Conclusion and Suggestions
CONCLUSION AND SUGGESTIONS

The present study of ‘Ecology and Environmental Management in Dehradun District’ starts with the general description of concepts and methodologies used in the studies of ecology and environment.

The geographical profile of the study area has been well documented and described in the form of physical, economic and social settings.

The study of the natural environment focuses with the theme of forest and mining. As far as the distribution of forest is concerned, Chakrata block has registered the highest composite score, whereas the lowest composite score has been recorded in Kalsi and Vikas Nagar blocks because the topographic and climatic conditions in Chakrata block are favourable for the growth of forest while the Kalsi and Vikas Nagar blocks are mainly agricultural blocks so more and more forested area has been cleared for the cultivation of crops. The other blocks of the study area show medium level of distribution of forest. On the other hand mining is another aspect of natural environment. The study region is well known for their economic potentiality due to abundance of economic minerals like limestone, limestone marble, phosphorite and gypsum. All these minerals are located in the Krol belt viz infra krol, krol and Tal formations. The study reveals that haphazard and unscientific mining operations destabilize slopes, lead to excessive soil erosion and landslides, formation of badlands, generate dust and noise. Now a days mining is banned in the district.

It has been concluded through the study of genetic environment that high level of agricultural development is found in the upper central part of the study area. This portion attained this status due to a variety of reasons. The farmers living in this portion enjoy better irrigation facilities; cropping intensity is high with plenty of agricultural workers coupled with more production of food grains. The medium level of agricultural development is found in the lower central part of the study area. In 1981 and 1999 Raipur block was in the
medium grade but in 2001 it came in low grade because in 2000 Dehradun
district become the capital of Uttarakhand state so more and more non-
agricultural development has taken place. Chakrata block shows low level of
agricultural development in all the three decades because of its topographic and
climatic conditions. Chakrata and Kalsi blocks record high level of livestock
development, because these blocks are less populated and have more rural
pockets. Vikas Nagar and Sahaspur blocks, located in the center of the district,
show medium level of livestock development in all the three decades. In the
previous decades Doiwala block was under the medium grade but in the last
decade it came under the low grade whereas Raipur block shows low level of
livestock development in all the three decades.

Population, urbanization and tourism are the main aspects of socio-
economic environment. The population growth shows two discernible trends, a
decreasing population trend till 1921 and a continuous increase since 1921. As
a result of increased health care the mortality rate has gone down and the
family planning measures have not been able to control the growth of
population. During the last decade, 1991-2001, there is an increase in
population by 25.00 per cent. As far as composite population densities are
concerned, the upper part of the district shows low composite population
densities, while the central part represents the medium level and the lower part
of the district shows high level of composite population densities in all the
three decades. Only Doiwala block which is located in the southern most part
of the region, was under the medium grade in 1981 and 1991 but in 2001 it
came in the high grade. Another aspect of socio-economic environment is
urbanization. The district is divided into six development blocks and five
blocks out of six have urban population. Kalsi block is totally a rural area so
this block has not been incorporated in the study of urbanization. Raipur block
is the most congested, urbanized and developed because major urban centers of
the district are located in this block, so this block shows high level of
urbanization in all the three decades. Chakrata block is the least urbanized and
developed because only one urban center i.e. Chakrata cantt is located in this block. This block lies under the low grade in all the three decades. Another block Vikas Nagar also falls in the low grade in 2001 but in previous decades it was under the medium grade. In fact, a reflection of higher levels of industrial and economic development is observed in the southern part of the district. Another aspect of the study is the tourism. The movement of people even for short duration as tourist from one place to another is responsible for impacting economic, socio-cultural and ecological set up of any locality. Excessive development of tourism in the region has begun to destroy that attributes which attract the visitors. Main tourist spots of the study area are Mussorrie, Kalsi, Lakhamandal, Sahastradhara, Dak Pathar and Rishikesh. All the tourist places attract people from various parts of the country and abroad.

The last chapter of this present thesis is based on primary survey. The primary data obtained through a detailed survey confirms the findings of the secondary data. In the blocks where forests are in abundance, wood is used as fuel for cooking. Only in Kyarkuli Bhatta village about 60.00 per cent respondents were using gas as fuel. Villages which are located on the main road and close to urban centers enjoy more facilities and amenities in comparison with those villages located in the remote areas. The study confirms that the villages situated in the hilly tracks have marginal and small size of land holdings while the villages located in the plain topography have bigger size of land holdings. For example zone I villages and Mangrauli village of zone III are located in the hilly track, while zone II villages and Dhaira village of zone III are located in the plain topography. In almost all the villages, the main source of water for agriculture is rain fed. Most of the respondents have their own agricultural implements. Mostly, farming is done by bullocks because of small size of land holdings; those respondents who have big land holdings, farming is practiced by tractors.

The socio-economic environment is represented by the variables of family size, age structure and level of education. The average size of family is
5.78, 4.36, 5.66, 6.11, 8.4 and 7.18 in Nagal Hatnala, Kyarkuli Bhatta, Harbhajwala, Lakshmipur, Mangrauli and Dhaira villages respectively. Although workforce constitutes more than two-third of the population, but most of them are theoretical workforce not actual workforce due to mass level unemployment in all the villages of the study area. Education is the most important parameter to judge the socio-economic and cultural environment in any area. Again the educational level is highest in Kyarkuli Bhatta village and lowest in Mangrauli village. Among the educated, majority are the primary literates because primary school facility is available in all the villages. The study finds a very interesting result in the house hold environment. About 75.00 per cent houses in zone I and zone II are cemented while in zone III this figure is 45.00 per cent. More vegetarians are found in Nagal Hatnala, Mangrauli and Dhaira villages while non-vegetarians are common in Kyarkuli Bhatta, Harbhajwala and Lakshmipur village. Lakshmipur village shows higher percentage of non-vegetarians because this is a Muslim dominated village. Most of the villages do not face the problem of water logging because of their location in high altitudes. Only zone II villages are located in low altitudes, some of them face the problem of water logging, mainly the rain water, for a short period of time. The frequently reported diseases in almost all the villages are cough and cold, gastric disorder, thyroid, pneumonia, stones in gall bladder and kidneys. The major environmental problems observed in the study area are the land slides, earthquakes and the cloud burst.

The economic aspect of the study has been demonstrated by the mode employment and income level. All the villages are facing the problem of unemployment. The percentage of employment ranges between 21 and 32 in all the villages. They are mainly employed in primary sector. Only in Kyarkuli Bhatta village some of them are employed in secondary and tertiary sector. The source of income in Lakshmipur, Mangrauli and Dhaira villages is from the agricultural sector while in Nagal Hatnala, Kyarkuli Bhatta and Harbhajwala, it is mainly from non-agricultural sector.
The study reveals that all the sampled villages enjoy the school facility mainly up to the primary level and few villages have medical facility too. Drinking water facility is available in all the villages. The villages are electrified and most of them enjoy bus service facility.

The present study reveals that most of the forest cover is found concentrated in the northern part of the study area. Agricultural development is more pronounced in the upper central part of the region. The development of livestock has been recorded in the northern part of the district due to favourable ecological conditions. The highest concentration of population has been observed in the southern part of the area having a highly urbanized and developed Raipur block. The influx of tourist is recorded more in Mussorrie and Rishikesh.

**Some of the suggestions are:**

- Agriculture itself has been one of the main causes for the destruction of many previously forested areas. The demand for food, fodder and raw materials has reduced the forest cover to a certain extent. In order to sustain a healthy life, forest cover should be at least 33 per cent.

- Livestock is one of the major contributors to the degradation of the environment and to soil erosion. There is no doubt that there is an urgent need for a strong policy with appropriate guidelines and sustainable administrative machinery to control and regulate the animal population.

- The trend towards excessive urbanization can certainly be checked, regulated and slowed down by a systematic well planned policy of restricting the migration of rural population to towns; of course it is neither advisable nor practicable to impose legal restriction on the exodus of people from the villages to towns and cities. Therefore the problem should be tackled in a rational way.

- It is necessary that while planning the development works due considerations should be paid to safeguard the environment. Tourism,
economic development and environment have to go hand in hand and should be developed in a symbiotic relationship.

- In the opinion of the researcher, the ecological resource management and its judicious utilization together with the maintenance of the quality of the environment. In order to bring about its economically productive, socially equitable and environmentally sustainable use of the following four major approaches, namely the ecological, the economic, the technological and the ethnological are suggested. Therefore, the community based participatory approaches to ecological management is the practical option.