.

For actual provision of bus services proper in the smaller towns, a franchisee scheme based on 'least subsidy' bids could be adopted.

Regulation: Urban transport services impose regulatory demands in terms of fixing of reasonable tariffs, extending service to all segments, and overseeing the quality of service. This aspect concerns other urban services as well and is taken up in a later paragraph.

4.4 Solid Waste Management and Disposal

In Section 3 of this chapter, we have referred to a few central schemes that have been in vogue for over a decade and several recent initiatives by large, medium and small towns in many states. There is, therefore, no dearth of

models to choose from. This is also an obvious priority because this is an area where immediate results could be achieved.

Uttarakhand has taken two specific initiatives so far. One is the promotion of 'Mohalla Swachhata Samitis' (MSS) to involve local communities and the attendant authorisation to hire sweepers at a fixed wage support from the government. The second is the proposal to select a private agency for SWM for the industrial estate near Haridwar. The experience of the first-mentioned scheme (the second is not yet operational) could be evaluated for improving or modifying it.

The State Urban Vision refers to private involvement in developing landfill sites for disposal of urban waste. As successful experience in several towns and cities in the country bear out, private participation could extend beyond this limited area. So this part of the Urban Vision needs review.

As a further suggestion, the state government could assist one or two ULBs of medium towns to develop and implement 'pilot projects' that are more ambitious than the MSS model and would cover gradation of waste and its utilisation on environmentally and financially beneficial lines. Government should provide financial assistance and incentive for the preparatory work on this.

4.5 Dehradun to be Positioned as a Leading City and One of the Top Ten Cities of the Country

The vision aims at making Dehradun as a leading city in the country by 2014. The required measures mentioned in the vision document prepared by the consultant are: creating pollution free environment, providing quality education and health facilities, creating leisure and recreation outlets for shopping and recreation, development of good road infrastructure and transportation system that stimulates efficiency and productivity, improving connectivity with other cities and state capitals and finally good law and order conditions.

In order to be reckoned among the top ten cities of the country, Dehradun needs to grow five to tenfold from its current size in terms of population and by implication also spatially. This is a very long-term vision and hence, a subject for drawing up of a master plan that would cover land-use, transportation including connectivity to rest of the country, basic water and sanitation needs and the sources for water, power supply, etc. The starting point is a detailed look at the available resources.

Experience elsewhere indicates that some cities outgrow others by: (a) fully exploiting natural advantages

BOX 15.2

A 'Zero Garbage' Town

Namakkal, a small poultry town in Tamil Nadu (population: 53,000) has earned the distinction of 'zero-garbage town', becoming the first local body in the country to receive ISO 14001 certificate for adopting effective solid-waste management system.

The certification is given to any organisation that uses technology and maintains internationally acceptable standards in services and develops an environmental management system in which water, air and sound quality are maintained.

The municipality, housing around 600 poultry farms and over 250 automobile workshops, generates about 20 tonnes of solid waste daily. Of this, eight tonnes of organic waste is subjected to vermin composting, three tonnes are recycled and the remaining inorganic waste is used for landfilling. The recycled stuff now fetches the municipality INR 450,000 a year. Since its garbage segregation drive, local agriculture does not use chemical fertilisers.

The municipal authorities have privatised the collection and transportation of waste. Apart from gathering waste from commercial firms, door-to-door collection from households is also carried out. It started with the municipal chairman along with the municipal commissioner visiting every house in the town's most congested area and taking up three wards for an experiment in garbage removal. They talked to people, issued notices and finally showed results. The movement was kept completely apolitical; soon neighbouring wards wanted to be integrated and even the slum areas of the town joined in. They privatised garbage collection and trained a group in segregating garbage, preparing vermin-compost and recycling non-biodegradable waste like tyres and tubes that were earlier littered around (the town is known for its lorry body-building units).

Help came along from the Tokyo-based Asian Productivity Council (that introduced the concept of green productivity to enhance efficiency and the town's environment) and the National Productivity Council that supported to develop Namakkal as an 'eco-city', the first of its kind in the Asia-Pacific region.

A touch-screen computer at the municipality allows the residents of 30 wards to check their property/water tax arrears and birth certificates in 15 minutes. Besides waste management, the concept of 'green productivity' which involves rainwater harvesting among other things also is being practiced. Use of plastics, smoking and spitting in public places etc., are banned in the town. Further, the use of vehicle horns and loud speakers is also restricted, lowering noise levels.

Source: *The Hindu*, Sunday Magazine, 9 April 2006.

like location, climate etc., and (b) by consciously differentiating itself in positive ways from the rest of the group. (Box 15.3). Both aspects need to be considered at the planning stage. In general terms, differentiation from the rest in 'quality of life' is a basic aim to be achieved, beyond which the special advantages of the city will take over to promote rapid growth. In India, an obvious example is that of Bangalore, which started with some inherent advantages (of climate and relatively better quality of life) that attracted the nucleus of the software industry to locate there. Its further growth was determined by the pace of growth of the industry globally.

For ensuring the desired quality of life, all the areas touched upon in this section need to be implemented in the shortest possible time. As a specific measure, it would be desirable for the urban law under formulation to provide for the directly elected chief executive to be enabled to access expert assistance in all areas of civic activity. As inter-city and intra-city transport connectivity is critical to an urban population, it is also relevant to repeat the point that we made earlier that the long-term growth of a city could be influenced by proper location of new or redesigned transport terminals.

In addition to the five areas figuring in the State Urban Vision, it is also necessary to consider the issue of public-private partnerships for urban development and the important aspect of regulation. We discuss these two topics next.

4.6 Private Participation in the Service Driven Activities of the Urban Bodies

Inviting the private sector to participate in infrastructure provision and management is seen as a strategy in view of: (a) scarcity of funds with the public sector, (b) efficient project management and maintenance by private sector, and (c) latest technologies that could be accessed by private sector. These aspects are well known and do not need elaboration. The State Urban Vision envisages urban local bodies to unbundle their service driven activities like collection and disposal of waste, provision of water related services, setting up of social and entertainment infrastructure etc., and to find ways to open these services to private participation. Ensuring financial sustainability of the unbundled services is a main concern. In addition to the areas listed, scope for private

BOX 15.3

What Makes a Town Grow?

Queretaro, the capital city of the state of the same name in Mexico is the fastest growing town in that Central American country. The city was little known in outside world till an independent consultancy classified it in 2004 as the best place to live and do business in Mexico. The classification was based on a range of indicators such as economic and infrastructure development and levels of crime and corruption.

Queretaro has grown steadily over three decades, its population increasing fourfold since the mid-1970s, to about 800,000. But in a recent spurt, over 500-odd businesses have relocated there in the past 7-8 years, many of them multinationals. That includes Kellogg's, which has its regional headquarters in the city. All the big names in auto-parts manufacturing have presences in Queretaro. A large Spanish-owned banking group opened its headquarters in the town in 2004, providing about 2,500 jobs. There are also 23 research-and-development centres in the town, testifying to the skills of the local workforce and of the recent arrivals.

Among the town's advantages are its location and the access to both the central Mexican and the American markets. The main artery of Mexican-American trade (known as "the NAFTA highway") runs through the city, which is eight hours by truck to the border. The port of Veracruz is six-hours by road and Mexico City just two hours away. More than the locational advantage, "quality of life" is probably the biggest draw: low crime, clean air and unclogged roads. The low crime-rate is the result of policies that other cities could easily adopt as well. To counter the problem of kidnapping—a widespread menace in Mexico—the state of Queretaro deters kidnapers with the threat of 50-year jail sentences, about the toughest in the country. This is a big draw for nervous foreign middle-managers, who also maintain that there is very little official corruption.

Unlike other Mexican cities, Queretaro chose not to tear down its colonial centre (now a World Heritage Site), some of which is pedestrianised. It is kept impressively smart by an army of 650 cleaners.

Source: *Economist*, 29 April 2004 and information accessed through internet.

participation also exists in the area of transport as we noted earlier.

Unbundling of Services: In Uttarakhand urban infrastructure schemes are at present conceived as unitary service. In the case of drinking water supply in urban areas, unbundling can take place as follows:

- (a) Water resource management and development of source.
- (b) Treatment of water and bulk supply—Water Purchase Agreement.
- (c) Distribution/Operation and Maintenance (O&M).
- (d) Billing/Collection.

Uttarakhand is currently attracting several new industrial enterprises. Keeping this in view, water supply for industrial use is an area to be specifically considered for privatisation.

In the case of sanitation services the unbundling can be done along following lines:

- (a) Sewerage network-sewerage collection system.
- (b) Installation and maintenance of sewerage pumping stations.
- (c) Sewerage water recycling and using for agriculture.

As for the solid waste management, there are already several functioning instances of unbundling of:

- (a) Collection.
- (b) Separation and treatment.
- (c) Distribution of by-products (scrap material, manure, fuel pellets and biogas) etc.
- (d) Transportation and disposal at landfill sites.

In urban transport services sector, Uttarakhand's initiative in the area of bus terminal has been noted. Following modes of 'unbundling' are feasible:

- (a) Development and maintenance of terminals.
- (b) Operation of bus and intermediate public transport terminals.
- (c) Construction and maintenance of parking facilities.
- (d) Construction and maintenance of toll bridges.

It may be noted that development of urban mass transit systems and their operation and maintenance are also feasible areas for privatisation in future.

Transparency in selection of private agencies and risk mitigation to the private promoter through balanced contractual arrangements are critical requirements. Here again, models have already been developed which could

be the guide for the state. The Andhra Pradesh Infrastructure Enabling Act, 2001 is one such.

4.7 Regulation of Urban Bodies and Services

A regulatory mechanism has to be introduced in the urban infrastructure sector in order to promote operating efficiency, specify and monitor service standards, and to ensure responsiveness to final customer needs. The MML circulated by Central government contains detailed provisions for constituting Municipal Regulatory Commissions (MRC). We shall here confine the discussion to noting a few aspects to be kept in view.

Cost Recovery through User Charges: The MML envisages that the MRC will be the authority that will determine the user charges to be levied on the whole range of municipal services for all towns in the state. This is on the lines of the Electricity Regulatory Commissions already functioning in Uttarakhand and other states. While the model is feasible, the following suggestions may be considered in implementation:

- MRC should have access to expert assistance in determining the costs of various services.
- This assistance should include assessing the 'willingness to pay' by the citizens availing of the services, through objective surveys.
- MRC should devote as much attention as possible on enforcing the service quality and should have the support of agencies that can measure the performance in various areas on a concurrent basis. This should include scope for cost savings through energy efficiency, reduction of leakages, manpower rationalisation etc.
- In order to reduce leakages, metering of services of services should be enforced.
- It goes without saying that in all cases, 'political pricing' of utilities should be avoided. Directions by government in the matter of subsidised services should be such as would make the subsidies transparent, targeted and measurable.
- MRC's jurisdiction over the state may be expanded in phases and in a way that ensures avoidance of bureaucratic functioning.

Performance Measurement: The need for enforcing performance standards was mentioned above. To add, services of institutions like IIT, Roorkee could be obtained so as to keep the measurement of performance, whether by public or private agencies to high technical standards.

4.8 Metropolitan Transport Authority

While the MML envisages that MRC will have jurisdiction over transport infrastructure areas as well, its role with regard to setting of fares for public transport is left to the decision of state governments. As we noted earlier, the NUTP suggests the setting up of Unified Metropolitan Transport Authority for larger cities. In view of the state's vision to develop Dehradun as a leading city in the country and the detailed planning that this would entail, state government could consider constituting an MTA for this town at an early date.

5. Strategies and Recommendations

Our review has noted the several initiatives that Uttarakhand has already taken in the urban infrastructure area. However, these are, as of now, rather diffuse and a coherent overall strategy remains to be developed. At present urban services in the state are characterised by:

- Inadequate coverage and service level.
- Poor quality of service to consumers.
- Institutional delinquencies and high administrative overheads.
- Insufficient financial and managerial resources with urban local bodies.
- High non-revenue component due to wastage, pilferage, unaccounted-for losses and free riders.
- Inefficient operation and maintenance.
- Poor monitoring and cost recovery.
- Unsustainable resource management practices.
- High investment needs and project costs; and
- Lower priority accorded to certain urban services.

In order to achieve the goals envisaged in the State's Urban Vision, a strategy based on: (a) Strengthening of ULBs, (b) Devolution of finances, and (c) Private Sector Participation, was recommended. The attendant supports needed for this purpose have been outlined above.

A few of the components of such a strategy are discussed here.

5.1 Avoid Spreading Resources Thinly

As has been presented in the previous sections, lack of financial resources is the central problem faced by municipalities in taking up infrastructure development programmes. Urban local bodies (ULBs) are rarely able to generate surpluses large enough to finance the improvement of the existing and creation of new

infrastructure facilities. The practice adopted so far for financing urban infrastructure in India is through budget allocations of Central and state governments, institutional finances, donor and multilateral agencies and internal revenues of municipal funds. Uttarakhand has access to all these sources at present, but the risk of spreading the resources too thinly across too many projects needs to be avoided.

5.2 'Show-case' Model

The state would do well to develop a few well-planned projects and deploy concentrate resources to bring about a critical difference to a select urban area. This could serve as a 'show-case' model for raising of resources for other projects and also for copying by other towns in the state. Our suggestion to select an SWM 'pilot project' for a medium town where it will make maximum impact may be recalled in this context.

5.3 Mobilising Public Support

This is an important requirement, which has been stressed, in the central NUTP programme. As urban reform could cause some initial dislocations and could also entail higher user charges, special measures need to be taken to secure public support. A specific suggestion is to co-opt the services of NGOs and CBOs who could play a useful role in bringing about improvements. (A CBO, 'Peoples' Action Group' has reportedly been instrumental in voluntarily assisting the transport authorities to effect traffic improvements in Gurgaon, Haryana.)

5.4 Strengthening the ULBs

This is a central part of the programme of upgrading urban infrastructure. Strengthening of ULBs is aimed at by reforming their financial management, improving the planning capacity of ULBs, reforming the maintenance of urban infrastructure, and outsourcing of certain jobs to the private sector.

Implementing the 74th Constitutional Amendment Act that envisaged different measures for strengthening municipal governance is seen as a major step towards this direction. Besides this, implementation of double-entry accounting, adopting unit area method of property tax, computerisation of all property tax and water charges database, billing and collection processes, formulating effective urban planning norms for the orderly growth of urban areas and minimising functional fragmentation in the urban areas are other areas to be addressed.

Reforming Financial Management of ULBs: Improvement in financial management of ULBs towards: (a) achieving

better control over the present revenues and expenditures and, (b) realising the potential revenue from sources endogenous to ULBs. Financial viability is to be envisaged as the main objective of designing, implementing and maintaining new and existing projects.

Transfer of more resources from state government for investment in urban infrastructure basing on revenue receipts of the state as against the existing norm-based grants is envisaged. Tapping capital markets by ULBs either directly or through intermediaries is also envisaged.

Sources of Municipal Funds-Municipal Bonds: While several larger cities in the country have successfully tapped the market through municipal bonds, a more relevant model for Uttarakhand is the 'Pooled Financing Option' for small and medium towns on the lines of Karnataka, Tamil Nadu. This does not suggest that town-specific municipal bond issues are ruled out. As we observed, a town like Haridwar in particular, with assured stream of visitors is well-placed to tap this source as well.

Costing and Cost Effectiveness: Cost effectiveness can be improved by: (a) technological appropriateness, (b) proper attention to maintenance, (c) curbing misuse of services and efficient institutional arrangements for providing services. By packaging different infrastructural projects together, like water supply and drainage projects, cost effectiveness can be promoted. Coordination between different departments providing different services will also reduce overall cost of provision.

Augmenting the Planning Capacity of ULBs: All of the above is contingent on upgrading the capacity of ULB personnel through imparting training and hiring of specialised skills.

In the introduction to this chapter, we referred to the need to convert the prevailing 'vicious circle' in infrastructure services into a 'virtuous circle'. Because of the baffling inter-sectoral linkages, this may appear too difficult a task, but the experience of Indore shows the way this can be brought about (Refer Case Studies 1 and 2 in Appendix A-15.7).

It is also important to stress the 'soft inputs' which are often overlooked but which are particularly crucial. Three areas are particularly challenging and merit special mention.

Motivated Leadership

Motivated leadership is the key to dramatic improvements of the type illustrated by the case of the 'Zero-garbage Town'. Here, the turnaround was brought

about by a joint effort by the Municipal Chairman and Municipal Commissioner. Several other such successful initiatives in areas of waste management, tax collection and public transport, achieved through the determined leadership of elected as well as non-elected officials have been reported in the recent past from larger cities as well.

Capacity Building

The importance of this issue cannot be over-stressed. This is an area that has been neglected all along, so the much ground remains to be covered. Expert specialist assistance should be obtained for this purpose and the financial supports envisaged in the central programmes should be tapped.

Institutional Upgrades

“Improvements are not possible if quality of physical infrastructure is poor but they are even more unlikely if institutions are weak” (ref: Laveesh Bhandari’s *India Infrastructure Report 2006*, 3i Network).

We noted that improvements in urban infrastructure are contingent on upgrading of existing institutions as

well as providing some new ones. Capacity building is only one of the means for such upgrading; statutory interventions and upgrade of systems and processes dealt with in this review are equally important.

Cashing in on Advantages

Towns that build on a key advantage and mark themselves out from the rest through focused improvements in one or two areas have a better prospect for speedy growth. Often the key advantage that is exploited is not man-made but natural—like location, climate etc., and provides a necessary but not sufficient condition for accelerated growth. Focused improvements in areas affecting the quality of life then take over until, through a combination of several factors, a particular industry or group of industries brings about dramatic growth.

In the case of Uttarakhand, tourism is a potential driver of such growth which also underlines the need for upgrading urban infrastructure over small towns in the state. It is also possible that other growth drivers that cannot be foreseen at this stage develop, when urban infrastructure standards are improved across the state.

APPENDIX A-15.1

**Note on Data Used for Analysis of Urban Population Trends
(Refer Section II)**

Urban Area Data: The Census of India 2001 defined urban area as:

- a) All statutory places with a municipality, corporation, cantonment board or notified town area committee, etc.
- b) A place satisfying the following three criteria simultaneously:
 - i) a minimum population of 5,000;
 - ii) at least 75 per cent of male working population engaged in non-agricultural pursuits; and
 - iii) a density of population of at least 400 per sq.km. (1,000 per sq.mile).

Source: 1991 Census data corrected by SIFF.

Urban Agglomeration: Urban agglomeration is a continuous urban spread constituting a town and its adjoining urban outgrowths (OGs), or two or more physical contiguous towns together and any adjoining urban outgrowths of such towns. Examples of OGs are railway colonies, university campuses, port area, military camps etc., that may have come up near a statutory town or city but within the revenue limits of a village or villages contiguous to the town or city. For the Census of India 2001, it was decided that the core town or at least one of the constituent towns of an urban agglomeration should necessarily be a statutory town and the total population of all the constituents should not be less than 20,000 (as per 1991 census). With these two basic criteria having been met, the following are the possible different situations in which urban agglomerations could be constituted: i) a city or town with one or more contiguous outgrowths; ii) two or more adjoining towns with or without their outgrowths; iii) a city and one or more adjoining towns with their outgrowths all of which form a continuous spread.

The classification of an area as an urban unit in Census of India 2001 is based on the following definition: 1. All places declared by the state government under a statute as a municipality, corporation, cantonment board or notified town area committee, etc. 2. All other places which simultaneously satisfy or are expected to satisfy the following criteria: (a) A minimum population of 5,000; (b) At least 75 per cent of the male working population engaged in non-agricultural economic pursuits; and (c) A density of population of at least 400 per square kilometre (1,000 per square mile). As in the past censuses, well-defined OGs of statutory towns have also been included in the extended urban area. Any area, which is not covered by the definition of urban, is rural.

Statutory Town: A settlement having an urban local body viz., Municipality, Corporation, Town Area Committee, Notified Area Committee, Cantonment, Town Panchayat.

Census Towns/Urban Centres: Besides the statutory towns, settlements having: (a) a population of five thousand or more, (b) a minimum density of 1000 people per square kilometre and (c) at least 75 per cent of work force outside agriculture, are known as towns and treated as urban centres by the Population Census of India.

Urban Agglomeration: A city with continuous spread around it encompassing a few other towns and outgrowths, based on the core town.

Nagar Nigam, Nagar Palika, Nagar Parishad: Nagar Nigam refers to a Municipal Corporation and Nagar Palika or Nagar Parishad (nomenclature varies from state to state) refers to a Municipal Council. A corporation is higher than a council in the hierarchy of municipal administration. There are no strict norms for giving a municipality the status of a corporation or council—the decision is mostly political.

APPENDIX A-15.2

Decadal Growth Rate of Population of Towns: Uttarakhand and Himachal Pradesh

In order to analyse the pattern of population growth in Uttarakhand towns at a comprehensive level, the growth rate of population in Uttarakhand towns and Himachal Pradesh towns over the 10-year period 1991-2001 is presented below. Only those towns that recorded a rate of growth above 2 per cent are considered for this.

The maximum growth rate in Uttarakhand was 16.8 per cent

recorded in Gangotri while the maximum in Himachal Pradesh was 9.92 per cent in town Manali which was much less than that in the former. Moreover, none of the towns in Himachal Pradesh experienced a growth rate in excess of 10 per cent. Around 52 per cent of the towns in Uttarakhand experienced a growth rate in excess of 2 per cent while the same figure for Himachal Pradesh stands at 57 per cent.

Compounded Annual Rate of Growth of Towns in Uttarakhand

| Town | 2001 Census | 1991 Census | CARG (Per cent) |
|-----------------------------|-------------|-------------|-----------------|
| Dehradun (M.corp) | 426674 | 270159 | 4.68 |
| Haridwar (MB) | 175340 | 147305 | 1.76 |
| Haldwani-cum-Kathgodam (MB) | 129015 | 104195 | 2.16 |
| Roorkee (MB) | 97516 | 80262 | 1.97 |
| Kashipur (MB) | 92967 | 69870 | 2.9 |
| Rudrapur (MB) | 88676 | 61280 | 3.76 |
| Rishikesh (MB) | 59540 | 44487 | 2.96 |
| Dehradun (CB) | 53675 | 43031 | 2.23 |
| Ramnagar (MB) | 46205 | 37281 | 2.17 |
| Pithoragarh (MB) | 44964 | 27708 | 4.96 |
| Manglaur (MB) | 42584 | 34161 | 2.23 |
| Jaspur (MB) | 38937 | 30831 | 2.36 |
| Nainital (MB) | 38630 | 29837 | 2.62 |
| Kichha (MB) | 30503 | 21131 | 3.74 |
| Almora (MB) | 30154 | 26001 | 1.49 |
| Mussoorie (MB) | 26075 | 26722 | -0.24 |
| Tehri Garhwal (MB) | 25423 | 20226 | 2.31 |
| Kotdwara (MB) | 24947 | 21378 | 1.56 |
| Raipur (CT) | 24921 | 18532 | 3.01 |
| Sitarganj (NP) | 22027 | 16704 | 2.8 |
| Bazpur (MB) | 21792 | 16857 | 2.6 |
| Chamoli Gopeshwar (MB) | 19833 | 15378 | 2.58 |
| Roorkee (CB) | 17762 | 10877 | 5.03 |
| Landhaura (NP) | 16036 | 12195 | 2.78 |
| Khatima (MB) | 14335 | 11245 | 2.46 |
| Gadarpur (MB) | 13645 | 9487 | 3.7 |
| Jhabrera (NP) | 9384 | 7633 | 2.09 |
| Mahua Kheraganj (NP) | 8858 | 6614 | 2.96 |
| Dineshpur (NP) | 8856 | 6099 | 3.8 |
| Banbasa (CT) | 8179 | 6572 | 2.21 |
| Muni Ki Reti (NP) | 7880 | 4519 | 5.72 |
| Bageshwar (MB) | 7803 | 5772 | 3.06 |
| Kela Khera (NP) | 7782 | 2731 | 11.04 |
| Sultanpur (NP) | 7714 | 5866 | 2.78 |
| Gochar (NP) | 7303 | 4422 | 5.14 |
| Karnaprayag (NP) | 6977 | 5169 | 3.04 |
| Lalkuan (NP) | 6524 | 5310 | 2.08 |
| Dharachula (NP) | 6324 | 4475 | 3.52 |
| Kaladhungi (NP) | 6128 | 4663 | 2.77 |
| Barkot (NP) | 6095 | 3214 | 6.61 |
| Bhimal (NP) | 5874 | 4225 | 3.35 |
| Lohaghat (NP) | 5829 | 3891 | 4.12 |
| Bhowali (MB) | 5512 | 4364 | 2.36 |
| Didihat (NP) | 4806 | 3514 | 3.18 |

(Contd...)

(...contd...)

| Town | 2001 Census | 1991 Census | CARG (Per cent) |
|--------------------|-------------|-------------|-----------------|
| Shaktigarh (NP) | 4776 | 3845 | 2.19 |
| Champawat (NP) | 3959 | 2525 | 4.6 |
| Dogadda (MB) | 2998 | 2444 | 2.06 |
| Rudraprayag (NP) | 2250 | 1542 | 3.85 |
| Nandprayag (NP) | 1704 | 1262 | 3.05 |
| Badrinathpuri (NP) | 1682 | 978 | 5.57 |
| Gangotri (NP) | 605 | 128 | 16.8 |
| Kedarnath (NP) | 482 | 301 | 4.82 |

Note: MB: Municipal Board, M.Corp.: Municipal Corporation, CT: Census Town, CB: Cantonment Board, OG: Outgrowth, NP: Nagar Palika.
Source: Census of India 2001, Final Population Totals, Uttarakhand and Census of India, 1991, General population tables, Ser.25-UP.PT.II-A

Disparity is evident among the towns in both the states in terms of their rate of growth. However, disparity is more pronounced in case of Uttarakhand as compared to Himachal Pradesh. Growth rates of towns in Himachal Pradesh are depicted in following table:

| Compounded Annual Rate of Growth of Towns in Himachal Pradesh | | | |
|---------------------------------------------------------------|-------------|-------------|-----------------|
| Town | 2001 Census | 1991 Census | CARG (Per cent) |
| Manali (NP) | 6265 | 2433 | 9.92 |
| Rohru (NP) | 6607 | 3366 | 6.98 |
| Shimla (M Corp) | 142555 | 82054 | 5.68 |
| Solan (M Cl) | 34206 | 21751 | 4.63 |
| Sabathu (CB) | 5719 | 3700 | 4.45 |
| Ghumarwin (NP) | 5721 | 3708 | 4.43 |
| Jutogh (CB) | 2420 | 1636 | 3.99 |
| Parwanoo (M Cl) | 8609 | 5856 | 3.93 |
| Arki (NP) | 2877 | 1976 | 3.83 |
| Paonta Sahib (M Cl) | 19090 | 13207 | 3.75 |
| Bhuntar (NP) | 4260 | 2972 | 3.67 |
| Chauri Khas (NP) | 3016 | 2107 | 3.65 |
| Rajgarh (NP) | 2527 | 1780 | 3.57 |
| Chaupal (NP) | 1507 | 1074 | 3.45 |
| Hamirpur (M Cl) | 17252 | 12544 | 3.24 |
| Theog (M Cl) | 3754 | 2757 | 3.13 |
| Mehatpur Basdehra (NP) | 8681 | 6417 | 3.07 |
| Naina Devi (M Cl) | 1161 | 868 | 2.95 |
| Una (M Cl) | 15900 | 12001 | 2.85 |
| Rawalsar (NP) | 1369 | 1045 | 2.74 |
| Nadaun(NP) | 4405 | 3379 | 2.69 |
| Rampur (M Cl) | 5653 | 4342 | 2.67 |
| Talai (NP) | 2011 | 1550 | 2.64 |
| Tira Sujanpur (NP) | 7077 | 5477 | 2.60 |
| Dera Gopipur (NP) | 4336 | 3378 | 2.53 |
| Kotkhai (NP) | 1149 | 896 | 2.52 |
| Dagshai (CB) | 2750 | 2163 | 2.43 |
| Nalagarh (M Cl) | 9443 | 7448 | 2.40 |
| Kullu (M Cl) | 18306 | 14569 | 2.31 |
| Nagrota Bagwan (NP) | 5657 | 4503 | 2.31 |
| Bilaspur (M Cl) | 13058 | 10609 | 2.10 |
| Daulatpur (NP) | 3354 | 2748 | 2.01 |
| Jawalamukhi (NP) | 4931 | 4047 | 2.00 |

Source: Census of India 2001, Final Population Totals, Himachal Pradesh and Census of India 1991, Primary Census Abstract, Himachal Pradesh.

The above analysis indicates that the urbanisation that the towns of Uttarakhand experienced in terms of their population growth was higher than that which took place in Himachal

Pradesh. However, the pattern of growth in Uttarakhand was characterised by greater disparity.

APPENDIX A-15.3

Note on JNURRM

JNURRM at a Glance: Report As on Feb. 2008: Table I

| JNNURM | |
|------------------------------------------------------------------------------------------|------------------|
| Jawaharlal Nehru Urban Renewal Mission Cities | 63 |
| Total Central share for the Mission period seven years | INR 50,000 crore |
| Budget provision for 2006-07 (Sub-mission for urban infrastructure and governance) | INR 2500 crore |
| Budget provision for 2007-08 (Sub-mission for urban infrastructure and governance) | INR 2805 crore |
| City development plan | |
| City development plans submitted | 63 |
| City development plans not submitted | 0 |
| City development plans appraised | 63 |
| City development plans under appraisal | 0 |
| Urban reforms | |
| Reforms agenda negotiated and signed | 62 |
| Projects | |
| Detailed project reports submitted | 693 |
| States for which detailed project reports have been submitted | 29 |
| Cities for which detailed project reports have been submitted | 57 |
| Detailed project reports appraised | 321 |
| Projects sanctioned/recommended by CSMC/EFC | 289 |
| a) Projects recommended by sanctioning authority for release of ACA | 280 |
| b. Projects recommended by SA requiring further approval of UDM/FM before release of ACA | 9 |
| Release of Funds | |
| Value of project sanctioned* | 2436225.8* |
| Additional central assistance committed* | 1174437.39* |
| Central assistance approved for release* | 283488.66* |
| Central assistance released by MoF* | 265686.92* |

Note: * All the cost parameters are Rs. in lakhs.

Guidelines of JNNURM : There would be two set of reforms. Core reforms at ULB/Parastatal level aims at process re-engineering through deployment of technology to enable more efficient, reliable, timely services in a transparent manner. The other set of reforms are framework related at State level.

Urban Local Body/parastatal Level reforms

- Adoption of modern, accrual based double entry system of accounting in urban local bodies/parastatal.
- Introduction of system of e-governance using IT applications like GIS and MIS for various services provided by ULBs/parastatal.
- Reform of property tax with GIS, so that it becomes a major source of revenue for ULBs and arrangements for its effective implementation so that collection efficiency reaches at least 85 per cent within next seven years.
- Levy of reasonable user charges by ULBs/parastatals with the objective that full cost of operation and maintenance or recurring cost is collected within the next seven years.

However, cities/towns in north-east and other special category status states may recover at least 50 per cent of operation and maintenance charges initially. These cities/towns should graduate to full O&M cost recovery in a phased manner.

- Internal earmarking within local body, budgets for basic services to the urban poor.
- Provision of basic services to urban poor including security of tenure at affordable prices, improved housing, water supply, sanitation and ensuring delivery of other related existing universal services of the government for education, health and social security.

State Level Reforms

- Implementation of decentralisation measures as envisaged in 74th Constitution Amendment Act. States should ensure meaningful association/engagement of ULBs in planning function of parastatals as well as delivery of services to the citizens.

- Repeal of Urban Land Ceiling and Regulations Act.
 - Reform of Rent Control Laws balancing the interests of landlords and tenants.
 - Rationalisation of Stamp Duty to bring it down to no more than 5 per cent within the next seven years.
 - Enactment of Public Disclosure Law to ensure preparation of medium-term fiscal plan of ULBs/parastatals and release of quarterly performance information to all stakeholders.
 - Enactment of Community Participation Law to institutionalise citizen participation and introducing the concept of Area Sabha in urban areas.
 - Assigning or associating elected ULBs with “city planning function”. Over a period of seven years, transferring all special agencies that deliver civic services in urban areas to ULBS and creating accountability platforms for all urban civic service providers in transition.
- Note:* *In respect of schemes relating to water supply and sanitation, the under mentioned State level mandatory reforms may be taken as optional reforms:-
- Repeal of Urban Land Ceiling Act.
 - Reform of rent Control Act.
 - Simplification of legal and procedural frameworks for conversion of agricultural land for non-agricultural purposes.
 - Introduction of Property Title Certification System in ULBs.
 - Earmarking at least 20-25 per cent of developed land in all housing projects(both public and private agencies) for EWS/LIG category with a system of cross subsidisation.
 - Introduction of computerised process of registration of land and property.
 - Revision of by-laws to make rain water harvesting mandatory in all buildings and adoption of water conservation measures.
 - By-laws for reuse of recycled water.
 - Administrative reforms i.e., reduction in establishment by bringing out voluntary retirement schemes, non-filling up of posts falling vacant due to retirement etc., and achieving specified milestones in this regard.
 - Encouraging public-private partnership.

*Note:***Optional Reforms (Common to State and ULBs/Parastatals)**

- Revision of by-laws to streamline the approval process of construction of buildings, development of sites etc.
1. Any two optional reforms to be implemented together by states and ULBs/parastatals in each year.
 2. All the reforms (mandatory as well as optional) shall be implemented by state/ULB/parastatal within the mission period.

APPENDIX A-15.4

TABLE A-15.4a

Towns with Deficit Rate of Water Supply

| Sl. No. | District | Name of Town | Population of Town | | | Rate of Water Supply Reorganisation including 15 per cent Losses (135+15 Per cent) | Water Requirement for Reorganisation w/s including 15 per cent Losses in (mld) | Water Available (in mld) | Deficit in Water Supply (Column 9-8) |
|---------------------|-------------------|--------------------------|--------------------|----------------|------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------|--------------------------------------|
| | | | 2001 Census | Base Year 2005 | Design Year 2035 | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 |
| GARHWAL ZONE | | | | | | | | | |
| 01 | Uttarkashi | Uttarkashi | 16218 | 17191 | 26922 | 155.25 | 4.18 | 2.30 | 1.88 |
| 02 | | Barkot | 6095 | 6461 | 10118 | 155.25 | 1.57 | 0.86 | 0.71 |
| 03 | Chamoli | Joshimath | 13204 | 13996 | 21919 | 155.25 | 3.40 | 0.81 | 2.59 |
| 04 | | Chamoli-Gopeshwar | 19833 | 21023 | 32923 | 155.25 | 5.11 | 0.79 | 4.32 |
| 05 | | Karanprayag | 6977 | 7396 | 11582 | 155.25 | 1.80 | 0.93 | 0.87 |
| 06 | | Gauchar | 7303 | 7741 | 12123 | 155.25 | 1.88 | 0.64 | 1.24 |
| 07 | Tehri Garhwal | New Tehri | 25423 | 26948 | 42202 | 155.25 | 6.55 | 1.50 | 5.05 |
| 08 | | Devprayag | 2175 | 2306 | 3611 | 155.25 | 0.56 | 0.20 | 0.36 |
| 09 | | Kirti Nagar | 1040 | 1102 | 1726 | 155.25 | 0.27 | 0.10 | 0.17 |
| 10 | | Narendra Nagar | 5304 | 5622 | 8805 | 155.25 | 1.37 | 0.18 | 1.19 |
| 11 | Dehradun | Mussoorie | 26075 | 27640 | 43285 | 155.25 | 6.72 | 5.50 | 1.22 |
| 12 | | Rishikesh | 59540 | 63112 | 98836 | 155.25 | 15.34 | 12.38 | 2.96 |
| 13 | | Dehradun | 426674 | 452274 | 708279 | 155.25 | 109.96 | 102.17 | 7.79 |
| 14 | | Vikas Nagar | 12486 | 13235 | 20727 | 155.25 | 3.22 | 2.28 | 0.94 |
| 15 | | Herbertpur | 9243 | 9798 | 15343 | 155.25 | 2.38 | 1.39 | 0.99 |
| 16 | Pauri Garhwal | Kotdwar | 24947 | 26444 | 41412 | 155.25 | 6.43 | 6.00 | 0.43 |
| 17 | | Pauri | 24743 | 26228 | 41073 | 155.25 | 6.38 | 3.50 | 2.88 |
| 18 | | Srinagar | 19658 | 20837 | 32632 | 155.25 | 5.07 | 1.00 | 4.07 |
| 19 | Haridwar | Roorkee | 97516 | 103367 | 161877 | 155.25 | 25.13 | 17.00 | 8.13 |
| | | | | | | 0.00 | | | |
| | | Total Garhwal | 804454 | 852721 | 1335394 | 2949.75 | 207.32 | 159.53 | 47.79 |
| KUMAON ZONE | | | | | | | | | |
| 01 | Pithoragarh | Pithoragarh | 44964 | 47662 | 74640 | 155.25 | 11.59 | 3.40 | 8.19 |
| 02 | Champawat | Tanakpur | 15811 | 16760 | 26246 | 155.25 | 4.07 | 0.60 | 3.47 |
| 03 | | Champawat | 3959 | 4197 | 6572 | 155.25 | 1.02 | 0.20 | 0.82 |
| 04 | | Lohaghat | 5829 | 6179 | 9676 | 155.25 | 1.50 | 0.20 | 1.30 |
| 05 | Bageshwar | Bageshwar | 7803 | 8271 | 12953 | 155.25 | 2.01 | 0.30 | 1.71 |
| 06 | Almora | Almora | 30154 | 31963 | 50056 | 155.25 | 7.77 | 7.50 | 0.27 |
| 07 | Nainital | Haldwani cum Kathgodam | 129015 | 136756 | 214165 | 155.25 | 33.25 | 33.00 | 0.25 |
| 08 | | Ramnagar | 46205 | 48977 | 76700 | 155.25 | 11.91 | 7.25 | 4.66 |
| 09 | Udham Singh Nagar | Kashipur | 92967 | 98545 | 154325 | 155.25 | 23.96 | 9.40 | 14.56 |
| 10 | | Rudrapur | 88676 | 93997 | 147202 | 155.25 | 22.85 | 3.26 | 19.59 |
| 11 | | Jaspur | 38937 | 41273 | 64635 | 155.25 | 10.03 | 2.33 | 7.70 |
| 12 | | Kichha | 30503 | 32333 | 50635 | 155.25 | 7.86 | 0.90 | 6.96 |
| | | Total Kumaon | 534823 | 566912 | 887806 | 1863.00 | 137.83 | 68.34 | 69.49 |
| | | Total Uttarakhand | 1339277 | 1419634 | 2223200 | 4812.75 | 345.15 | 227.87 | 117.28 |

Source: Uttarakhand Peyjal Nigam.

TABLE A-15.4b
Towns with Sufficient Rate of Water Supply

| Sl. | District | Name of Town | Population of Town | | | Rate of Water Supply Reorganisation including 15 per cent Losses (135+15 Per cent) | Water Requirement for Reorganisation w/s including 15 per cent Losses in (mld) | Water Available (in mld) | Excess Available Water |
|---------------------|-------------|--------------------------|--------------------|----------------|------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------|------------------------|
| | | | 2001 Census | Base Year 2005 | Design Year 2035 | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 |
| GARHWAL ZONE | | | | | | | | | |
| 01 | Uttarkashi | Gangotri* | 605 | 641 | 1004 | 155.25 | 0.16 | 1.00 | 0.84 |
| 02 | Chamoli | Badrinath | 1682 | 1783 | 2792 | 155.25 | 0.43 | 1.35 | 0.92 |
| 03 | Rudraprayag | Rudraprayag | 2250 | 2385 | 3735 | 155.25 | 0.58 | 0.80 | 0.22 |
| 04 | | Kedarnath | 482 | 511 | 800 | 155.25 | 0.12 | 0.32 | 0.20 |
| 05 | | Muni-Ki-Reti | 7880 | 8353 | 13081 | 155.25 | 2.03 | 6.70 | 4.67 |
| 06 | Haridwar | Haridwar | 175340 | 185860 | 291064 | 155.25 | 45.19 | 53.01 | 7.82 |
| | | Total Garhwal | 188239 | 199533 | 312477 | 931.50 | 48.51 | 63.18 | -14.67 |
| KUMAON ZONE | | | | | | | | | |
| 07 | Nainital | Nainital | 38630 | 40948 | 64126 | 155.25 | 9.96 | 13.00 | 3.04 |
| | | Total Kumaon | 38630 | 40948 | 64126 | 155.25 | 9.96 | 13.00 | 3.04 |
| | | Total Uttarakhand | 226869 | 240481 | 376603 | 1086.75 | 58.47 | 76.18 | -17.71 |

Source: Uttarakhand Peyjal Nigam.

APPENDIX A-15.5

TABLE A-15.5a
Towns having Partial Sewerage System

| Sl. No. | District | Name of Town | Population of Town | | | Rate of Water Supply | Quantity of Sewage Developed |
|---------------------|-------------------|--------------------------|--------------------|----------------|------------------|----------------------|------------------------------|
| | | | 2001 Census | Base Year 2005 | Design Year 2035 | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 |
| GARHWAL ZONE | | | | | | | |
| 01 | Uttarkashi | Uttarkashi* | 16218 | 17191 | 26922 | 135 | 2.73 |
| 02 | Chamoli | Joshimath* | 13204 | 13996 | 21919 | 135 | 2.22 |
| 03 | | Chamoli-Gopeshwar* | 19833 | 21023 | 32923 | 135 | 3.33 |
| 04 | | Badrinath* | 1682 | 1783 | 2792 | 135 | 0.28 |
| 05 | Tehri Garhwal | New Tehri | 25423 | 26948 | 42202 | 135 | 4.27 |
| 06 | | Muni-Ki-Reti | 7880 | 8353 | 13081 | 135 | 1.32 |
| 07 | Dehradun | Mussoorie | 26075 | 27640 | 43285 | 135 | 4.38 |
| 08 | | Rishikesh* | 59540 | 63112 | 98836 | 135 | 10.01 |
| 09 | | Dehradun | 426674 | 452274 | 708279 | 135 | 71.71 |
| 10 | | Vikas Nagar | 12486 | 13235 | 20727 | 135 | 2.10 |
| 11 | Pauri Garhwal | Kotdwar | 24947 | 26444 | 41412 | 135 | 4.19 |
| 12 | Haridwar | Haridwar* | 175340 | 185860 | 291064 | 135 | 29.47 |
| 13 | | Roorkee | 97516 | 103367 | 161877 | 135 | 16.39 |
| | | Total Garhwal | 906818 | 961227 | 1505318 | 1755 | 152.41 |
| KUMAON ZONE | | | | | | | |
| 01 | Pithoragarh | Pithoragarh | 44964 | 47662 | 74640 | 135 | 7.56 |
| 02 | Almora | Almora | 30154 | 31963 | 50056 | 135 | 5.07 |
| 03 | Nainital | Haldwani cum Kathgodam | 129015 | 136756 | 214165 | 135 | 21.68 |
| 04 | | Nainital | 38630 | 40948 | 64126 | 135 | 6.49 |
| 05 | | Ramnagar | 46205 | 48977 | 76700 | 135 | 7.77 |
| 06 | Udham Singh Nagar | Kashipur | 92967 | 98545 | 154325 | 135 | 15.63 |
| | | Total Kumaon | 381935 | 404851 | 634012 | 810 | 64.19 |
| 19 | | Total Uttarakhand | 1288753 | 1366078 | 2139330 | 2565 | 216.61 |

Source: Uttarakhand Peyjal Nigam.

TABLE A-15.5b
Towns having no Sewerage System:

| Sl. No. | District | Name of Town | Population of Town | | | Rate of Water Supply | Quantity of Sewage Developed |
|---------------------|-------------------|--------------------------|--------------------|----------------|------------------|----------------------|------------------------------|
| | | | 2001 Census | Base Year 2005 | Design Year 2035 | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 |
| GARHWAL ZONE | | | | | | | |
| 01 | Uttarkashi | Barkot | 6095 | 6461 | 10118 | 135 | 1.02 |
| 02 | | Gangotri | 605 | 641 | 1004 | 135 | 0.10 |
| 03 | Chamoli | Karanprayag* | 6977 | 7396 | 11582 | 135 | 1.17 |
| 04 | | Gauchar | 7303 | 7741 | 12123 | 135 | 1.23 |
| 05 | Rudraprayag | Rudraprayag* | 2250 | 2385 | 3735 | 135 | 0.38 |
| 06 | | Kedarnath | 482 | 511 | 800 | 135 | 0.08 |
| 07 | Tehri Garhwal | Devprayag* | 2175 | 2306 | 3611 | 135 | 0.37 |
| 08 | | Kirti Nagar | 1040 | 1102 | 1726 | 135 | 0.17 |
| 09 | | Narendra Nagar | 5304 | 5622 | 8805 | 135 | 0.89 |
| 10 | Dehradun | Herbertpur | 9243 | 9798 | 15343 | 135 | 1.55 |
| 11 | Pauri Garhwal | Pauri | 24743 | 26228 | 41073 | 135 | 4.16 |
| 12 | | Srinagar* | 19658 | 20837 | 32632 | 135 | 3.30 |
| | | Total Garhwal | 85875 | 91028 | 142553 | 1620 | 14.43 |
| KUMAON ZONE | | | | | | | |
| 01 | Champawat | Tanakpur | 15811 | 16760 | 26246 | 135 | 2.66 |
| 02 | | Champawat | 3959 | 4197 | 6572 | 135 | 0.67 |
| 03 | | Lohaghat | 5829 | 6179 | 9676 | 135 | 0.98 |
| 04 | Bageshwar | Bageshwar | 7803 | 8271 | 12953 | 135 | 1.31 |
| 05 | Udham Singh Nagar | Rudrapur | 88676 | 93997 | 147202 | 135 | 14.90 |
| 06 | | Jaspur | 38937 | 41273 | 64635 | 135 | 6.54 |
| 07 | | Kichha | 30503 | 32333 | 50635 | 135 | 5.13 |
| | | Total Kumaon | 191518 | 203009 | 317920 | 945 | 32.19 |
| | | Total Uttarakhand | 277393 | 294037 | 460472 | 2565 | 46.62 |

* Note: The ten towns' names located along the Ganges marked by asterisk * are to be covered by GAP II.

Source: Uttarakhand Peyjal Nigam.

APPENDIX A-15.6

ADB, GAP-II, NRCD Project Implementation in Uttarakhand State

The 1st year of project cycle will be for the preparation of all the components, projects and its technical and financial appraisal. The next three years will be for the construction of different sector as integrated and simultaneous activities. The

last one-year will be entrusted to trial running and maintenance of work before handing it over to urban local bodies for maintenance and revenue of collection.

Year-wise Financial Phasing (INR in Crores)

| Sector | Total Cost | 1st Year (15 per cent) | 2nd Year (20 per cent) | 3rd Year (40 per cent) | 4th Year (20 per cent) | 5th Year (5 per cent) |
|----------|------------|---------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| Water | 454.75 | 68.21 | 90.95 | 181.90 | 90.95 | 22.74 |
| Sewer | 603.28 | 90.49 | 120.66 | 241.31 | 120.66 | 30.16 |
| Drainage | 520.80 | 78.12 | 104.16 | 208.32 | 104.16 | 26.04 |
| Total | 1578.83 | 236.82 | 315.77 | 631.53 | 315.77 | 78.94 |

Source: Peyjal Nigam, Uttarakhand.

The year wise financial phasing has been proposed as under:

Operation and Maintenance Arrangement

After execution, completion and successful trial and testing of the works by Uttarakhand Peyjal Nigam it shall be handed over to urban local body/Uttarakhand Jal Sansthan for maintenance and collection of revenue. The agency responsible for maintenance shall work out economically viable tariff.

Institutional Arrangement

Uttarakhand Peyjal Nigam will be the line department for planning and execution of all the works proposed under ADB funding. Urban local bodies/Uttarakhand Jal Sansthan will

maintain all the works which are executed under this programme.

Project Period

The completion date of the work is taken as year 2012, which is the millennium goal year for water supply and sanitation as fixed by the Government of India. The base year for the project is taken as year 2005-06 and it is assumed that works shall be initiated in the year 2006-07. The completion and project functional year is 2012 for all the projects which have a design period of 30 years.

Source: Uttarakhand Peyjal Nigam.

APPENDIX A-15.7

Breaking Out of the Urban Vicious Circle: The Case of Indore

How do cities in India break out of the vicious circle of inadequate resources, low investments and poor services? We have a success story in the making, in the case of Indore city that has notched up some significant achievements in last six years.

Indore (population: 1.6 million) is the largest city in Madhya Pradesh. In year 2000, with the assistance of an external donor agency, the city corporation launched a modernisation plan to increase revenues and improve urban services. The revenue mobilisation measures enabled the Corporation to more than double revenue generated from its own sources over four years (from INR 34 crore to INR 75 crore).

Case Study 1: Increasing Revenues

The two main sources of the city's revenues are property taxes and water tariffs. Smaller amounts are also realised from business licenses, shop rents and advertisement taxes. In the case of property tax, the city Corporation had shifted to a simple mass assessment method and self-assessment of properties by taxpayers in 1997. With the external help, referred to, the Corporation engaged a private firm in 2001-02 to conduct a physical survey of properties, in order to include unregistered properties into the database. With this measure, the number of registered properties nearly doubled in 2003. Revenues increased due to simplified assessments, better enforcement and more efficient collections.

In the case of water charges, it was estimated that some 40 per cent of the connections were illegal. These were identified during the physical survey of properties and by comparing the water charges realised and the property databases. Arrears were collected and current collections were enforced.

In order to strengthen the collection efforts, the Corporation brought all billing and collection together in one department, removing them from the functional departments. A vigilance team was constituted and three smaller departments to handle survey, encroachment and markets were created.

The crucial success components were:

- Committed leadership (led by the first directly elected Mayor);
- Extensive citizen participation through communication and outreach programmes;
- Training of staff and capacity building in the local administration, and
- Introduction of improved (double-entry) accounting.

Case Study 2: Urban Health Programme

Almost concurrent with the improvements on the revenue side, the city embarked on an Urban Health Programme in 2002.

This targeted the slum population of the city numbering approximately one-third of the total. The Programme had two components. The first aimed, with active participation of NGOs and CBOs, to generate demand for health services by linking slum communities with public and private maternal and child health (MCH) facilities. Approximately 50 MCH outreach camps were organised each month, resulting in significant improvement in immunisation coverage. In selected slums, toilet facilities were renovated.

In the second component, the municipal ward accounting for the largest slum population was targeted through a public sector driven approach of immunisation outreach. Seven immunisation camps are held each month. The ward committee is collaborating with technical experts from recognised national institutes in the field of pediatrics and maternal care to improve quality of services and community counseling.

This programme was also supported by an external donor (USAID).

Urban Transport

Success builds on itself. The most recent achievement reported from Indore proves this maxim. Here it is the critical transport sector that is receiving a facelift.

Indore has become the first city in the country to acquire and operate a fleet of 53 modern low-floor buses equipped with GPS and computerised ticket-vending machines. Electronic sign boards for bus stops are also being installed.

The new system is run on public-private partnership (JV) basis. It has been widely welcomed by the users because the buses run on time, are comfortable to ride as well as for entry and exit, the specially trained staff are well-behaved and the tariff is unchanged from that of the old inefficient services. The buses are colour-coded according to routes. Staff were trained by a management agency. Facilities for washing and cleaning of buses overnight have been provided.

The fleet is being doubled within the next few months. The city also plans with financial support from JNNURM and technical help from IIT, Delhi to construct designated bus lanes for a complete Bus Rapid Transit System.

As with the improvements in the area of city revenues, here also, committed leadership was the critical element in this innovation. The sequence of improvements is an illustration of how, through planned improvements in key areas of urban administration and governance, a city can break out of the vicious circle that has long characterised the urban scene.

(Source: *India Infrastructure Report 2006*, 3 i Network, and report in *Sunday Indian Express*, Mumbai, 17 September 2006)