

HOSTED BY



ELSEVIER

Gulf Organisation for Research and Development  
**International Journal of Sustainable Built Environment**

ScienceDirect  
[www.sciencedirect.com](http://www.sciencedirect.com)



Original Article/Research

# Approach to formulate setback regulations for Indian hill towns

Ashwani Kumar<sup>a,\*</sup>, Pushplata<sup>b</sup>

<sup>a</sup> Department of Architecture and Planning, Malaviya National Institute of Technology, Jaipur 302017, India

<sup>b</sup> Department of Architecture and Planning, Indian Institute of Technology, Roorkee 247667, India

Received 10 July 2014; accepted 4 March 2015

## Abstract

Urban settlements in India are growing tremendously and have critical issues related to uncontrolled and inappropriate development, environmental degradation, pollution, high energy consumption, and inefficient infrastructure which results in deteriorating living conditions. Therefore, achieving systematic and contextual development is the most challenging concern in all urban developments. This scenario is most critical in environmentally sensitive hill towns which have witnessed huge inappropriate development in last few decades. However, to achieve systematic and contextual development different building regulations like, floor area ratio (F.A.R.), setbacks, ground coverage, and height of building are enforced, but the problem of inappropriate development persists.

Setback is a regulation which controls the spacing between buildings to have adequate solar exposure and ventilation. Presently, setback regulations are enforced uniformly throughout a hill town for a particular use which results in inadequate solar exposure to buildings, high energy consumption and unhealthy living conditions.

This paper attempts to highlight a new approach to formulate setback regulations based on topography, slope direction, building height and access road for specific context to Shimla (the largest hilltop town of India) after the in depth study of problems of existing setback regulations in Indian hill towns.

© 2015 The Gulf Organisation for Research and Development. Production and hosting by Elsevier B.V. All rights reserved.

*Keywords:* Hill towns; Setbacks; Urban development; Building regulations

## 1. Introduction

Building regulations are a set of rules enforced in human settlements aimed to protect public health, safety and general welfare, and environment. Presently, these are the means by which government/development authorities can control use of available land resources, buildings, infrastructure facilities to ensure proper spatial organisation

and environmental protection in the city (Hui, 2001). Prescriptive type of building regulations, like floor area ratio (F.A.R.), setbacks, ground coverage, height of building, number of storeys and plot area etc., are in force to control and achieve systematic and regulated development in urban settlements throughout India (TCPO, 2004). But, issues related to uncontrolled and inappropriate development, environmental degradation, pollution, high energy consumption, inefficient infrastructure and deteriorating living conditions persist in almost all urban settlements of India. The problem of inappropriate development is most critical in hill towns, which are environmentally sensitive

\* Corresponding author.

E-mail address: [ashwani.patiyal@gmail.com](mailto:ashwani.patiyal@gmail.com) (A. Kumar).

Peer review under responsibility of The Gulf Organisation for Research and Development.

and presently undergoing tremendous developmental activity (Pushplata and Kumar, 2012). As a consequence of this, 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 result in environmental degradation and ecological disturbance (TCPO, 2011) (Fig. 1), thus questioning the appropriateness of different enforced building regulations.

Moreover, it is evident from existing development in Indian hill towns the building regulations which are enforced are not appropriate to the existing geo-environmental context (Pushplata and Kumar, 2012). Setback is one such building regulation which is enforced to regulate spacing between two buildings with the aim to have adequate solar exposure to buildings throughout the year (sufficient for general lighting in buildings), protection of one building from the shadow of others and sufficient ventilation. The effective use of space between two buildings for landscaping, plantation of trees or other activities, which are important for maintaining environmental quality and improving aesthetic significance of a place, depend upon the exactness of enforced setback regulations and its effective compliance. The inappropriateness of setback regulation and problems prevailing in setback regulations

are discussed below for specific context of residential buildings in Shimla- the largest hilltop town of north India.

## 2. Inappropriateness and problems in existing setback regulations in Shimla

Shimla, is located in an ecologically sensitive zone and existing building regulations are formulated without considering the geo-environmental and climatic context of the town. Moreover, most of the regulations are borrowed/inspired from the building regulations of nearby metropolitan cities, mostly without any modification, thus leading to inappropriate development in the picturesque hill town (ITPI, 2004). The front, rear and side set back regulations applicable for residential buildings in Shimla town are 2.5 m, 2.0 m and 2.0 m respectively (TCPO, 2011). These setbacks are uniformly applicable to all slope aspects, without taking into account the need for having different setbacks for ensuring adequate solar access on different slope gradients and directions. The actual ground coverage, after fulfilling the setback regulations, is usually high (mostly more than 65% of plot areas), which results in high building foot print and less open space. The existing set backs are insufficient to have adequate solar exposure for buildings and consequently, a large number of

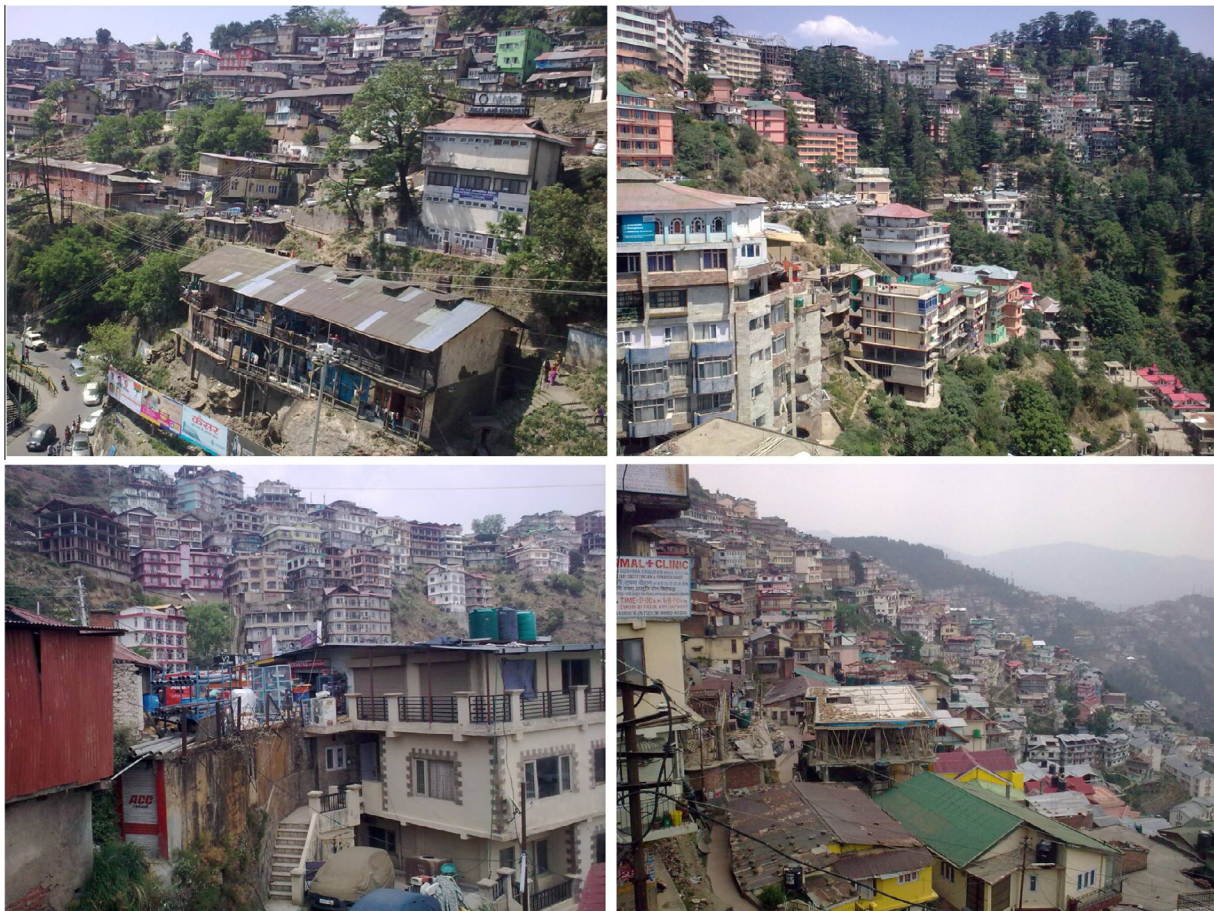


Figure 1. Existing inappropriate development in Shimla town.

Download English Version:

<https://daneshyari.com/en/article/214827>

Download Persian Version:

<https://daneshyari.com/article/214827>

[Daneshyari.com](https://daneshyari.com)