

Chapter 6
Summary, Conclusions and
Recommendations

The foregoing chapter discussed the Management of urban environmental problems and planning of Shimla Urban agglomeration and the present chapter gives the summary, conclusions and some recommendations for sustainable development.

6.1 SUMMARY

There were meagre efforts to study urban environmental problems of hill cities having fragile environment like Himalayas. In India, urban environmental problems were not the focus of the research prior to independence. However, after independence, there is a steady growth in the research studies on this issue. These studies highlight the impact of developmental activities and unplanned urbanisation on environment. Unplanned and undisciplined urban life has not only led to urban environmental problems but resulted to many socio-economic problems. The literature survey on urban environmental problems calls for a fresh look. Therefore, the urban environmental management is done for sustainable development. The city of Shimla was often referred as queen of hills but the magnitude of the problems in Shimla is so high that it is at the verge of collapse. The haphazard development and complete mismatch between population growth and infrastructure has grossly affected the ecosystem of Shimla.

The study area i.e. Shimla city is located between 31° 06' North latitude and 77°10' E longitude in central Himalayas. The city is situated on the major water divide of the Himalayas. The Shimla Ridge separates the water drainage to bay of Bengal and the Arabian sea. Shimla has temperate climatic conditions and the average temperature ranges from 23.2° Celsius to 6.4° Celsius and receives 16 mm rainfall annually. Shimla is built over hills and ridges. Population of the town was merely 3436 in 1876 which has reached to 1,44,560 in 2001 (census of India, 2001). Shimla is only class one city in the state which also explains the dominance of the city in terms of facilities, amenities and opportunities. Majority of population in the town are engaged in service and business sector. Population pressure in the town has caused

various social and environmental problems. There is high literacy rate of about 92 % in the city.

Urbanisation and development processes in the state can be traced from 1881, when first census was conducted in the country. At that time only seventeen settlements were classified as towns. These were mainly capital towns and administrative headquarters. Introduction of Indo- Tibet road played crucial role in the development of commercial sector in the town. The urban processes slow during the pre railway period but after the introduction of Shimla –Kalka railway line urbanisation processes geared up in the Shimla.

In the decade of 1901-1911 out of 18 towns in the state, 8 were declassified. Weak economic base and political instability were main causes behind this change. Census of India (1921) reveals that pattern of urbanisation remained more or less same in this decade and Shimla (40.34 %) recorded highest growth rate among all hill towns. During the decade, 1921-31 Shimla town recorded negative growth rate. No significant changes were registered in the decade 1931-41. In 1941-51 decade very high growth rate (78.60%) was recorded. The rural urban migration and rehabilitation of refugees were main reason behind this growth. The state experienced sudden growth in urban population from 0.86 lakh in 1941 to 1.54 lakh in 1951 (Kanwar,1990). Shimla recorded very high urban growth (151.52%).

In post independence period, the process of urbanisation was stronger than before due to infrastructure development in social and economic field. Development of road network was main reason that strengthened urbanisation processes during 1961-71 decade. In this decade, about 40% urban growth was recorded with total number of towns reached to 36. Shimla recorded highest percentage of urban population (80%) in the state. During 1971-81, 325971 persons resided in urban areas. Shimla Tehsil alone constituted 21.66% of the total population of the state. The state capital Shimla for the first time qualified to be the class I town in 1991 census. Shimla urban Tehsil recorded 244.58% growth rate highest in the state. Eleven more towns were added in this decade. In this decade Shimla town shared 24.6% of the total population of the state.

The urbanisation processes slightly slowed down during 1991-2001 decade and the number of towns declassified from 58 to 57. Shimla remained the largest and only class 1 town in the state. The urban population of the state is not growing in equitable manner and the inequalities have increased considerably in last five decades. The spatial pattern emerging from the growth of tourism, Trade and industrial activities need to be monitored for sustainable development.

There is serious defects in the solid waste management and environmental decline is visible everywhere. Wastes should be recycled, reused, collected and disposed in accordance with environmental sanitary engineering. Unplanned tourism sector in the city is biggest contributor of garbage. Choking of drainage system has become a common feature. All 14 major nullahs of Shimla have become dumping ground for garbage. Sewerage system for Shimla does not undergo any treatment, and discharged into the natural water drains thereby causing water pollution. Slum dwellers are very common in all wards of the town. The squatter settlements have encroached upon government land and they live in extremely unhygienic conditions. There is no provision of sorting degradable and non-degradable garbage separately. Damage of sewerage lines is very common and it remained unprepared for days, which pollute over all environment of the town. There is no waste management system in the urban areas and urban environmental decline is visible in almost all forms. Diseases like diarrhoea and malaria break out frequently due to poor sanitary conditions.

The steep growth in population is also becoming source of many other problems. Initially Shimla was developed for the population of 25000 people (Buck, 1904). Now it accommodates more than 1.5 lakh people. The numbers of residential houses are also on rise in the city. In 1981 there were 17500 houses which increased to 24850 in 2001. This has added to the list of problems in the city. Per capita availability of water is well below the required norms. The water supply system is under tremendous pressure and water losses due to poor maintenance has made situation more serious. There is great mismatch between demand and supply of water in Shimla. The total water supplied to the city is about 33 mld and the requirement is more than 40

mld. The inadequate quantity and poor quality of water is always an issue in Shimla. Media has repeatedly highlighted the poor quality of water and resultant implications. In the year 2007, about 300 people were hospitalised in Shimla due to indocline water. In July 2010 one person died and several were hospitalised (The Tribune 22nd July 2010). Traffic problem is a common feature of the city and Shimla is no exception. The Cart Road only option for traffic movement and it is functioning beyond its capacity. The mushrooming of Hotels and Dhabas in and around the city is major threat to the clean environment. The Increasing number of tourists are putting extra burden on the already stressed basic amenities. Extreme climatic conditions have become prime climatic concerns. Shimla broke its 170- year record of highest temperature on 23rd May 2010 by touching the 32.4°C mark (The Tribune, May 2010). This is surprising that winters of 2006 were snow less but in 2007 from January to March town received record snowfall. The weather conditioned continued to be erratic in 2008 and 2009 as well. The city of Shimla is also experiencing different kinds of pollution. The highest noise level is recorded in ISBT area followed by H.P Secretariat area. The town lies in seismic Zone-IV and is susceptible to earthquakes. Vertical buildings may trigger chain reaction in the wake of natural disaster, (Singh, 2007). People have constructed buildings on very steep slopes which will multiply intensity in case of disaster. Kachchi Ghati area is most havoc prone locality of Shimla. The Cemetery, Sanjauli and Jeevnu colony are other vulnerable area. About 90% of central Shimla has a gradient of above 60 degree slope while 85% of the buildings in cemetery area have been constructed over 70 degree slope. Most of the localities are narrow which may cause obstacle in the time of post disaster management.

Original village of Shimla was located on the ground lying above the road leading to Rippon hospital, below the catholic chapel and inhabitants were mainly charcoal burner (Buck, 1925). In 1819 Lt. Ross built a cottage at Shimla (Buck, 1904). Charles Pratt Kennedy, a political agent, built first pucca house called Kennedy house. At that time, there were about 20 European houses at Shimla (NAI, 1830). Gradually the process of human inhabitation in Shimla hills caught momentum and by 1826 the settlement got definite shape

and it was named as Shimla (Buck, 1904). Lord Amherst's visit in 1827 gave momentum to the developmental activities in the town. Chatterjee (2000) states that in 1830 there were 30 European houses in Shimla. In 1830, Shimla town covered about 15 km². With the visit of Lord Combermere in 1827, construction of bridge across a deep Nallah below Jakhoo hills and a three-mile long road was started. These developmental activities were initiated for better links between the western and eastern parts of the town. In 1864, Shimla was made summer capital of the British Raj and headquarters of Punjab govt. between 1873 and from 1876 onwards. Buck (1904) observes that by now Shimla had developed as trading centre and it had well developed commercial functions. The Europeans occupied The Mall road and Indian traders occupied shops below it. Construction of Hindustan Tibet road in 1851-52 and cart road running parallel to the mall at lower level added to the subsequent growth of Shimla and influenced its function in significant ways. In 1866, Shimla had only 290 residents where as in 1881 it had 1141 and in 1891 its permanent population was 1334, included Indians and Europeans (Punjab Government 1908). During 1898-1900 town developed towards south east due to establishment of transport line. Immigration processes also contributed to the population growth of the town. Immigrants came from Punjab, North-West Frontier Province rest, parts of the country as well as from some other Asian countries. Health and educational facilities in the town attracted Europeans, aristocrats, royal people and other affluent people to Shimla. By the end of the nineteenth century, there was sharp increase in the construction activities and services in the town and this changed the complexion of the town. The town experienced major change in its physical and social environment. Although the growth and development of Shimla maintained a balance between needs of its inhabitants and services but general orientation of the town remained elitist. All the institutions, recreational centres and other services were catered to the British and Indian aristocracy.

Introduction of Shimla-Kalka railway line made it accessible to plains, and sharp increase in population was experienced. Municipal limits of the town started growing due to restriction on construction in central Shimla. Shandil (1993) observed that bazaar ward had become so congested due to

low land tax imposed on the residents. Congestion and over crowdedness started mounting during this stage. Expansion of town continued in the decade 1911-1921 due to war conditions and increase in administrative functions. Besides permanent population, Shimla had considerable floating population. In order to reduce the population pressure the downsizing of government staff was proposed and this was accepted and the move proved a setback to the business class. Clean ambience and temperate climatic conditions of Shimla ideally suited for the European aristocracy who invalid from plain and found it a complete sanatorium. Political activities in 1940's also influenced the growth and development of the town.

British administration was concerned about population pressure and crowdedness of the town. They kept recording the data on the winter and summer population as well as limited natural resources. The post independence stage may be termed as stage of rapid population growth and development. Initially development of the town suffered a setback as a result of withdrawal of traders and the Britishers, commercial activities were halted. In 1966, Shimla was integrated with Himachal Pradesh as a result of reorganisation of Punjab and hill states. The attainment of full statehood in 1971 proved turning point for the development of the town. The total population of the town reached to 57,323 with an area 21.03 Sq Km. In census, 1981 Shimla recorded a total population 73,004 and while the area remained unchanged. The state capital of Shimla has grown steadily during the past century however, the growth has been fluctuating. During 1901-2001 the town grew at the rate of 36.37% and the population of the town reached 142555. The population of the town had gone up by 10 times during 1901(14335) and 2001(14255).The highest growth rate was recorded during the decade 1941-51(151.52%),due to increasing concentration of administrative and military establishments.

Shimla was tested in the light of theories of city structure and it was observed that Shimla is a combination of various models of land use. The city is a mixture of concentric zone, sector zone, multiple zone and fused growth theories. However, this comes very close to fused growth theory. This evident

from the fact morphological features of fused growth theory .i.e. indigenous, analogous and modern are present in Shimla urban agglomeration.

Quality of life and status of environmental conditions were assessed on the basis of people's perception. Based on data analysis on environment and quality of life, urban scenario in Shimla is not pleasant one. It calls for reorientation in development programme and a rethink in present policies. Garbage is a serious concern in the town. More than 3/4th respondents disposed off biodegradable and non degradable garbage together. Due to degenerating environmental conditions people are suffering from different diseases like Asthma (36%), eye infections (25%) and skin (3/4Th). More than 60% people revealed that there was no open space around their houses and situation is same in all parts of the city. It seems no planning norms were followed during the construction of buildings. Majority of respondents are living in pucca houses (54%) in the city. Many people in the town have constructed buildings just to create assets. Such buildings are putting pressure on fragile strata of the city. Around 60% are using LPG as a fuel and some other sources like kerosene and wood were also in use. Most of respondents (79%) are getting water on alternative day and 77% opined that water quality is good in the town, which is contrary to the facts. Transportation and parking facilities are in poor conditions and more than 50% respondents parked their vehicles on roadside.

The menace of traffic jam has become major concern in the city. Duration and frequency have crossed all limits. Strengthening of public transportation system seems only solution. Environmental degradation is visible in the form of dirty sites (35%), destroyed slopes (32%) and encroachments on forest land (33%). People opined that Population pressure (53%) is main culprit of environmental degradation in Shimla. Very high percentage of respondents (85%) felt that Shimla is quite unsafe in case of earthquake and awareness about seismic location of Shimla city is not very good (52%). This shows general ignorance about such a sensitive issue. Impact of urban processes can be seen in the periphery of the town. It has engulfed Kufri, Shogi areas and TCP department has named it Shimla Planning area. Systematic planning of periphery area will certainly help in

sustainable development of Shimla. Shimla city and its environs need to be viewed as a single indent meticulous land use planning is need of the hour. In Shimla planning area numbers of houses are expected to rise from 45163 in 2001 to 8000 in 2021, which will require an additional amenity from the government which will ultimately put pressure on the town. Commercial centres in the whole planning area need to be planned immediately. No of shops and dhabas are growing very fast in the planning area, these needs to be planned and unauthorised growth must be checked strictly. Majority of hotels (96%) and restaurants are located in the central Shimla. Diversification of tourist amenities and decongestion of tourist accommodation from the core of the city is major concern. Ropeways and tunnels if extended to planning area from the city centre can be a good option to release tourist pressure.

TCP report (2008) reveals that planning area is rich in traditional water source. These sources if judiciously tapped can fulfil the additional requirement of main city. Nullahs of the planning area have become dumping site of garbage this leads to choking of drainage system. There is utmost need to clean all natural drains in and around Shimla. The present pattern of urban growth has also made the town vulnerable to disasters. Lack of infrastructure, overcrowding, and unabated pollution, unsanitary living conditions, water and noise pollution are continued to jeopardize the environmental health and quality of life of Shimla residents. Stagnation in employment in rural areas has compelled people to migrate Shimla. Limited capacity of the town to absorb large scale immigration is creating ghettos at different parts of the town. It has given birth to slums in Shimla and many such dwellers have encroached upon the government land. Health and tourism sectors are most ill planned, they need a complete reorientation. Heritage zone needs serious attention. If any construction is required to be undertaken in premises of heritage areas, it should inevitably follow the local architectural style. New TCP Act is waiting cabinet approval. Any delay in act will further degenerate the environmental quality in the whole state. The outer Shimla is in pre development stage and it needs to be handled accordingly. The summary of the present problem highlights the strength and weaknesses

of city of Shimla and sought to answer the question over which the whole of quest has been woven.

Before initiating the present study, some research questions have been laid down, to find out the status and order of the Shimla and its environs. It has been observed during the research study that city never grew in consistent manner. During pre railway stage, growth of Shimla was slow due to very weak economic base. During this period, Shimla acted as an administrative unit for the British India government. During this stage, steady growth rate was recorded. Introduction of Shimla Kalka railway accelerated the growth of the town. Expansion of commercial activities, opening of new transport networks and political activities were mainly responsible for this growth. During post independence period precipitant growth rate was registered due to infrastructure and socio-economic development. The emerging city structure of Shimla is a combination of various models like concentric zone theory, sector theory, multiple nuclei theory and fused growth theory but it closely resembles with fused growth theory. Analysis of peoples' perception reveals that scenario of QOL is not pleasant one in the city. However some contradictions and mismatch in peoples' perception and factual status were also observed. Most of the urban problems in Shimla are the result of weak enforcement of laws and policies. Urban environment policy framework calls for a complete reorientation so the present policies are inadequate.

6.2 CONCLUSIONS

It is relatively easier to discuss the growth and development of the city and present the status of environment, But it is quite difficult to draw inferences and arrive at conclusions because large number of factors are interplaying and therefore can not have straight cause and effect relationship. However after the extensive field survey and analysis of data following conclusions may be drawn.

1. The pace of urbanisation in the state was very low in pre independence period which has got accelerated in the second half of the 20th century. There was a single digit decadal growth rate prior to 1950 which has

remained more than 30% per decade in most of the post independence census.

2. The city of Shimla is the only class I city of Himachal Pradesh and enjoys the status of primate city. The city accommodates nearly 1/4th of total urban population of the state. There is no class ii town and half of the town fall under the category of class IV.
3. The city of Shimla lies in zone IV of the national seismic map but the haphazard development and urban growth has given rise to several socio-economic and environmental problems.
4. The structure and growth of Shimla urban agglomeration does not confirm to any of the theories of internal structure of the cities rather it looks mixture of several theories. Nevertheless, when tested the present structure of Shimla, it came closest to the theory of fused growth.
5. The quality of life in Shimla has been studied on the basis of large numbers of indicators and it has been observed that nearly half of the wards were facing multi facet problems. Magnitude of urban environmental problems varies from one ward to the other.
6. The peoples' perception of quality of life also varies and is being affected by the recent incidents of their wards. The overall satisfaction level was higher in the central and northern part of the city.
7. The management efforts to curb urban environmental problems look insignificant and the hill city is highly stressed in terms of its environmental resources. The infrastructural facilities are grossly inadequate.
8. The Shimla planning area, which extends much beyond the city limit, is a welcome step. This can prove like a panacea for the guided growth and sustainability of the hill city.

RECOMMENDATIONS

The hill city Shimla has been getting congested day by day as a result of increasing population and growing infrastructure. Keeping in view the present and the future requirements following points needs to be adhered.

- 1. Decongestion and Satellite Towns is required to Release Pressure.** In order to save Shimla from further degeneration and over pressure, services like wholesale, warehousing, grain, vegetable and timber markets needs to be shifted to the periphery of the town. A complete reorientation of development of The Mall and Circular road, up-gradation of Dhalli-Mehali-Shoghi road, development of a bye pass down below the existing bye-pass is the necessity. Planning is required not only to accommodate the anticipated changes but also to improve the existing conditions of the town. Solution to Shimla's problems lies in developing a counter magnet at an appreciable distance amidst the populous belt at a nodal location.
- 2. Strict and thorough Implementation of plans.** The conceptualisation of plan is not enough they also need to be implemented properly. Due to weak implementation, desired results are never achieved. Political decisions take precedents over rational planning decisions, which adversely affect the utility of the plans. Plan making and implementation should not be skewed in favour of a few. Most of present urban problems are due to poor implementation and Jawaharlal Lal Urban Renewal Mission (JLNURM) is a glaring example in Shimla, Therefore strict implementation of regional and urban plans is required.
- 3. Suitable structural designing should be adopted.** Construction designs should be in conformity with the natural environment. Construction in hill area like Shimla should follow strict structural design to with stand the natural hazards. People should use eco friendly materials in their houses and emphasis should be on need-based construction. Being located in the high seismic zone Shimla

needs earthquake resistant structures. A multidisciplinary approach is helpful in management and governance, which has become important features in urban planning along with physical socio-economic and environment concerns.

4. **Strong political and administrative will is needed.** There should be political will to prepare plans and implement them strictly. Urban issues should become core issues in elections. Planning, management and governance of urban areas should emphasize on developing institutions and appropriate laws and legislations. Most of urban disasters are result of vote bank politics and Shimla with multi-storeyed and haphazard buildings is a disaster in waiting. Therefore, the offenders of law and those ignoring the guiding laws of TCP should be punished irrespective of their status and political affiliations. This can only be done if there is a strong political and administrative will.
5. **Eco-friendly way of life and risk reduction measures should be adopted.** The natural setting of the town has already been disturbed a lot. Any more construction in these areas will aggravate the threats to green cover. The vertical rise of buildings which has led to increase on land need to be dealt strictly. Risk mitigation plan should be prepared to reduce human and property loss. The city is susceptible to various hazards like earthquakes, landslides, cloudbursts and fire. In order to ensure safety and preparedness for these hazards, it is imperative to devise a pre-disaster mitigation plan with quick response force for the Shimla town.
6. **Pollution needs to be curbed down.** The menace of pollution both visible and invisible only be controlled by strict execution of the legislative laws which are already available. City dwellers suffer from respiratory diseases due to the direct exposure to carcinogenic air pollutants. There should be complete ban on loud speakers and pressure horns. After recent high court order there is considerable decrease in noise pollution in the town.

- 7. Water and garbage problems needs to be addressed.** The local water distribution system of Shimla is more than 100 years old. The new network system laid is not well interconnected to old network in the absence of information on the layout of old network. Traditional water sources like Bowris and natural springs need to be preserved in and around the town. Rainwater Harvesting is best solution for the growing need of water as Shimla receives second highest rainfall in the state after Dharmshala. The garbage dumpers should be cleaned regularly. To address this problem, awareness campaigns at the community level should be started to sensitize about the garbage problem. Most of the natural drains in Shimla have encroached upon for garbage dumping. Authorities should clear encroachments from these natural drains. Ward wise teams should be constituted to look after proper functioning of drainage and severe system.
- 8. Transportation and traffic problem need immediate solution.** Traffic and transportation networks require meticulous planning. It is imperative to develop bus stands and parking lots on the entrance points of various regional roads from where the bye-passes are likely to take off. The planning and development of an alternate bye pass in between upper and lower bye passes on the southern face and a new bye pass on the northern face is the foremost necessity. In order to shorten the distance and to solve problem of traffic jams one way traffic and few alternate tunnel, ropeways are required to be developed. Growth of vehicles is on rise, which is contributing to traffic jams, pollution and environmental degradation of the town. Parking lots need to be provided at strategic locations and roads be made free from side parking which is occupying most of the effective road width.
- 9. Tourism Industry needs a complete reorientation.** Tourism is backbone of Shimla's economy. This sector is not well organised. There is no coordination between government and private entrepreneurs. The British Shimla is dotted with heritage buildings of various styles, which needs to be notified and regulated in accordance with heritage regulations. Heritage tourism need to be strengthened as

Shimla is full of heritage wealth, which in turn can boost the economy of the city. Parks and open spaces play a significant role in beauty a place. Presently public services are not adequate to cater for the existing demand of local and regional population. Public services lack planning and they need to be planned and developed accordingly. Local parks require foremost attention, as in the absence of proper recreational spaces; children are forced to play on the roads and streets. Being a premier city its basic infrastructure problems needs to be sorted out on priority. However, town has state level hospitals but the major hospitals are located in core area of the city. It has been observed that health institutions are located either in congested localities or at lop-sided locations. Government hospitals are under immense pressure. Authorities should encourage private partners to open hospitals.

10. **Planning for relocation of government offices should be initiated.** There is no coherence in the location of government offices. These offices are spatially located in different parts of the town and are spatially scattered as per availability of land resources, convenience of developers in the absence of appropriate Locational model. It is imperative to re plan government offices and new offices and institutions may be located at viable locations. It will reduce traffic congestion, save resources and time to reach destinations.
11. **Economic base of the city needs to be strengthened for sustainable development.** Towns without strong economic base cannot withstand for long. Shimla does not have any such strong base since town as a result of strategic and political necessity of the British government. Government should encourage some eco friendly industries to strengthen the economic base to secure sustainability of the town.
12. **Planned afforestation and reforestation should be done in a systematic manner.** There is an urgent need to take systematic efforts for afforestation and reforestation in and around the town. Monitoring

and numbering at regular intervals will help to know the survival rate of plants. Planned forestation will also ensure maximum survival. Protection from forest fire, animals and droughts and involvement of common masses in plantation movement can improve forest density in the town. Government should fix accountability of concerned department and minister for better results.