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Building regulations for hill towns of India



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Abstract Pressure for development on preferred locations in the Himalayan regions has increased during the last few decades due to urbanisation, population increase, and high influx of tourists. These preferred locations are converted into hill towns, making them preferred tourist destinations and the main economic activity generators of the hill regions of India. As a consequence of these factors, during the last three decades development activities have tremendously increased in these seismically vulnerable and environmentally sensitive hill towns. This unprecedented development has resulted in deterioration of living conditions, and environmental and visual quality in hill towns. Building regulations are enforced in hill towns to control/regulate the ever-increasing demand for development in hill towns but, as evident from the existing conditions, hill towns are experiencing numerous problems and concerns due to inappropriate and non contextual urban development buildings, thus highlighting inappropriateness of existing building regulations in the context of hill towns.

This paper discusses existing development scenario and issues to accommodate future development in hill towns located in Indian Himalayan region, also highlights the state of existing building regulations through an in-depth study of building regulations in major hill towns, and briefly discusses possible approaches to change existing building regulations for achieving contextually appropriate development.

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Overview of development in Himalayan hill towns

Any area having an altitude of more than 600 m from the mean sea level or an average slope of 30° may be classified as hilly in India [1], which includes the Himalayas, the Central Highlands, the Deccan Plateau and the north eastern hill ranges. 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) [2]. These different hill regions have varied geo-environmental conditions and resources

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available for development. Hill regions are the most difficult, yet most interesting and challenging terrains, to carry out any development work as development in Hilly regions is constrained by difficult terrains, steep gradients, complex geological structure, climatic conditions and rich flora.

Most of the hill towns/stations like Shimla, Nainital, Dalhousie, Mussoorie etc. are situated in the mid hill regions. These hill towns have been experiencing great pressure for development (due to high population growth, large tourist influx and better living conditions) from the last three decades, which has changed the environment and visual appearance of hill towns. Hill towns have grown many times more than their design and carrying capacity and are under a lot of pressure for providing residential, educational, health, work and recreational facilities, which is further pronounced due to scarcity of buildable land, as well as high land prices. For example, Shimla is designed for a highest population of 25,000 on a pedestrian scale, but the present population of the Shimla town is around 169,758. As a consequence of this, the lush green slopes of hill towns are converted into barren concrete jungles coupled with problems like congestion, overcrowding, pollution, traffic jams, inaccessibility, landslides, forest reduction and slope failure, which resulted in environmental degradation and ecological disturbance [3] (Fig. 1).

Issues of development in Himalayan hill towns

The various issues/ problems faced by hill towns due to high urbanisation and rapid development are as follows:

1. Heavy pressure on the housing and existing infrastructural facilities is exerted due to high population increase due to migration from the surrounding regions as well as a high influx of tourists which leads to construction of more multi-storeyed buildings in hill towns for residential, office, and commercial purposes (Fig. 2).
2. Hills stations are mostly located in ecologically sensitive zones. The ecological balance of towns is affected due to high density development having multi storeyed buildings and lower carrying capacities of hill towns. Also, degradation of natural topography, vegetation and disturbance of natural drainage pattern due to massive construction has resulted in environmental degradation in the hill towns [4] (Fig. 3).
3. Hill stations are presently facing problems of congestion, water scarcity, landslides, pollution of lakes and streams, and destruction of scenic beauty and visual blight, which are the outcomes of rapid urbanisation in and around hill towns [5].
4. In the present context, most of the hill settlements are facing issues/problems related to high development on steep and shaded slopes, insufficient traffic movement, inadequate source of water supply, and disturbances in natural drainage, which are crucial for development in hill towns [6].
5. Hill towns are susceptible to different types of natural hazards like landslides, earthquakes, floods, cloudburst, fire etc (Fig. 4). Most of the buildings are constructed or being constructed without adhering to safety provisions against natural hazards and are susceptible to heavy damage during the event of any natural calamity [7].
6. Hill towns have become concrete jungles characterised by depleting forest/greenery, un-checked construction, barren hills covered with buildings, narrow and accident prone roads, and encroachments on roads and public areas [8] (Fig. 5).
7. Construction/development activity on high and unstable slopes, more than 35° and up to 60° , having a high percentage of ground coverage with no tree/greenery amidst congested localities is taking place thereby limiting natural light, air and ventilation, which is likely to lead to environmental chaos and affect human health and well being [9] (Fig. 6).



Fig. 1 Development in Shimla, the largest ridge hill town of north India.

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