

Evolution of Indian Hill Stations During the British Era: Problems and prospects of development

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Abstract

Indian hill stations have been an attraction for the people as a place for recuperation and relaxation. Their history dates back to the British times. In colonial India, the natural beauty and climatic conditions that favored the hills over the plains influenced the establishment, development and historical path of hill stations.

Initially, Indian hills served as a cantonment and sanatorium area for the British. However, in the mid-nineteenth century, the attention was to recreation and the British shifted their capitals from plains to the hill stations. The small hamlets slowly became British settlements due to the influx of the people to the hills. This led to a construction of activities for residences, heritage structures, churches etc.

The paper seeks to unearth how the development in the hills took place in India. It examines the need for the British to set up the hill stations and uncovers the land-use decisions, the lifestyle as well as the architectural styles adopted by the British to frame the city structure. The paper identifies the similarities of characteristics of the British hill stations in India and abroad and how the urban growth in the hill stations pose a threat to the development scenario of the hills.

Keywords: Hills, Britishers, Indian Hill Stations, Land-Use, Built Environment.

Introduction

Hill stations in India are a contribution by the British to make their stay in India more comfortable and bring them to be similar to the European conditions. Their reason for existence and functions has been changing for years. The history of hill stations dates back to the 1820s when the British used them as sanatoriums (Shekhar, 2018). In colonial India, the foundation, development, and historical trajectory of the hill stations were dictated by the ethnic disparities and a climatic value system that favored the hill areas over the plains. Hill stations were essentially colonial urban centers erected on mountain ridges distant from the tropical lowlands to aid in the recovery of European bodies from the heat and illnesses of the plains (King, 1976).

The hill stations came into being mainly in the early 19th century. Thirty-five hill stations were constructed until the mid-nineteenth century and 14 hill stations have been constructed by the end of the 19th century. Darjeeling was one of the first hill settlements to be designated as a summer home for the British officials in the mid-nineteenth century. The Bengali administration chose the hill station as a good, healthful, and strategic area to dwell during the hot summer months in response to the Indian Rebellion of 1857 (Ray, 2013). Shimla, in the

North of India, steadily grew into a significant political, social, and economic powerhouse after being allocated as the British Raj's summer capital in 1864 (Metcalf, 1994). In 1870, Ootacamund was designated as the headquarters of the Madras Presidency, alongside Shimla as the summer capital of the British Raj (Barr, 1978). Under the British Raj in India, there were around 80 hill stations, which were developed and managed by the British. Most hill stations have the similar characteristics, although differences exist. The major variations between these hill stations are as their clientele, size and function (Kennedy, 1996).

Hills

Hills, as natural biosphere reserves, have a unique value in terms of the ecology and culture of any region, state, or country, and play a vital part in their growth and development. Even though hill states only account for 10% of the country's population, the majority of people living nearby rely on the resources of hill states, either directly or indirectly (Gupta, 2020). Hill areas in India contributes 22% of the total geographical area i.e. 707747 km² and these hilly areas are mostly situated in the northern part of the country. According to the report of India State of Forest 2011, the total geographical area of India is 32.78 lakh sq. km, out of which 7.08 lakh sq. km relates to hilly areas with a population of 75111000 as per census 2011.

The National Building Code defines hilly areas as “Any area above 600 m in height from mean sea level, or any area with an average slope of 30°, considering the sensitive and fragile ecosystem of hills and mountains.” The state governments may identify and notify areas to be covered under 'Hilly Area,' which require special consideration. Hill areas have fragile ecosystems that must be protected. The hilly area planning and development strategies must be designed with greater sensitivity and sound land use planning (Town and Country Planning Organization, 2015). Depending upon the altitude and prevailing climatic conditions, hill regions have been classified into three categories as Foot-hill regions (below 1200 m), Mid-Hill regions (1200–3500 m) and High-hill regions (above 3500) (Kumar & Pushplata, 2014; Pushplata, 2000).

Hills have natural resource potential and socio-cultural significance and they protect a lot of flora and fauna, have scenic beauty, provides a micro-climate and create opportunities for economic benefits to the people residing there (Kapur, 2018). For a long time, these areas have not been given the attention they need, when it comes to development, and the majority of these areas remain unplanned. The Government of India's initiative was to introduce the Hill Area Development Program, a significant step towards ensuring appropriate development in these areas (Planning Commission, 2010). From the Fifth Five Year Plan, the Planning Commission of India launched two schemes in designated Hill Areas: the Hill Areas Development Programme (HADP) and the Western Ghats Development Programme (WGDP). Special Central Assistance is provided to designate Hill Areas under these programmes to supplement the efforts of state governments in developing these ecologically sensitive areas. Since its inception in the Fifth Five-Year Plan, the objectives and focus of the HADP programmes have changed over each five-year plan within a broad framework of strategy and approach (Planning Commission, 2008).

In the hill areas of India, hill stations play a vital role in both the economic and socio-cultural aspects and after independence, many hill stations came under the jurisdiction of the states of Himachal Pradesh and Uttarakhand (Shekhar, 2018). Being the administrative hubs, all these hill stations need the key focus for various urban development activities. To understand development activities in the hilly areas, in-depth research of the evolution of various hill stations in India and Abroad is done in the paper.

Hill Stations

Hill stations in India are colonial settlement and are British major contributor to the Indian settlement system. Hill stations are high-altitude settlements that were built by the East India Company to house British soldiers and civil servants. The reason for their emergence and sustained existence has changed over centuries in order to keep them relevant as time and technology have progressed (Shekhar, 2018). Until 1800, the British believed that they could

not live in the tropics for long period of time as it may lead to serious mental and physical damage due to illness from chronic heat stress with the long stay in equatorial regions. However, during the nineteenth century, Europeans got more familiar with climatic conditions of the hills, which reminded them of their own land. The British found emotional renewal in these blissfully cold locations, and they also recovered from typhoid fever, malaria and other illnesses (Reed, 1979). The hills were preferred by the British over the plains, as Britain's influence spread into the hills in the north, north east, and north west in India during the early nineteenth century. Hill stations provided opportunities to the British in India for architectural distinctiveness, sewerage, clean water and creation of the social spaces such as the Mall. Municipal governance was also established in all parts of urban India under British rule, but the governance of hill stations remained under the control of British officials (Bhattacharya, 2012).

After independence, many hill stations came under the jurisdiction of the states of Himachal Pradesh and Uttarakhand (Shekhar, 2018). They are considered as the destinations for holidays due to their natural beauty, pleasant climate, scenic view, higher altitude etc. (Karandikar, 2014). They are also considered sacred and most of the hilltops have religious structures built on them (Pushplata, 2000). Environmental conditions or the climatic conditions in these stations helps to increase the economy of the residents. Also, tourism is the major source of the economy due to the hill's scenic beauty, resources, rich heritage and the lifestyle of the people (Kapur, 2018).

Literature Review

Various literary strands were referred to understand the evolution of hill stations from the colonial period. King (1976) states that the sites for hill stations were undiscovered before the British as these were either small hamlets or villages in the remote areas where the terrain was difficult, insufficient accessibility, lack of resources etc. to carry out the development activities (King, 1976). According to Rahman (2018), the growth of the cities started from the ancient times, but it got incitation during the colonial period whereas, the evolution and development of the hill stations like Darjeeling, Dehradun, Nainital, Shimla, Kurseong, Kalimpong etc. were done by the British in India (Rahman, 2018). R.R. Reed (1979) in his study described that the British officials supported the initial development of hill stations by attracting multiple private investments for building infrastructure facilities such as housing stocks, laying of transport network (Rail and Roadways), schools, commercial activities which led to the transformation of various hill stations into summer capital, for example, Simla in India and Baguio in the Philippines (Reed, 1979).

Isabelle Sacareau (2007), explained the development of hill stations during the British Raj with a major focus on tourism in the hills. Hills stations in India emerged in the early 1820s mainly for the benefit of the British and over time transformed into summer capitals. Hill stations were seen as a recreational place during the British period and even after the Independence, these remained favorite tourist attractions for both domestic as well as foreign tourists which led to swift development in the hills (Sacareau, 2007). As per Banta (2005), most of the hill stations of mid-hill regions like Mussoorie, Dalhousie, Nainital and Shimla serve as major activity centers and employment generators till date, leading to huge migration flux from the nearby towns and villages. The study was divided into four main phases i.e. Colonial Dominance(Pre-independence era when hill stations were established by British for which small hamlets were preferred), Post-Independence when power was exercised by the Local elite, hill stations served as a center of socio-economic development and development in the present time (Banta, 2005).

Various authors have stated the issues and problems of development in the hill stations. The major concern due to the evolution and development of the hills in India is dense urbanization in a sensitive context, which has a crucial impact on the stability of the hills (Rahman, 2018). The local population along with the floating population grew tremendously in hills which led to the development of various infrastructure facilities. But drastic growth in the population of the hill stations, resulted in the haphazard development due to lack of planning, low carrying capacity of hills, congestion and unavailability of buildable land (Pushplata, Kumar, & Sinha,

2009). Also, the growth of hill stations in the modern era has led to various challenges in the hills such as pressure on housing and infrastructure facilities, lack of space for the construction of new buildings, degradation of the environment of the hills, inappropriate planning and design, air pollution, congestion, water crises etc. (Shekhar, 2018). These challenges are being faced by all the hill stations located in different zones of India (Shekhar & Thirumeni, 2002). For example, Shimla town was initially planned by British to cater the population of 25000 people but as per census 2011, the population has reached a drastic level of 1.61 lakh and is still increasing (TCPO, Shimla, 2011).

The major gap in the literature is that the previous studies have either emphasized the evolution of the hill stations in India or drawn out the challenges faced due to the development of these hill stations. The approach of these studies is fragmented, thus the article intends to focus on the origin and development phases of hill stations as well as draws out the various challenges faced by the hills with the help of past and recent studies from the 19th century to the 21st century.

Aim of the Study

The study intends to comprehend the evolution of hill stations in India and attempts to portray a timeline of colonial development in Indian hill stations, followed by urban development scenario of these hills in the modern era. It highlights the need for the Britishers to establish the hill stations, draws out the similarities of characteristics of British Hill Stations in India and Abroad, land-use planning by Britishers, urban development scenarios and various challenges of urban development in hilly areas.

Research Methodology

Detailed systematic data collection methods have been adopted to study the developments which have taken place in the hills of India. The research focused on the studies that have attempted to explore the need for the British to set up the hill stations, the land-use decisions taken by them to plan the hills, the lifestyle as well as the architectural styles adopted to frame the city structure. Moreover, the study also looked at how the urban growth in these hill stations pose a threat for the development of these areas. The research focused on the period after the 1800s as it was the time when the British started developing the hill stations for their benefit.

The data collection methods involved web searches for the examination of Scopus database and various government documents. The search keywords included hills, India, the British, Land use, Planning, & Architecture. The study falls within the domains of urban planning, architecture, geography and social sciences. The documentary survey is in-depth and provides valuable insights to the readers about the history of hill development, planning and architectural styles, as well as various challenges in the Indian hills and characteristics of hills established by the British in India and Abroad.

The case studies involved Shimla, Mussoorie, Manali and Dharamshala which were visited to collect the information regarding the challenges faced during the urban development of hill towns with the special focus on land use planning and urban character of the hills. The analysis used the qualitative data to identify similarities and the differences of the characteristics of hill stations, existing development issues and problems faced by the Indian hills and how the character of the Indian hills has changed.

Findings and Discussion

According to the literature review and on-site case studies of Shimla, Mussoorie, Manali, and Dharamshala, it is observed that there is unprecedented population expansion in the hill stations, which is posing a threat to human health and development. The paper discusses the historical evolution of various hill stations in India and their growth pattern till date. Accordingly, challenges of the urban development in hills have been identified which includes physical challenge, aesthetics and visual discomfort, disaster risk, harsh climatic conditions, mismanagement of building bye-laws, rapid urbanization and economic inefficiency.

History of Evolution of Hill Stations in India

The evolution of hill stations in India was mainly due to the cold and temperate climate and the scenic beauty of the hills. Hill stations in India were similar to the climatic conditions of Britain. The same weather in the hills attracted the British to develop these places (Shekhar, 2018). The evolution period has been divided as follows:

(1820-1880):

During this period, the hill stations were used primarily as recreational spaces. In the lower mountains of India, four clusters have been established containing 80 settlements from 1815 to 1947 (King, 1990). The British in India were getting unusually sick and suffered from various diseases from 1817 to 1821 and it was hard to find the reasons until the late 19th century. There was an unusual increase in the mortality rate amongst the British. Therefore, they started to search for places with weather like in Britain. It was noted that the British doctors in Europe had established winter resorts in the foothills of the Pyrenees conditions and similarly discovered the cool and temperate weather of the Indian hills (Sacareau, 2007). The locations preferred for the hills were at the elevations of 4000 ft. to 8000 ft. (Fig. 1). This made the Indian hills a cantonment and sanitarium (rest place for soldiers) area for the British in India (NCERT, 2021).

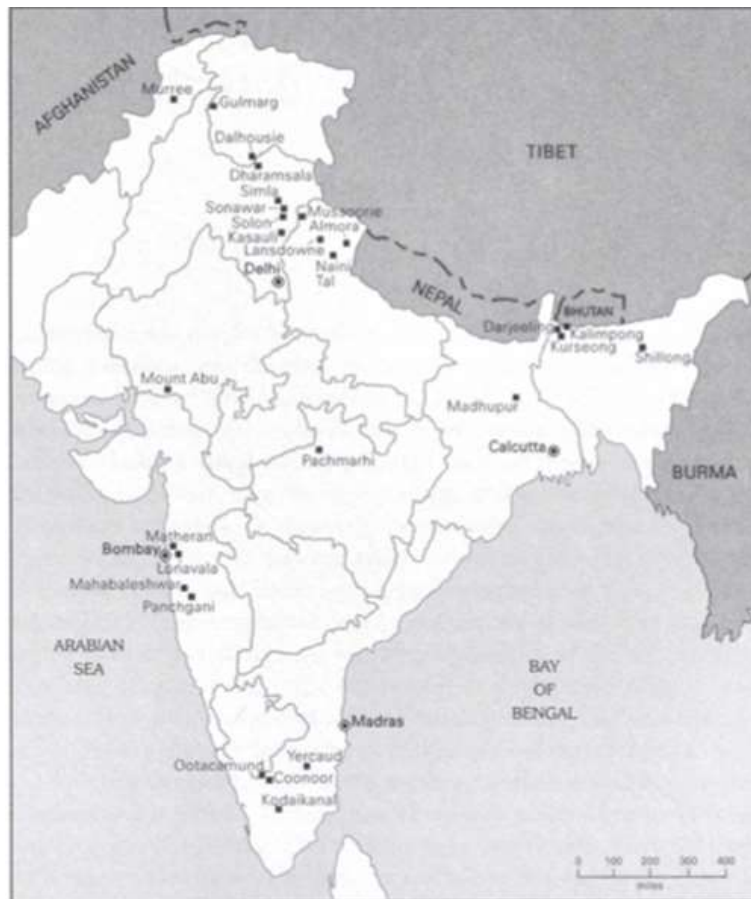


Fig. 1: The locations of hill stations in India.

Source: Dane Kennedy, 1996.

The cold climate of the hills attracted the new rulers too. Thus in 1864, Shimla became the summer capital (Monalisa, 2008). The British then wanted to have control over the Himalayan border and hence purchased land from the Prince and started to have construction there (Sacareau, 2007). However, the Indians were not allowed to purchase land in the hills. Thus, hill stations for the British not only helped them to survive through war and epidemics but also gave them a power of superiority over the local Indians (Shekhar, 2018).

The time period can be further divided into two phases as follows:

- Phase 1 (1820-1857) - In this phase, the priority was to build military cantonment areas and health resorts.
- Phase 2 (1857-1880) - In the second phase, attention was given to the recreational activities, the shift of British capitals from plains to hill stations and setting up of educational places for their children (Sacareau, 2007).

(1880-1947):

The British liked the hill stations of India as they were like their Swiss or Scottish landscapes. The hills had less populations and this helped them to avoid contacts with the local people (Sacareau, 2007). The places in the hills were remote and were away from the noise and crowd of the locals. They took it as an opportunity and started living there as these places not only provided them with the climatic benefits but also took them away from the local Indians. In other words, they lived in Indian hills without the Indians (Shekhar, 2018). However, with the increase in wealth among the locals, the hill stations became accessible to the local people too, although there was a segregation of native people and the Europeans.

The settlements in the hills were either row (valleys), ring or cluster (hilltops) types (Monalisa, 2008). The buildings were of the European style detached villas and cottages. The recreational activities such as theatres, picnic spots etc. were also constructed (NCERT, 2021).

In the second half of the 19th century, with the introduction of the railways, there was an increase in the tourist influx. The lower class and the middle-class Indians who couldn't afford residences in the hills started visiting the hill stations and living in the hotels (Sacareau, 2007). Slowly, the immigrant labor started to migrate from plains to the hills and in this way, the hills were no longer the abode of the British (NCERT, 2021). Roads were made but the condition was bad in the rainy season (Baker, 2009). Even the remote areas in the hills were accessible with the easy and inexpensive journeys. There was also the introduction of the narrow gauge trains as for Darjeeling in 1881, Ootacamund in 1902, Simla in 1903, and Matheran in 1907 (Kennedy, 1996). Thus the hill stations had diverse functions.

The British shifted from their founded and developed cities namely Madras, Calcutta and Bombay to the nearby hill stations which led to a drastic increase in the population of the hills as it was now seen not only as a tourist or recreational hub but also as an administrative hub due to the arrival of administrative staff and civil servants, Indian merchants and domestic staff (Sacareau, 2007) By this time, most of the hill stations had gained popularity but there was overcrowded housing, contaminated water and poor living conditions of the people and migration of the poor or middle-class people to the hills. These, the British were not able to ignore. Subsequently, more Indians were seen in the hills. After the end of the World War-1, with the recommendations of the Lee Commission and the gradual decrease in the shipping fare, the British started visiting England for holidays instead of the hill stations. In fact, the British slowly moved away because they found fewer reasons to visit the hill stations. However, the land values decreased and the Indians could now afford to buy land in the Hills. After the World War II, the British kept away from the Indian hills (Kennedy, 1996).

According to Mitchell (1972), there are various categories of hill stations grouped according to the geographical areas. They are as follows:

- A. The private multi-functional hill stations serve the social function only. Eg. Kodaikanal, Matheran, and Mussoorie.
- B. The single purpose hill stations, the minor hill stations and the satellite hill stations have similar functions. It is difficult to differentiate between them. There were small satellite stations around the large hill stations like Dalhousie, Darjeeling, Nainital, Shimla and Ootacamund.

The official multi-functional hill stations were the government headquarters as well as social, recreational, and educational centers for the British eg. Simla, Darjeeling, Nainital, and Ootacamund.

(1947-2020):

After independence, hill stations lost their administrative functions but regained again when the states were set up. In India, as the education system was not satisfactory, the families who couldn't afford to send their children abroad to study sent them in the boarding schools of hills set up by the British. This led to an increase in the influx of people. These boarding schools were found in Shimla, Dehradun, Mussoorie, Nainital and Darjeeling. Some hill stations also served as sports centers (Shekhar, 2018).



Fig. 2: Development of various Hill stations of Himachal Pradesh.

Source: Author

The hill towns are still an attraction for a large number of people and continue to serve as tourist destination centers. After the British left, they were somehow different from the colonial period. The income of the middle-class Indians also increased after 1991 economic liberalization. However, the economic growth in the hill towns is seasonal (Rense, 2006). There was an improvement in the quality of roads (Baker, 2009). However, the continuous growth of these towns need a check on their planning and land use to cater for the faster growth influx due to over-population, unchecked construction and tourist influx (Fig. 2). The timeline shows the trajectory of the Indian hills rise and fall throughout the British Empire and after the independence. It is expected that the Indian hills will have high growth in the next few decades (Rense, 2006).

Similarities of Characteristics of British Hill Stations in India and Abroad

Kennedy says, "Hill stations remain among the most curious monuments to the British colonial presence in India" (Lal, 1997). Indeed, the hill stations made by the Britishers were on the same theme and concept of British hill stations elsewhere. For example, similarities can be found in the hill stations of the mainland South-East Asian hill stations (i.e. Ceylon, Malaya,

Burma, The Northern Borneo) and Indian hill stations which have been analyzed and compared by Weebers and Idris (Weebers & Idris, 2015). A similar comparison has been produced by Aiken of Indian hills with Penang Hill in Peninsular Malaysia that is, various architecture styles as of India were used by British to establish the hill station of Penang and also Penang hill station have structures such as golf course, country club, post office similar to Shimla, Mussoorie, Darjeeling etc. (Aiken, 1987;Weebers & Idris, 2015). The similarities of characteristics of the British hill stations can be summarized as follows:

- The locations were at a height between 1200 to 9000 feet and the size of the hill stations vary from 408 to 600 square miles. The characteristics have been taken from Britain; from places such as Golf clubs, botanical gardens, churches, libraries, clubs, resorts, spas, pseudo-Tudor, Elizabethan Renaissance and Victorian-style architecture, lifestyle etc.
- The main objective has been to set up the hill stations as an escape from the heat of the plains in Asia.
- Every hill station had a sanatorium.
- The architecture style in the hill stations was a mix of European Architecture styles i.e. pseudo-Tudor, Elizabethan Renaissance and Victorian style or Swiss Gothic style, Neo-Gothic and Neo-Classic architecture style.
- The British used similar features in the buildings such as entrances with arches, bay windows, dormer windows, chimneys, sloping roofs etc. as shown in Fig. 3. These, they replicated in all the hill stations.



Fig. 3: Sketches showing monuments built by British in Shimla

Source: Author

- They copied their mall culture in the hill stations.
- Even after the British left India, the Indian hills replicated the spatial structure of Britain by means of producing theatres, picnics, evening stalls etc. They have eventually become the daily routine of the residents. In fact, this culture was adopted by the rich Indians before Independence to have good interactions with the British (Weebers & Idris, 2015).
- The hill stations in India are no longer European although they have the European touch in architecture and planning (Crossette, 1999;Bansal & Chhabra, 2019;Weebers & Idris, 2015;Aiken, 1987).

Land Use Planning

The British wanted to have developments on the sites having a higher elevation to protect themselves from the heat, especially in the summer seasons (Bansal & Chhabra, 2019). They acquired the sites through power, conflicts, and negotiations with the local powers (Pradhan, 2007). They also preferred the elevations above 6000ft to 7500 ft. as the sites were considered to be above the malarial insect habitats having temperate climatic conditions (Bansal & Chhabra, 2019).

- The availability of sufficient land was the priority for the site selection (Shekhar, 2018). However, access to the hills was not easy for the Europeans. The paths were steep and there were no roads (Baker, 2009).
- The British did not transfer the grid pattern of the military and civil stations of the plains to the hilly areas. On the contrary, they worked with the contours of the hills and constructed along the ridges and the shores of lakes (Kennedy, 1996). Plans of the buildings were made with the contours and according to the character of each hill town (Weebers & Idris, 2015).
- The British made a composite style of architecture: a mix of Indian, European and Mughal Architecture through an amalgamated physical development. They were simple with no ornamentation, but were unique and of a large scale (Fig. 4) (Bansal & Chhabra, 2019).



Fig. 4: Architectural monuments in Shimla built during the British times.

Source: Author

There were Gothic style villas, and timber-Tudor cottages having gables roofs. Timber and stone were used as construction materials and a large number of forests were cut down.

People preferred open spaces rather than forests for security. Within the two decades after this, the problem of soil erosion and degradation rose (Baker, 2009). Thus architecture was a mix of European and Indian architecture styles (Bansal & Chhabra, 2019).

- Hill stations can be divided into three types of settlements: ridge, valley and the mid-lands. Planning in these settlements varies accordingly.
- The planning for the valley settlements includes the main public buildings, open spaces, temples, and community areas located in the lower areas i.e. valleys and the residential area in the upper region (Fig. 5).



Fig. 5: View of a Valley Town.

Source: Author

For the ridge settlement planning, the public buildings, open grounds etc. were located near the bridge and the residential area was located in the lower areas (Fig. 6) (Kumar & Pushplata, 2014). The ridge settlement planning in brief by the British can be explained as follows: The cottages, bungalows and the institutional buildings for the Europeans were along the ridge and lakeshores (Fig.7 & Fig. 8) (Kumar & Pushplata, 2012).



Fig. 6: View of a Ridge Town

Source: Author

The density was low and the buildings were also low rise (Bansal & Chabbra, 2019). They also planted flowers and trees and cultivated various fruits and vegetables at the back of their cottages. The cantonment area and the bazaars for the Indian people were on the periphery of the site. Even the houses of the Indian people were distant from the cottages or bungalows of the British (Fig. 8) (Bansal & Chabbra, 2019).



Fig. 7: Valley Town

Source: Author

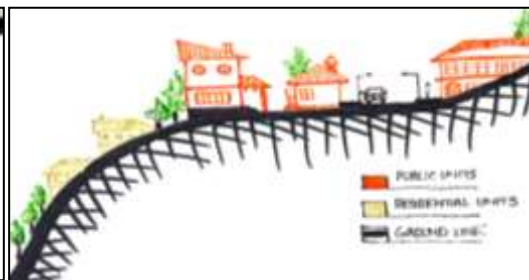


Fig. 8: Ridge Town

Source: Author

The mall was a unique feature seen in the ridge settlement hill stations established by the British. The mall was constructed along the main ridge, having a walkable road or a pathway, public infrastructures like benches, kiosks and a large number of shops along with it as shown in Fig. 9.

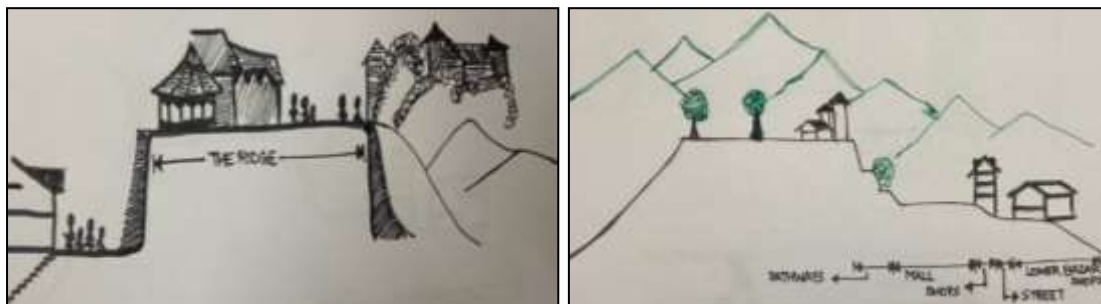


Fig. 9: Section along the Mall Road.

Source: Author

- The other road which was found near the mall road was the cart road which was used to carry the goods and carts (Bansal & Chhabra, 2019). Church, being the symbol of traditional English values was always found in the center of the site (Kennedy, 1996).
- The orientation of the buildings was according to the sun to gain the maximum heat (Deptt, 2012). Water proximity is another point they gave preference for site selection (Kumar & Pushplata, 2014). The British were dependent on Indian people for the construction activities.

Fig. 10 shows the elevation variation along the mall road in Shimla Town. Hill stations have the same characteristics but they differ in size and function (Kennedy, 1996). However, the elements and the material used in the buildings differed in the pre-independence times and after the independence (Kumar & Pushplata, 2012). Thus, the character of the stations have changed after independence as a lot of development took place leading to densely populated

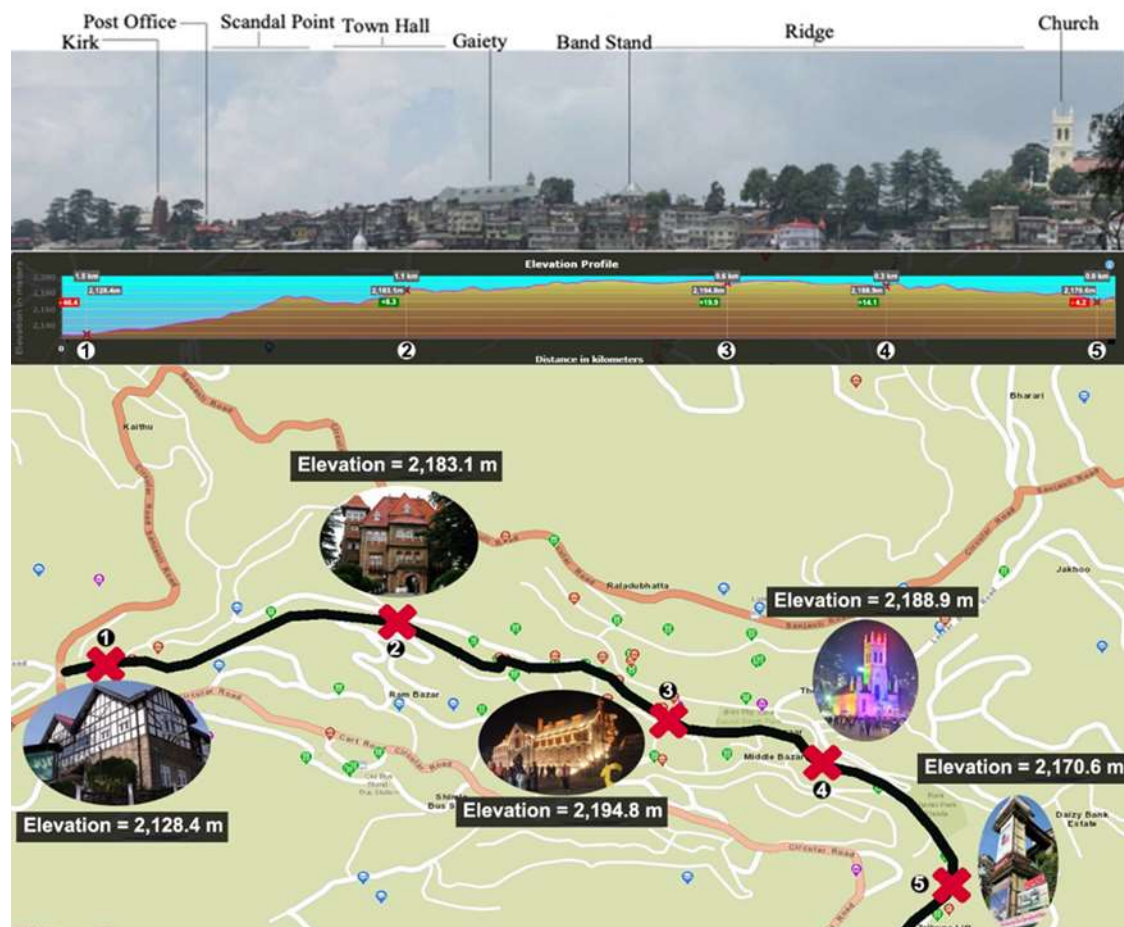


Fig. 10: Map of Shimla with elevation and skyline of the major Buildings.

Source: Author

zones (Deptt, 2012). The buildings made after independence or any additions done afterwards were of different material, style, and change in skyline resulted in a lack of unique architecture for which the hill stations made by British were known (Kumar & Pushplata, 2012).

Urban Development Scenarios in Hills

Hills cover about 24 per cent of the earth's area. They have gained much importance today due to the increasing population and their demands require planning of the area (Kapoor, Jain, & Bansal, 2019). Over the years, the urban population in various towns of hilly areas have rapidly increased which has evolved as an important growth center for the economy of India. With the increase in urban developments, the towns of these hilly areas are expanding both in

terms of area- and population due to the migration influx of rural population from the countryside to urban areas (ITPI, 2007).

The development of the hill stations began when the hills were announced as the summer capital by the British (Bansal & Chhabra, 2019). Afterwards, hills took a new turn from the 1980s when there was an increase in the level of urbanization due to which planned development of new towns and small urban centers was done to ease the pressure on the central city (Sharma, 2007).

The hills were made for low carrying capacity and for low-density settlement (Bansal & Chhabra, 2019) although now they are the centers for the mid-rise multi-story developments. Indeed, sparsely located bungalows have been replaced with dense structures (Kumar & Pushplata, 2012). From the last three decades, the development in the hills started from the mid-slopes to ridge settlements and has extended down to the valleys due to good connectivity networks (Tiwari, Tiwari, & Joshi, 2018). The Urban development is now responsible for both issues/problems and opportunities in hills, but due to uncertainty of resources, topographical and climatic constraints, the need of the hour is to look upon the potentials and threats in a balanced manner to evolve appropriate strategies in the context of the area (ITPI, 2007). The hills in India have a unique character and maintaining and managing the development in these areas is a challenging task now (Kumar & Pushplata, 2012). With the change in time, the urban fabric and image of the hills have been completely changed and has become a challenge for appropriate development in the hills. The land use demand is increasing continuously with the influx in the flow of population rate leading to uncontrolled development pattern. Therefore, the unique ecosystem enriched with visual resources and bio-diversity are needed to take care of them from numerous problems occurring in these areas. This is necessary for a balanced and hierarchal urban development to build a better and appropriate future and quality of life with a special focus on environmental constraints (Shekhar & Thirumeni, 2002).

Challenges of Urban Development in the Hill Towns

Hill states accommodate 10 per cent of the total population of the country but nearby states are dependent on the hill states for the resources available here. This increase in pressure for the resources and human activities is leading to potential damage to the environment of the hill areas (Gupta, 2020).

A. Physical Challenges

- The development activities have been increasing at a very high pace in the fragile hill areas for the past three decades (Kumar & Pushplata, 2014). Due to the peculiar setting and lack of planned development of the hill stations, they have to suffer from a variety of issues such as soil erosion, ribbon development, traffic bottlenecks, flooding, lack of suitable land, unplanned, unauthorized, haphazardous, uneven development, lack of physical and social infrastructure etc. (Sharma, 2007). Taking the case of industries in the hills, the development is very poor as the allocation of the industries have been confined to small pockets and mostly seen on the borders of the states, which has led to spatial imbalance. The land use pattern of the industries needs to be examined for the betterment of the development pattern of the hills (Gupta, 2020).
- Due to migration and tourist influx, it results in the change in the land use pattern. The last few decades tend to show the change in land use from agriculture use to non-agriculture use in hills due to the construction of holiday homes, second homes, resorts, investment plots etc. These, happening in the agricultural land lead to soil erosion, increase in temperatures etc. (Karandikar, 2014).
- Excessive slope cutting generates large amounts of debris, negatively affecting slope stability; increased land surface exposure aggravates the process of surface erosion by many folds; and eroded sediments deposited in the downstream drainage system cause clogging of drains when dumped in/near drains, resulting in landslides, pollution, and silt (Garg & Kaur, 2020).

- The land in the hills is even scarcer due to the slopes, vegetation, forests, soil characteristics etc. There is a need to examine the issue of land development, land conversion, preservation etc. to have a rational development (Gupta, 2020).
- The key challenges, such as human population pressure and livestock grazing in hilly regions, as well as indiscriminate tree cutting for commercial objectives, have resulted in quick loss of forest cover and a decline in land productivity, affecting the economic status of the hilly areas (Planning Commission, 2010).
- Hill towns in India are having low carrying capacity but these are densely populated with multi-story buildings, causing problems such as depletion of green spaces, overcrowding, traffic congestion, scarcity of water etc. (Kumar, 2015).

B. Aesthetics and Visual Discomfort

- Orientation is an important step that provides a building with thermal comfort. The orientation must be such that the maximum south sun enters the building. As there is no direct sun in the North of India, the north sides remain unsuitable for the development of the buildings (Chawhan & Kamal, 2021).
- The scenic hill towns are under tremendous development pressure, which has altered the overall image of hill towns (Kumar, 2015).
- The modern buildings are constructed in the hill towns such as Shimla, Darjeeling, Nainital, Mussoorie, New Tehri etc with non-local materials, construction techniques, and design criteria, which has led to the loss of the urban character of the hill towns (Garg & Kaur, 2020).
- The buildings on the hills lack setbacks which harm scenic views/vistas and the townscape of the hills (Garg & Kaur, 2020).

C. Disaster Risk

- There is height limitation in the hills but still, the deep excavations to build high-rise buildings is witnessed which lead to various hazards (Chawhan & Kamal, 2021).
- The land use pattern in the hills is congested and doesn't address the safety issues of the residents. Many areas do not have access to emergency vehicles, which may result into stampede during any kind of disaster (Kapoor, Jain, & Bansal, 2019).
- Unplanned growth in the hills has resulted in a huge number of natural hazard risks, socio-economic inequalities, and geo-environment degradation (Anbalagan, 1993).
- Slope instability is the major issue that leads to geographical inaccessibility in the hills. It leads to various hazards such as earthquake-induced landslides (Tiwari, Tiwari, & Joshi, 2018).
- Non-systematic construction activities lead to unplanned development in the hilly regions (Tiwari, Tiwari, & Joshi, 2018).

D. Harsh Climatic Conditions

- One of the challenges in the hills is climate change leading to flash floods, slope instabilities and landslides, drought and water scarcity, and health risks (Tiwari, Tiwari, & Joshi, 2018).
- Unprecedented urban development in hill stations led to change in the microclimate which resulted in uncertain rainfall, snowfalls, hailstorms, landslides and continue to deteriorate the environment of fragile hill stations (Garg & Kaur, 2020).
- Hill stations such as Shimla, Mussoorie, Nainital etc. have a very cold climate as all of the hill stations are lying above 28° N latitude which makes sunlight blemish from the northern slopes and make them much cooler in the same region (Kumar, 2015).
- Traditional buildings in hill stations were designed in response to the cold climate of hills, but with the improvement in living and economic conditions of the people, the use of traditional construction techniques declined and buildings became thermally uncomfortable (Singh, et al., 2019; Sarkar, 2013).

E. Mismanagement of Building Bye-laws-

- Most of the setbacks or the building regulations are the same followed as are for the plain areas. However, the construction or the development pattern in the hills is not

similar to the development pattern in the plains. This leads to inappropriate development in the hilly areas. There is insufficient setbacks around the building and no or fewer open spaces which is however changing the essence of the place (Pushplata & Kumar 2015).

- The pressure of an increase in the population has led to constructions in those areas that are not suitable for the construction in the hills such as shaded slopes (Kapoor, Jain, & Bansal, 2019).

F. Rapid Urbanization

- The improper allocation in the development plan and lower price of land in the suburbs has resulted in sprawl (Shekhar, 2011).
- Due to the rapid urbanization, there is an increase in the demand for the built space (Tiwari, Tiwari, & Joshi, 2018; Kumar, 2015). There is an unprecedented growth of population in the hills which is creating pressure on land use, housing and other infrastructure facilities because of the lack of land in the hilly areas (Shekhar, 2018).

G. Economic Inefficiency

- Another challenge is the high cost of construction in the hills as the stress today lays on the cutting and filling methods which also leads to various environmental problems such as increase in the rate of weathering, soil erosion, siltation, loss of vegetation cover, exposure of surface area decreasing water quality and biological freshwater community (Chawhan & Kamal, 2021).
- The land prices (buildable land) are high in the hills and also the cost of labor and logistic is expensive, which make it uncertain for the development activities to be carried out in the hills (Kumar, Poonam, & Gupta, 2014; Kumar & Pushplata, 2014).

Hills face many challenges and if the trend continues, the hills have to pay a heavy price. Often, land in the hilly areas are allocated without proper surveys such as topography, the direction of slope, orientation of the sun, vegetation, soil type etc. as there are insufficient spatial planning strategies (Kapoor, Jain, & Bansal, 2019). Lack of a long term vision to bring integrated urban development in hills is a major challenge to be examined (Karandikar, 2014). There is a need to develop effective, dynamic and realistic land-use policies for the protection of urban land use (Tiwari, Tiwari, & Joshi, 2018).

Conclusion

This paper offers an overview of the development in the hill towns started by the British and brings out the concerns of the character of the Indian hills that we have forgotten with time. It offers insights into the various periods when the turns in the development of the Indian hills took place. The focus is on the studies that have tried to tell us about the need for the British to set up the hill stations: the land-use decisions, the lifestyle as well as the architectural styles adopted to frame the city structure and how the urban growth in these hill stations pose a threat for the appropriate development in the hills. The paper uncovers the development by the British was almost similar to elsewhere i.e., based on the same theme and concepts in all the hill stations. The main objective of establishing these stations was to escape the heat of the plains. They copied the same architectural elements and styles and have replicated the social structure of Britain in all the stations. However, the new developments that took place in the hills such as dense buildings, mid-rise buildings, changes in the skyline, elements and style of buildings have changed the overall character of the hill stations established by the British. There is a unique character and traditional touch of the hills in India but with the change in time, it is a challenging task to manage the urban character of the hills. Moreover, there is an unprecedented growth in the urban development in the hills which not only poses a threat to the physical environment but also the social lives of the residents in the hills. The development has extended from the midlands to ridge settlements and now urbanization is seen in the valley settlements too. Therefore, the growth in the hills needs to be monitored and planned in a way that retains the unique and traditional touch of the British times and overcome the challenges related to the hills for the protection of the Indian hills.

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