

Problems and Prospects of Urban Developments in Mandi Town of Himachal Pradesh, India

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Abstract

Hills in India are among the most magnificent natural occurrences, known for their aesthetic appeal, visual beauty, cultural relevance, and historic towns. But due to unprecedented growth, various hill settlements of India have undergone significant changes that have resulted in highly dense and overcrowded hill towns. This study examines the Mandi town also known as Choti Kashi, situated in the lap of the Great Himalayas and geographically located in the State of Himachal Pradesh, India, in order to highlight the issues and challenges of the hill towns.

The history of the town is a key example of the monarchy and date back to the 16th Century AD. The town has a total of 81 ancient temples and hundreds of sculptures. It has witnessed major reforms in the context to the expansion and physical development, and is growing at present at a rapid pace. This has led to numerous challenges such as overcrowding, congestion, environmental degradation, and the deterioration of historical monuments etc.

The research collects key evidence of the growth pattern of the Mandi town from the late mediaeval period till the date. The study focuses on an in-depth analysis of the documents from various era on the town preserved in the District Library of Mandi. These include the Mandi Gazetteer, newspapers, and books. Data is also collected by using semi-structured interviews and field surveys conducted with the local residents living in the Mandi Town to analyze and understand the challenges that occurred as a result of urban expansion of the Mandi town.

Keywords: Hills, History, Vernacular, Issues, Challenges

Introduction

Mandi is located at 30 ° to 40 ° 0° North latitude and 76° 24° 0° East longitude. It is situated at an elevation of approximately 760 meters above the mean sea level. The Motipur Dhar, Gandharv Hills, Rehra Dhar, and Tarna Hill surround the town, which is a bowl-shaped tabletop on the Beas River. The small rivers Suketi Khad and Skodhi Khad flow into the River Beas and serves as the major tributaries crossing through the town. (TCPOHP, 2001). The town's geological location makes it prone to earthquakes (seismic Zone No. IV). The ancient princely realms of Mandi and Suket were united to become the Mandi District when Himachal Pradesh was founded on April 15, 1948. Since then, it has functioned as the district headquarters for the Mandi District.

For development purposes, the district has been divided into ten blocks. According to the 2001 Census, the district has a population of 9,00,987 people and a land area of 3,950 square kilometers, accounting for 7.10 per cent of the State. It occupies a key position because National Highways 20, 21, and 70 pass through it. Mandi is also a popular rest stop for visitors on their way to Kullu Valley.

The town has a long history dating back to the 8th century AD. However, in the early 16th century (1500 AD-1534 AD), Raja Ajber Sen, the twentieth descendant of Bahu Sen, constructed the present Mandi town around the 'Bhootnath Temple' and relocated his capital from Purani Mandi to the Mandi. It is also known as 'Choti Kashi' since it is a town of 81 ancient temples of historical and archaeological significance. Mandi, one of Himachal Pradesh's oldest towns, has had an urban status since 1901 (Raghav, 2019); (Punjab Government, 1920). It has served as the district headquarters of the Mandi District since Himachal Pradesh's establishment as a state on April 15, 1948 (TCPOHP, 2001).

However, because the town is located on a hill, the pressure for development has resulted in chaotic conditions such as overpopulation, traffic jams, and stress on existing infrastructure, resulting in a low quality of life in the town. This enormous urban expansion in the hills endangers not just the natural environment but also the social life of the people who live there. The development has spread from the midlands to the ridge villages, and now urbanization can even be seen in the valley settlements (Sharma, et al., 2022). There is also a lack of efficient governing bodies and restricted master plans (i.e., just for a few towns). The state authorities are focused more on large towns or cities than on medium towns, resulting in terrible living conditions making these towns important centers of environmental degradation. For contextual urban growth in the hill regions, it is necessary to take care of these medium sized towns from the numerous issues and problems that arise in these eco-sensitive areas.

Hill areas

Hills are essential to the growth and development of every area, state, or country since they are natural biosphere reserves that have a special significance for the ecology and culture of each one (Gupta, 2020). The hills in India were initially developed by the British in India. They built the roads and streets for a minimum population threshold, which was and still is a major constraint for development. Earlier, only the Maharajas could build in the hills, but as the economy grew and wealth expanded, the common people could afford to build in these places under the development of programs and policies by the Government. This encouraged the increase in the population and also led to various environmental problems in the fragile areas (Sachthanandan, 2004).

For the last few decades, hilly areas have been facing tremendous pressure from urban development due to various opportunities like employment, business and also tourist inflow which has increased drastically (Kumar, 2016). Due to the migration influx of rural population from the countryside to the urban regions, the towns of these hilly areas are developing both in terms of urban areas and population. Furthermore, urban development is responsible for both issues/problems and opportunities in hills, but due to the resource uncertainty, topography and climatic constraints, the need of the hour is to examine potentials and threats in a balanced manner in order to develop appropriate strategies in the context of the area (ITPI, 2007).

India's hills have a different character and traditional touch, but with the passage of time, it has become difficult to manage their urban character. Moreover, the enormous increase of urban development in the hills poses a threat not only to the physical environment, but also to the social lives of hill dwellers (Sharma, et al., 2022). It is essential to maintain a balance between the emerging issues in hills and the preservation of natural resources to the fullest in both developed and developing nations. The issues and challenges are more pronounced in the medium sized towns of the hill regions as the size of these towns are small and planning in these towns is more challenging due to the size and increasing demand of activities for development in the town. As a result, it is extremely important to investigate and understand the development scenario of the medium size towns and to discover numerous difficulties that now occur in these towns. Therefore, this study examines the various challenges faced by the

town due to rapid urban developments with a prior focus on the context of hills, with the support of the case of the Mandi town: a medium size town of the Himachal Pradesh.

Objectives of the Study

The study intends to comprehend the evolution of the Mandi Town situated in the state of Himachal Pradesh, India. It highlights the town's urban growth, the socio-cultural significance, and ancient Architecture along with the major challenges faced by the people residing there. It also aims to highlight the various characteristics and evolution of the town from ancient times to the present. Thus, the paper attempts to highlight the shortcomings and the potential followed by the current urban developments in the Mandi Town.

Research Methodology

In-depth systematic research has been done to comprehend the development of the Mandi town of Himachal Pradesh and the challenges faced by the town due to the urban growth. The data is gathered through various government documents, Articles in journals, field visits and interviews with the local residents of Mandi town. The search terms included Mandi, Himachal Pradesh, Ancient, History, Evolution, Indian literature, hills, development in hills, hill cities, etc., and the research is being conducted in urban planning, architecture, geography, and the social sciences. The article provides readers with valuable insights into the evolution and history of the Mandi town. Since the literature on the history and evolution of Mandi town is limited, the study also focused on semi-structured interviews and on-field survey conducted with local residents of Mandi Town, as well as the existing literature on Mandi town preserved in the District Library of Mandi, namely Mandi Gazetteer, newspapers, and Books. The paper is divided into the following sections: a literature review emphasizing on the hill areas, historical background of Mandi town situated in Himachal Pradesh with a special focus on the temples or historic structures built during the ancient times, a glimpse of the town's demographic profile, the transformation of the town, issues and challenges faced by the town due to unplanned urban expansion, and conclusion.

Study Area Background

Mandi has existed as a town since 1881. According to the 1961 Census, this town is listed as Class IV, but it was formerly classified as Class V till 1951. The Mandi State, like most of the other Hill States, receives its name from its capital, which is located on the left bank of the Beas River. Mandi is a Hindi word that means "market." It may be related to the Sanskrit word "mandapika," which means "an open hall or shed," and may be derived from the Sanskrit root Mand, which means to beautify or distribute. If one can speculate on the origin of the name, it most likely stems from the fact that, in ancient times, as it is now, the location was a center of trade on the main road from Yarkand and Ladakh to Hoshiarpur and the lowlands. The town was first mentioned in an inscription at the Triloknath temple in Old Mandi in the Kaluga year 2264 and the Saka year 1442, which corresponds to AD 1520 (Punjab Government, 1920).






Traders from over the border used to travel to Mandi for the Shivratri Fair, visited by more than a hundred local gods and goddesses from the old state and is still the main event in Mandi's festival calendar, a grandiose staging of royal reign even now. Shivratri's economic and political significance is noted as an event involving virtually the entire town and a large portion of the rural population, it is of significant economic importance, and it also serves as a stage for public appearances of leaders and officials (Conzelmann, 2006).

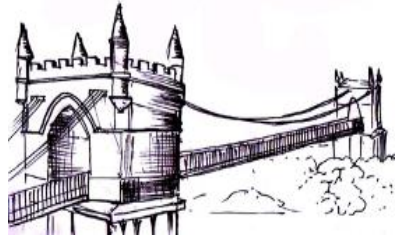


The "pent" roof - a short sloping roof with a solitary surface, affixed to the side of a structure - is the most common type of hill temple architecture in the Himachal Pradesh. A veranda is a roofed, open-air gallery or porch linked to the outside of a building, which is typically extended across the front and sides of the structure. a tower-like, multistory, solid or hollow structure composed of stone, brick, or wood with successive wooden roofs, one on top of the other; a combination of "sloping and pagoda" style roofs; and Sikhara - the superstructure, tower, or spire above the pillared mandapas in North Indian temple construction (porches or halls). It is the most prominent and distinguishing feature of the Hindu temples in the North,

but it may also be seen in the state's flat valleys. Each geographical zone of the state has its own particular architectural style. Pent-roofed and tiered roofed (pagoda) temples can be seen in the Shivalik hills. The temples in the upper alpine locations are flat-roofed again, but in a different design. Mandi is famous for its old stone temples and memorial stones called as "Bersellas." Among the temples is the "Bhootnath Temple" in the town center (Punjab Government, 1920).

In the town, there are a number of additional historic temples and shrines with vernacular architecture and beautiful sculpture. The temples of "Triloknath," "Panchvaktra," "Ardhnareeshwar," "Bhootnath," "Neelkanth Mahadev," "Sidh kali temple," and "Mahamritunjaya" are popular. The state's only temple of this type is Lord Mahamritunjaya's famous Mahamritunjaya temple. Mandi has predominantly Sikhara-style roofing in the flat valleys and pent roofs along the slopes of the hills (Punjab Government, 1920). The following are some of the most well-known temples and historic monuments of Mandi town in the Table no. 1 given below:

Table 1: Various Historic Monuments
Source: Punjab Government, 1920; Raghav, 2019

Name	Architectural features	Visuals
Bhootnath Temple	This Shikhara-style stone temple consists of a modest porch and a cella topped by a spire (tower or minar). The sabha-mandap in front appears to be a later construction. The porch is supported by fluted pillars with elephant capitals and a trefoil arch between them.	
Triloknath Temple	A life-sized three-faced stone depiction of Shiva riding a bull with Parvati in his lap can be found in the temple's cella (inner chamber). The porch (dwar-mandap) is 78" by 36" in size, with a lintel supported by two fluted pillars and pilasters.	
Panchavaktra Temple	Constructed in the 14 th century A.D. in the Sikhara style. The main porch (dwar-mandap) is supported by four hefty pillars with flower pot capitals and rosettes or lotuses on the bases.	
Ardhnareeshwar Temple	Comprises a cella, a porch, and a Sabha mandap. The carving throughout is rich and artistically beautiful. A slab with the deities' vehicles, the bull and the lion is attached to the main image. Overall dimensions are 44" x 33" h/w.	
Bersellas Temple	Bersellas are kind of memorial stones built in memory of the queens and other ladies who became sati with their monarchs. 1-7 feet tall and carved with rajas and ranis who became satis.	

Victoria Bridge	Built like the Hanging Victoria Bridge on England's Thames River. Engineers from London and Kolkata worked together to build this 76-meter bridge. Engineers thought it would last no longer than 100 years, but it worked for 143 years.	
The Raj Mahal Palace	The Raj Mahal Palace is a building made of stone and has gable ends, slated roofs, and a lawn in front of it. The ruler of Mandi, Bhawani Sen, moved his family here and turned it into a Royal Family residence.	
Ghanta Ghar	Sir Arthur M. Milge, who was the State Forces Military Advisor in Chief at the time, launched Ghantaghar on February 28, 1939. The land where the bell tower is built has been used for more than 300 years. The place used to be a small lake, but the last Raja of Mandi, Raja Joginder Sen, transformed it. The clock tower has a pagoda-like structure and a good example of hill architecture.	

Findings

The Demographic Profile of Mandi Town

Himachal Pradesh is located in the Great Himalayan Region of the northwestern part of India. It is between 30° 30' and 33° 15' North latitude and 75° 30' and 79° 0' East longitude. The Himachal Pradesh Himalayas cover the whole state of the Himachal Pradesh. They are part of the Northern Mountains and are located between the Jammu and Kashmir Himalayas and the Uttar Pradesh Himalayas. Based on hologenetic characteristics, the large area of the state has been split into four smaller areas: Northern Himachal Pradesh, which includes Chamba, Trans Himalayan Zone, which includes Lahul & Spiti and Kinnaur, Central Himachal Pradesh, which includes Kangra, Hamirpur, Una, Mandi, and Kullu, and Southern Himachal Pradesh, which includes Bilaspur, Shimla, Solan, and Sirmour districts. The Mandi district is in the middle of Central Himachal Pradesh, which is one of the State's four smaller regions. It is between 31° 13' 30" and 32° 04' 22" north latitude and 76° 36' 08" and 77° 23' 26" east longitude. It is surrounded by Kangra district in the north and north-west, Hamirpur and Bilaspur districts in the west, Solan and Shimla districts in the south, and Kullu district in the east.

According to the Census of India, the district comprises 3950 km² of the total 55673 km² of Himachal Pradesh. It is the seventh largest district in terms of the land area, which is 7.10 percent of the total land area of the state. The population density per square kilometer in the district of Mandi is 253. It is the second most populous district in the state, with a population of 9,99,777 and is 15.01 percent of the total population of the state as of the 2011 Census. There are 4,98,065 men and 5,01,712 women. Out of all the people in the district, there are 26422 people living in Mandi town, which is 426 Hectares in size. Mandi Town's municipal council was upgraded to a municipal corporation on October 28, 2020, when it merged with the surrounding panchayats and villages. With the addition of new Panchayats and villages, the total number of people living in Mandi town has grown to 41,375, and the area has grown to 2,493 Hectares (TCPOHP, 2001).

Transformations of the Mandi Town

Mandi is an ancient agrarian city with tourism and cultural destinations for north-south travelers. Mandi, the district's administrative center, serves as the hub for rural-urban interactions within the district as it attracts farmers and locals from the nearby villages. In 2011, there were more than 26,000 people living in the Mandi town (Census of India, 2011). Further, the transformation of Mandi is categorized into two parts as follows.

Pre-Independence:

Chiefs of Mandi State are descended from common ancestors of the Chandervanshi line of rajputs of the Sen Dynasty of Bengal, who claim to be descendants of the Pandavas from the time of the Mahabharata. According to the old stories, Bahu Sen set up his own territory and was recognized as a Rana, or local chief. People thought that Raja Ajber Sen, the nineteenth descendant of Bahu Sen, was a smart and kind leader. In the early 1600s, he built the existing town of Mandi around the Bhootnath Temple and moved his capital from Purani Mandi to this place. Mandi finally became a state at the start of the 16th century. The rulers definitely became kings and queens, taking on the title RAJA and other symbols of royal power. People had tried to make a state before, but it wasn't until Raja Ajbar Sen took over the land on the other side of the river Beas and built a new town there that it worked. Once the Raja of Mandi owned the land, there was a significant amount of construction activities around the palace and along the bank of river Beas. Local Rajput history says that Ajbar Sen "thought about building a palace and a capital" after his victory in 1526. First, the temple of Bhootnath was built on the spot where the god's linga had been found. The Raja then "made a firm decision to start a town and build a palace." The first stone was laid for "a fortress with a square courtyard and towers on all four corners," as well as separate buildings for running the government and collecting taxes from trade. During his time in power, the temple of Triloknath was also built. Chhattar Sen took over after him, and he built a fort in Kalar called Lakargarh. Shyam Sen, Gaur Sen, Sidh Sen, Shamsher Sen, Surma Sen, Ishwari Sen, Jalam Sen, Balbir Sen, and Vijay Sen were all the rulers of Mandi. During his time in power, Raja Vijay Sen started many public facilities, services, and utilities, such as schools, hospitals, post offices, etc. He also built a lot of homes and palaces. During his time, in 1877, a mule road was built from Baijnath in District Kangra to Sultanpur in the next-door District of Kullu via Mandi, and the Victoria suspension bridge was built over the river Beas. Raja Vijay Sen didn't have any children and didn't leave a direct heir, so Bhawani Sen was named his successor in 1897. During his time, the 1905 earthquake did a lot of damage to the town. In April 1914, Joginder Sen took over, but it wasn't until February 1925 that he was given full power as chief. Mandi stayed under the control of a British officer while he was young, and a number of departments were reorganized and changed. Mandi is one of the oldest towns and has had urban status since 1901 (Punjab Government, 1920).

Post-Independence:

Himachal Pradesh was made on April 15, 1948, the old princely states of Mandi and Suket were joined together to make Mandi District. Since then, it has served as the District's headquarters. Mandi district has 7 Tehsils, which are Jogindernagar, Sarkaghat, Sundernagar, Sadar Mandi, Chachyot, Thunag, and Karsog, and 9 Sub-Tehsils, which are Ladbharol, Padher, Sandhole, Dharmpur, Baldwara, Nihri, Kotti, Aut, and Balichowki. The District has been split into 10 Blocks so that development projects can take place. As of the 2011 Census, there are 9,99,777 people living in the District and total urban population of the district accounts for 6.27%. It has an area of 3,950 square kilometers and makes up 7.10% of the state. There are six towns in the District, and Pandoh is the census town. Mandi, Sunder Nagar, Jogindernagar, Rewalsar, Sarkaghat, and Pandoh are the names of these places. Mandi has recently become the Zonal Headquarter for the Central Zone, which includes the districts of Bilaspur, Hamirpur, Kullu, and Mandi itself and has attained importance in terms of administrative power (TCPOHP, 2001).

Mandi town has witnessed major reforms and steady growth after the independence of the country. One of the major transformation of town can be analyzed through the sketches shown in figure 1 and 2 which shows that there was the presence of a water body in front of the Raj Mahal Palace which was transformed into a market complex. The sketch of The Raj Mahal Palace from the year 1915 is referred from the image published in the article “European Bulletin of Himalayan Research 29-30: 14-38 (2006)” by Elisabeth Conzelmann.

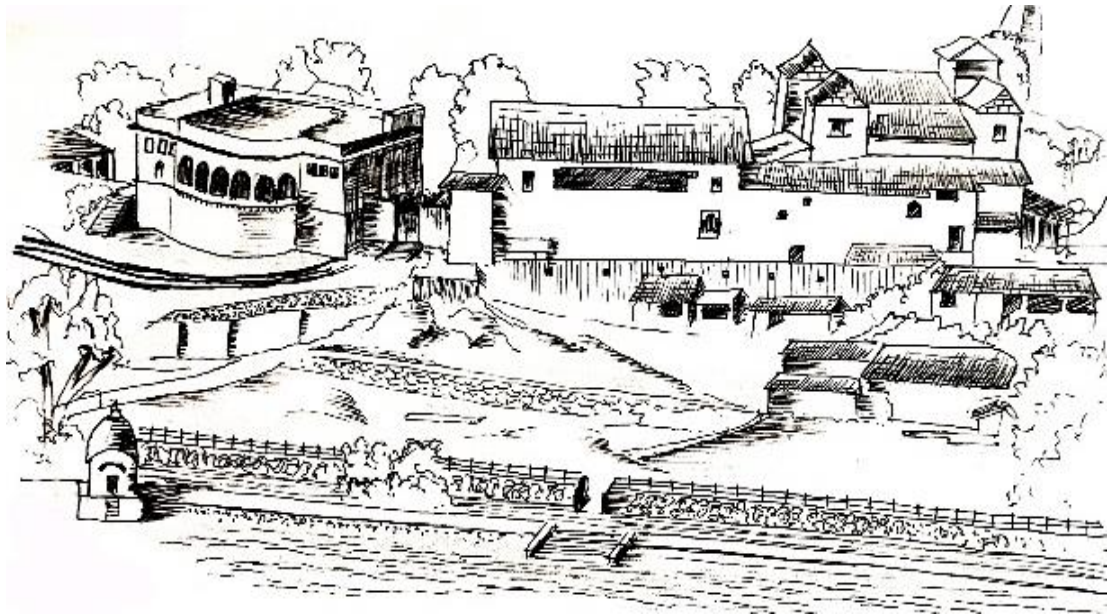


Fig. 1 Raj Mahal Palace from the year 1915

Source: Author



Fig. 2: Raj Mahal after construction of Ghanta Ghar and Market Complex

Source: Author

Various data sets has been compiled and analyzed to understand the growth pattern and urban transformation of the Mandi town which includes area of town, population distribution, population density and number of households. With the help of census handbook, of Mandi town, the data has been considered for last 70 years discussed as follows.

a. Area of Mandi Town:

According to the 1961 census, the area of the Mandi Municipal Council was 4 square kilometers, which remained unchanged until 1981. In 1981, 4.26 square kilometers of land were

added to the existing area of Mandi as a result of urban sprawl and growth in the city's periphery (Census of India, 1961) (Census of India, 1981). The Mandi Municipal Corporation was established in 2019 by the Government of Himachal Pradesh, which also included other villages and satellite towns with an area of 20.67 square kilometers, making a total of 24.93 square kilometers for the municipal corporation.

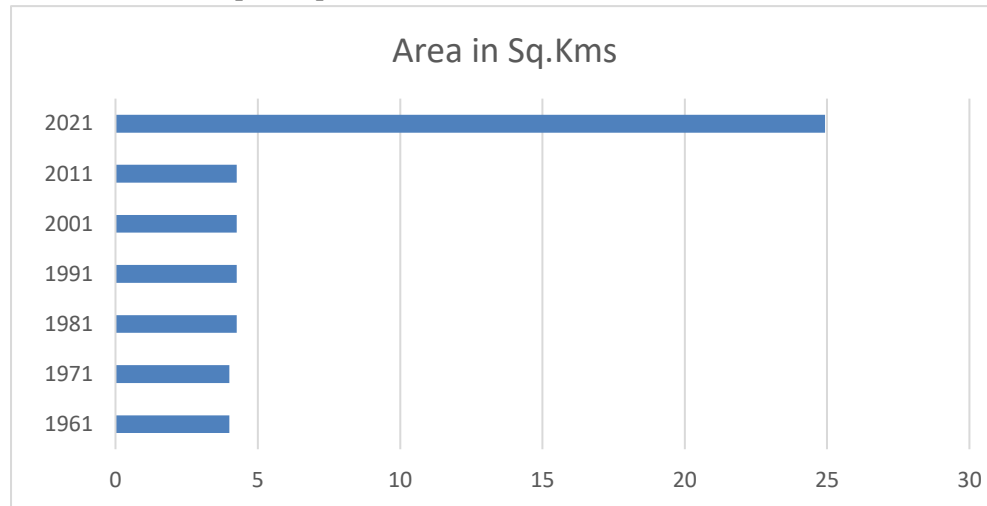


Fig. 3: Area Distribution of Mandi Town
Source: Author

b. Population growth of Mandi Town:

There were 13034 people living in Mandi town in 1961. According to preceding year data, the town's population has been increasing rapidly during the last seven decades. In comparison to 1961, the town's population increased by more than 100% in 2001. However, the census from 2011 shows a small reduction in the population, with a negative growth rate of -1.62%, bringing the town's population down to 26422. (Census of India, 1961) (Census of India, 2011) However, due to the inclusion of surrounding areas into the existing municipal limit, the total population of the town increased with a growth rate of 56.59% and summed up to 41375 after the municipality was upgraded in the year 2019.

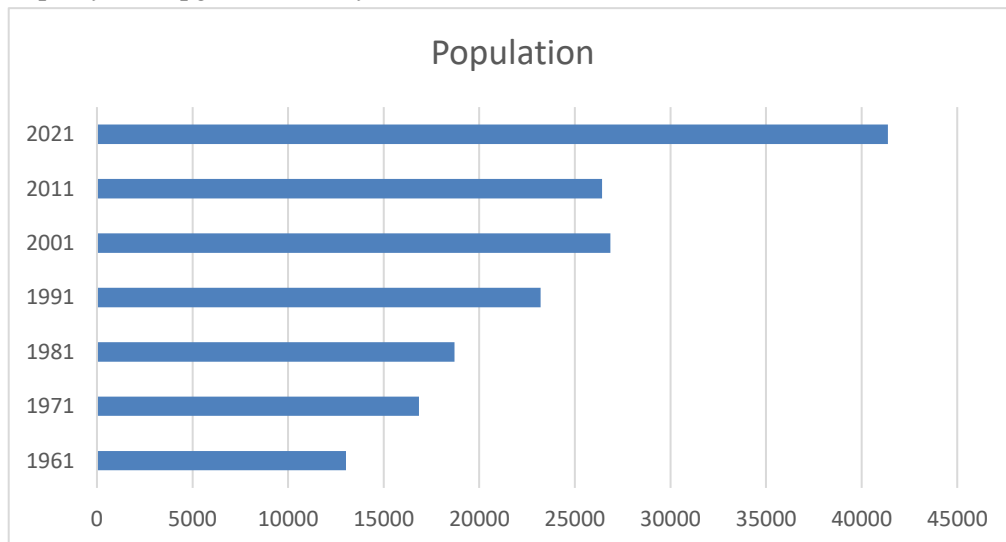


Fig. 4: Decadal population Growth
Source: Author

c. Population Density of Mandi town:

Mandi town had a total area of 4 sq. km. in 1961, a population of 13034, and a net population density of 3259 people per km. In 2001, the net population density of the city increased by

6,351 people per square kilometer, but declined somewhat in 2011 due to the previously discussed negative growth rate. Additionally, the town's population density dropped significantly by 73.23% and stood at 166 people per kilometer after the Municipal Corporation

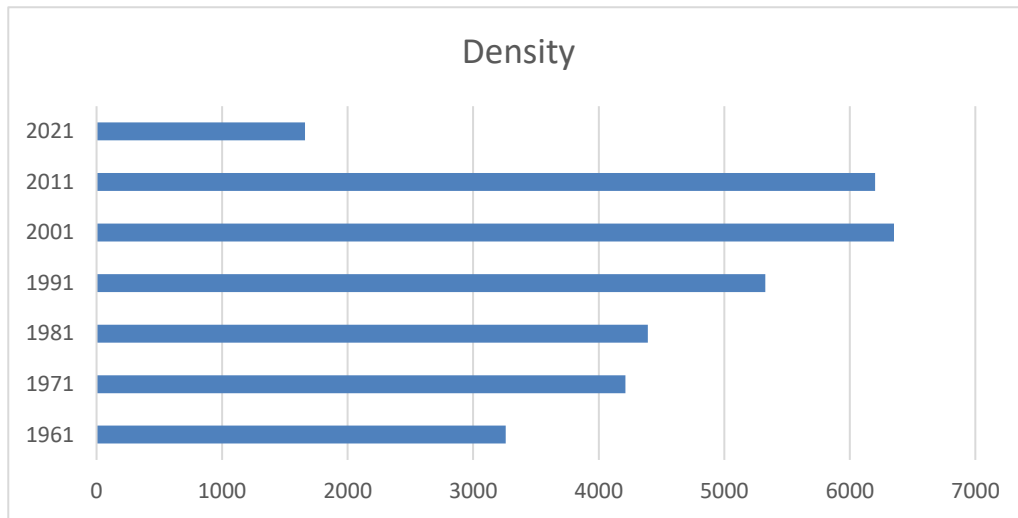


Fig. 5: Decadal Population Density (Person per Kilometer)

Source: Author

of Mandi was established (Census of India, 1961) (Census of India, 2011).

d. Growth trend of No. of Households:

The statistics on the number of households has demonstrated a steady and favorable growth pattern. In the year 1961, there were 2752 units of total households. Similarly, the number of households for the years 1971, 1981, 1991, 2001, and 2011 was 4076, 4274, 5328, 6351, and 6627, respectively, and due to the addition of new regions, the total number of households for the year 2021 is 15207 (Census of India, 1961) (Census of India, 1971) (Census of India, 1981) (Census of India, 1991) (Census of India, 2001) (Census of India, 2011).

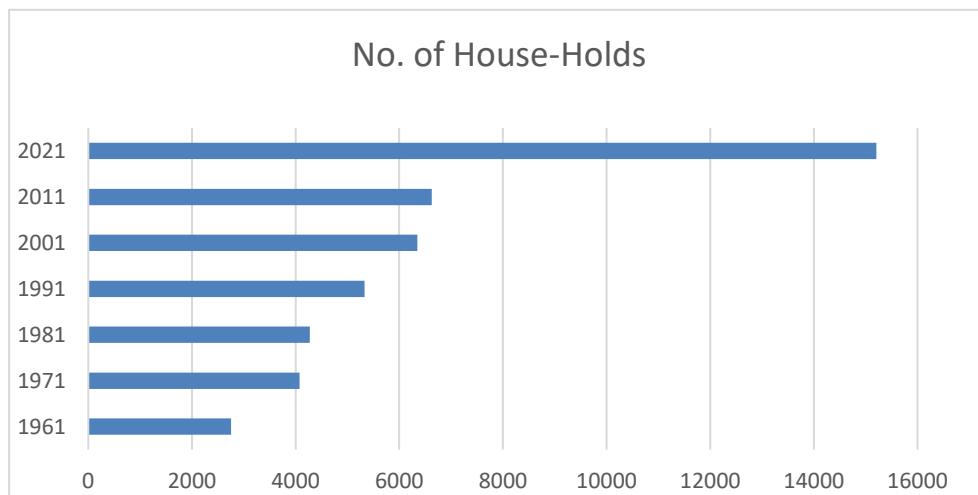


Fig. 6: Household Data of Mandi town

Source: Author

The data shown in the figures above has demonstrated the town of Mandi's positive growth trends. In terms of urban growth and development, it can also be said that the town has undergone significant reforms and adjustments. The population rise has increased the need for infrastructure (Indian Institute of Technology, Mandi, 2018). With the town's continued growth and urban development, there are numerous issues and problems that are considerably affecting the living as well as the natural environment. Therefore, the need of the hour is to address these issues and identify the probable solutions for the same.

Issues and Challenges

The evolution of Mandi town has a history of 500 years. The town was initially established as a defense against invaders. Without any road provisions, the development happened in organic manner. The first bridge in the town, the Victoria Bridge, was constructed in 1877 by Raja Vijaya Singh Sen, the King of Mandi, with assistance from the British which connects Purani Mandi with Mandi town. The town's spatial organization has grown incredibly complicated and chaotic as the population of Mandi has put a strain on both the natural environment and the city's physical infrastructure (Indian Institute of Technology, Mandi, 2018). The need for adequate land for development and other infrastructural facilities has increased along with population growth. Since the town is situated in the hills, there is a lack of suitable land that is ideal for development activities due to steep slopes, topography, forest cover, etc. An effort is made to comprehend the current and upcoming challenges with the support of available literature, field surveys, and semi structured interviews, which are mentioned as follows:

- People are demolishing their ancient, street-front homes and turning them into commercial shops or stores. Almost all of the historic buildings have been damaged or vanished as shown in Fig. no. 7. Traditional Chowki homes are being rapidly transformed into framed reinforced cement concrete structures. Due to the scarcity of buildable land within the town, construction is shifting to the outskirts.



Fig. 7: Demolished Traditional Chowki House
Source: Author

- There are very few open spaces in the Purani Mandi and the core area. The original two-story courtyard homes made of mud and stone are being swiftly replaced with structures made of reinforced cement concrete that are three to four stories high. There is no scope of expansion in this area.



Fig. 8: High Rise Building in Purani Mandi area
Source: Author

- There are 81 Ancient stone temples located in Mandi town. These temples are some of the best instances of vernacular architecture with fine carvings, as well as having unique and historic cultural significance (Raghav, 2019). However, they are exempt from preservation in the modern day. Concern has been raised about changes to vernacular architecture since they result in the loss of indigenous knowledge, culture, and social values. Concerns of preserving and safeguarding the vernacular communities and the region creates the need to investigate these transitions (Jagatramka, et al., 2021). With the changing approach to

the built environment, it is necessary to comprehend the status of vernacular sustainability (Jagatramka, et al., 2020) especially in the case of hills.



Fig. 9: Deteriorated Temples and Sculptures

Source: Author

- Bheuli, Khaliar, Jail Road, and Sain are the areas with a medium level of development. These areas often have two to three story buildings. The focus of development is currently on the new residential zones that are being built in Nela, Bari, Bijini, and Panjethi. Ribbon development along the National Highways has pronounced. Major uses like trade & Commerce, Community facilities, traffic transportation has almost choked the existing roads.
- The central town of Mandi is undergoing rapid structural change as a result of diminishing land resources. Due to the demand for more developed land, Mandi's physical environment is changing quickly. Reinforced Cement Concrete (RCC) frame buildings with contemporary amenities are being built out of courtyard homes. These new constructions are typically two or three stories high as shown in Fig. no. 11.
- Due to the topography of the town, the availability of land for construction purposes is limited. However, fast urban expansion in the city of Mandi is causing the construction of



Fig. 10: Bottle Neck Situation in the Core area

Source: Author



Fig. 11: Multi Story RCC Buildings near Indira Market

Source: Author



Fig. 12: Haphazard Development in Mandi town

Source: Author

multi-story structures, overcrowding, traffic congestion etc. Also, Rapid change in the trend of land use is another result of urban expansion that has contributed to chaos in the city, as incompatible land uses have led to uncontrolled growth in the city.

- The town's road network is extremely compact and congested. Within the core area, there are no parking spaces, and the vast majority of the region lacks access to roadways. Accessibility is provided via very narrow streets or gullies as shown in Fig. no. 13. In addition, the core area includes a mix land uses, including commercial shops on the ground and first floors and residential units on the upper floors.



Fig. 13: Congested Narrow Streets in Core area of Mandi Town

Source: Author

- At day timings, these narrow lanes are packed with locals and tourists engaged in retail activity. And there are no restrictions on two-wheeled vehicles, resulting in utter chaos in the town. Due to low accessibility in the core area, all carrier activities are conducted using donkeys and man-driven carts, causing many problems for the local people on the streets. There is no access to the fire services in the core due to poor accessibility. In the majority of the main area, road width ranges between 2.5 meters, there is a lack of pedestrian footpaths and drainage systems.



Fig. 14: Narrow Streets in the core area

Source: Author

- Hill slope cutting can be noticed in the area, leading to a variety of problems such as accelerated weathering, soil erosion, siltation, loss of vegetation cover, exposure of surface area, and degraded water quality etc. (Singh & Singh, 2018).
- In the town, inappropriate building laws, ground coverage, and F.A.R. can be noticed. As per Himachal Pradesh Town and country Planning Rules, 2014, for Row Houses with common wall on two sides maximum floor area ratio is 2.0 with 80% maximum ground coverage where as in most of the buildings violation of building byelaws is observed (Town and country Planning Department, 2014). The roads running through the town are narrow whereas structures constructed are high rise and majority of the buildings are closely placed to each other as shown in Fig. no. 15. The layout pattern of high-tension

cables and telephone wires hinders the attractiveness of the town. The near proximity of these lines to homes and plots also degrades the urban fabric of the hills.



Fig. 15: Inappropriate ratio of road width and Building

Source: Author

- As depicted in Fig. no. 16, the road width in Mandi town ranges from 3 to 7 meters, and the high V-C ratio observed in the town causes traffic concerns. In the recent years number of Motor vehicles has increased incredibly. According to Vahan dashboard Govt. of India, approximately 2200 new vehicles per annum has been registered consecutively in the town from the year 2017 onwards (Ministry of Road Transport & Highways, 2022). In addition, there is a huge shortage of parking spaces in Mandi and according to Draft Development plan Mandi, 2001, 54.05% of the vehicles are parked on the roadside, while 45.95% are parked in designated parking zones (TCPOHP, 2001).



Fig. 16: 3m wide Major District Road

Source: Author

- The core area of Mandi town has evolved recently, resulting in chaos in terms of traffic congestion, pressure on existing physical infrastructure, reduction of open spaces etc. (Baishya, et al., 2013). This is because the central area has already developed to its full extent. But due to unauthorized and illegal construction activities in the town, development is going in the vertical direction as shown in Fig. no. 17. Due to a scarcity of space in the central region, more multistory structures are being built than is permitted. Additionally, it was noted during the field survey that locals are building the upper stories on cantilevers or chajjas, which has resulted in wall-to-wall construction and neglected natural lighting and ventilation.



Fig. 17: G+4 and G+5 Buildings

Source: Author

- The town's construction has produced impermeable surfaces including bitumen roads, parking lots, business facilities, homes, cemeteries, etc. which is leading to an increase in

the rate of surface runoff, infiltration, and delay of raindrops to reach the drainage system (Singh & Singh, 2018).

According to census data, population, population density, and the number of households have all increased significantly. Although the town's area increased by 500% when the municipality was upgraded, the central region still retains a very high population density and all social infrastructure. The town has reached its maximum size, which has led the unplanned growth in the fringe areas.

Conclusion

Mandi town is located in the heart of Himachal Pradesh and has a rich historical and cultural history. Along with hundreds of sculptures and antiquities, the town is home to 81 temples made of stone. Modernization has affected the overall image of the town as it has evolved, and the town is currently facing various issues due to lack of planned development. In context of physical planning, the core area of Mandi town has already grown to its full extent and unplanned expansion is occurring in the periphery. Most of the houses in the core area do not have any access to fire tenders and ambulances as the streets are narrow with a width ranging from 1m-2m. There is a shortage of land due to the topography and other natural barriers, however new construction activities without any planning consideration are flourishing in the outskirts very swiftly. With the advancement in technology and availability of modern construction material, most of the traditional houses has been converted into modern multi story buildings. Problem of traffic and transportation has reached its limit, as the number of vehicles are also increasing which not only aiding to the congestion and parking problems but also harming the natural environment. The issues related to urban development in the Mandi town are emerging extensively day by day which requires stringent reforms and urban planning guidelines to regulate. Therefore, a comprehensive planning strategy is necessary, especially for medium sized towns of the hilly areas. New construction activities should also be monitored in the core area in accordance with the building bye laws. To prevent the disease, precaution measures are must similarly, to prevent our social, cultural and historical significance, precaution measures are required or else Mandi town will soon lead to uncontrollable chaos.

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