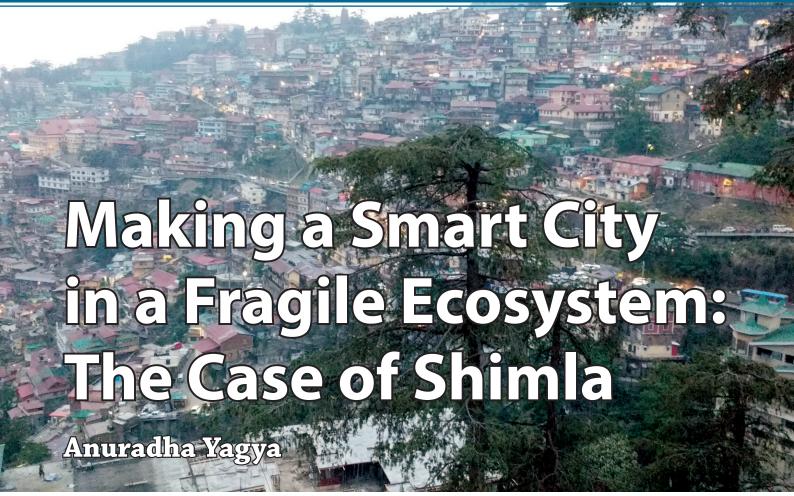


# **ORF SPECIAL REPORT**

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A hill city, Shimla's urban management issues are different from those in the plains. (Photo: ORF/Rumi Aijaz)

#### **ABSTRACT**

Sustainability requires, among others, adjusting and reorienting to a dynamic situation. In the context of urban areas, "dynamism" is seen in the population and economic growth characteristics. The constantly changing nature of urban centres calls for new and improved strategies to ensure sustainable and

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equitable development. Owing to population growth and, consequently, greater pressure on resources, there has been increased focus on smart and innovative mechanisms that encourage the optimum utilisation of resources. This report sheds light on the urban development challenges in Shimla in northern India and explores the ways forward. Hill states have a fragile ecosystem, and solutions to urban development challenges must take into consideration these peculiar ecological issues. The case of Shimla shows that environmental factors and climate change considerations need to be incorporated within the urban planning and governance process to increase urban resilience.

#### **INTRODUCTION**

Concerted measures are necessary for India to meet the demands of its evergrowing urban population. Indeed, the country's urban-policymakers have been making efforts to adapt their strategies to the growing challenges of urbanisation. The period before the enactment of the Constitution (74th amendment) Act, 1992 emphasised on the creation of housing stock and provision of basic urban amenities to the poor. The 1992 Act sought to empower urban local bodies. Subsequently, in 2005, the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was launched to improve urban infrastructure and strengthen urban governance. The most recent initiative by the Government of India, launched in 2015, is the Smart Cities Mission. Under the mission, the Centre is supporting state governments in the creation of 100 'smart cities'.

Urban growth and development issues in India vary across cities and are determined by their spatial/physical location as well as the sociopolitical characteristics of the state where they are located. There are significant regional variations in development achievements and performance across the country. For example, while some northeastern and northern states of India face physical challenges (such as isolation due to difficult terrain), other states such as Bihar, Jharkhand and Rajasthan hurdle less issues of topography and more of sociopolitical and economic constraints.

India being a federal republic, the challenges with respect to governance vary across the states as urban development is a state subject. Planning and development authorities (regional and town planning) fall under the jurisdiction of the state government. The central government can issue directives, provide advisory services, set up model legislation and fund programmes that states can follow at will. Therefore, development efforts and their outcomes are subject to the state-level initiatives.

Himachal Pradesh is a hill state located in the northern part of the country. It is the least urbanised state in India, with just 10.4 percent of its population residing in urban areas. Its annual exponential growth, too, is recorded to be the lowest amongst all states and Union Territories (UT), at 1.45 percent. The reason behind the low rate of urbanisation is that the urban centres are not able to fulfil the defined criterion of accommodating population density of at least 400 persons per sq. km. Many places have lesser population density and fail to qualify due to the hilly terrain. The challenges to sustain even this level of urbanisation in Himachal Pradesh are manifold due to its mountainous ecosystem that makes it extremely fragile. Development efforts are constrained due to issues like higher vulnerability of the state to natural disasters, and less availability of built up space. Yet the same physiographic conditions that serve as obstacles to development also make the state an important tourist destination.

Shimla is the capital city of the state of Himachal Pradesh. Being a hill city, Shimla faces urban management issues that are different from those for the cities in plain terrain. For one, land resources—critical for urban growth—are in short supply in Shimla. Resource efficiency, therefore, is key to ensure sustainable development of the city. The city was selected—through a competition process, wherein the Shimla Municipal Corporation submitted a smart city proposal that was accepted by the Ministry of Urban Development—under the Smart Cities Mission in June 2017.

This report seeks to describe the key urban development and management challenges in Shimla, and offer ideas and suggestions to overcome them. It aims to serve as a policy input for the ongoing smart city project in Shimla. The report presents an overview of the city and discusses key features of the city with respect to its physical location and growth, infrastructure and service provision, mobility, tourism potential, and institutional setup for urban management. The report specifically brings to light key policy revisions and reforms undertaken by the Government of Himachal Pradesh to promote sustainable development. It concludes by identifying some key suggestions for urban development. The information presented here is based on a review of literature and a two-day workshop on smart cities conducted in Shimla on 19–20 May 2017. The workshop gathered subject experts from Shimla as well as other parts of the country. Key government officials were also in attendance and discussed policy issues with respect to urban development and management in Shimla.

#### **SHIMLA CITY: AN OVERVIEW**

Shimla is connected to the city of Kalka—a foothill town situated in the adjoining state of Haryana—by one of the longest narrow-gauge railway in

India. It is also connected by road and airline services. The city is approximately 100 km from Panchkula, the nearest major city, and 365 km from New Delhi.

Shimla's population has been constantly growing from about 55,000 in 1971 to 186,000 in 2016. As per the 2011 Census, Shimla had a population of 169,578. Figure 1 shows the population change of Shimla city over the decades. However, while the absolute population is growing, percent decadal change shows a declining trend. It is the only Class-I urban centre (population over 100,000) in the state, with about 25 percent of the state's urban population living in the city.

180,000 **55.6** 160,000 50 140.000 Growth Rate (Percent) 120,000 40 100.000 31.08 30 27.61 80,000 60,000 20 ■17.89 40.000 10 20.000 0 1971 1981 2011 1981 1991 2001 2011

Figure 1: Decadal Change in Population of Shimla

Data Source: Ministry of Urban Development, 2013.4

The city is governed by a municipal corporation and has an area of around 35.34 sq. km. The density of population is 47.98 persons per sq. km. The city is built on top of seven hill ranges and has 25 percent of land under forests and 41 natural springs that gives it a unique natural setting. The city has 82 listed heritage sites, six demarcated heritage zones, one ASI protected monument, and a museum. The Kalka–Shimla railway line built by the British is a UNESCO world heritage site.

Shimla's urban development issues may not seem very different from those in other cities of the country-mobility, congestion and land management, spatial growth and management, infrastructure, and service inadequacy. However, the context—as discussed in the subsequent sections—must be understood with specific reference to Shimla.

#### URBAN DEVELOPMENT SITUATION IN SHIMLA

This section analyses the various urban development features of the city, including the physical location and the urban growth characteristics, the state of infrastructure and services, the characteristics of urban mobility, the impacts caused by tourism activities, and the energy situation of the city.

#### Physical Location and Urban Growth

The city is spread over seven hill spurs, namely, Jakhoo Hill, Elysium Hill, Museum Hill, Prospect Hill, Observatory Hill, Summer Hill and Potters Hill. These spurs are interconnected by roads. Thus, the development pattern in Shimla is governed by topographical constraints such as steep slopes, elongated hilly spurs, forest areas and zones of perpetual sunshades. About 90 percent of the city is built on unstable, 60-degree slopes, covered in four- to five-storey structures, although construction is prohibited on slopes above 45 degrees. However, there is a need for greater vigilance on construction activities. Extensive deforestation happened in the 1980s and 1990s, and Shimla has since lost a lot of its green cover.<sup>5</sup>

Shimla's physiographic conditions impose many constraints on urban development and growth. These include:

- a) Scarcity of buildable land, leading to the construction of unsafe structures on slopes. Most of the population is concentrated on the southern slopes, which are more amenable to construction. Shimla is still learning to balance its natural environment with its manmade one. Being a tourist destination, many problems get accentuated. The city is witnessing large-scale expansion.
- b) The spatial expansion of the urban area is along linear corridors, and several areas are completely inaccessible through motorised transport. The movement of vehicles and people face several difficulties due to reduced width of roads in some areas.<sup>6</sup>
- c) The city lies in Seismic Zone IV (high-damage risk zone). Due to construction on hilly terrain and steep slopes, Shimla is extremely vulnerable to natural hazards such as landslides, sinking of land and earthquakes. Several areas of the city are in sinking zones. About 25 percent of the old town is in the sinking zone, and unless improvements are made in the drainage and sewerage systems of the upper reaches, more areas will become prone to sinking, thus endangering life and property. The reasons for sinking of land include unregulated dumping of debris on slopes, resulting in loose soil; increasing pressure of people and buildings on slopes; and poor drainage and sewerage systems. It is important to improve the drainage system to facilitate run-off, especially in monsoon season, to reduce the risk of sinking.<sup>7</sup>

To ensure planned and regulated growth, the Government of Himachal Pradesh constituted Shimla Planning Area (SPA) through notification in November 1977. The SPA comprises the following:<sup>8</sup>

a) Shimla Municipal Corporation;

- b) Recently merged Special Areas of Dhalli, New Shimla, and Tutu; and
- c) Special Areas of Kufri, Shoghi and Ghanahatti.

The geographical spread of the SPA is roughly 100 sq. km, in which approximately 32 sq. km falls under the municipal limit, including newly added areas of New Shimla, Dhalli and Tutu.

#### Infrastructure and Service Provision

Shimla faces management and planning challenges with respect to provision and maintenance of essential services such as liquid and solid waste disposal and water supply (Table 1). Shimla is an administrative node and an educational hub for the rest of the state. Moreover, due to influx of tourists and floating population, especially during the summer season (which is the peak tourist season), there is great pressure on infrastructure and services.

**Table 1: Basic Infrastructure and Service Levels** 

Services	Essential Features	
Water supply	<ul> <li>85% households have water supply connection</li> <li>111.22 LPCD supply</li> <li>52 million litres per day (MLD) water available at source</li> <li>10% extent of metering of water connections</li> <li>45% non-revenue water</li> <li>Net water availability reduced by 7 MLD due to closure</li> </ul>	
Solid waste management	of GWSS scheme  • 70 metric tonnes of municipal solid waste generated per	
	<ul> <li>day</li> <li>300 kg medical waste generated per day</li> </ul>	
	80% households covered by door-to-door waste collection	
	28% households dependent on community bins	
Sewerage and sanitation	<ul><li>70% road length covered by sewer line</li><li>35% efficiency in collection</li></ul>	
	<ul> <li>75% adequacy of sewage treatment capacity, although only 8–9 MLD sewage treated at the sewage treatment plant</li> </ul>	
	Only two public toilets provided	

Source: Shimla Municipal Corporation, 2017.9

The city faces acute water shortage. Because of the closure of a groundwater supply scheme (GWSS), the net water availability has further reduced. The per capita water supply is below the 135 litres per capita daily (LPCD), the standard

set by the Central Public Health and Environmental Engineering Organisation guidelines.

In terms of solid and liquid waste, too, the situation is critical. As a result of poor utilisation of available treatment facility in the sewage treatment plant, only 11 percent of the total sewage is treated. The untreated water is released into open streams and drains that cause severe damage to environment, flora and fauna. $^{10}$ 

Around 80 percent of the city is covered by door-to-door waste collection services (Table 1). During peak tourist season, however, more waste is generated. The community bins often overflow, even in the tourist areas. Waste is regularly dumped in the open drains, leading to blockages in natural drainage channels.

#### **Urban Mobility**

Most of the hill towns have severe mobility constraints due to a lack of land to accommodate increased traffic flow. Shimla is no exception (Table 2). Vertical mobility is more critical for the city with such variations in elevation. However, presently, there is only one public lift for tourists and residents alike. Only 16 percent of the motorable roads have footpaths, although 42 percent of the trips are covered on foot. The availability of public conveyance, too, is inadequate, with only 308 buses available for public transport.

**Table 2: Urban Mobility Indicators** 

Aspect	Essential Features	
Parking	<ul> <li>4,311 equivalent car space (ECS) parking slots available as against the required 14,500 ECS</li> <li>1,480 ECS added in public-private partnership (PPP) mode</li> </ul>	
Transportation	<ul> <li>308 numbers of present bus fleet</li> </ul>	
	<ul> <li>23% rise in vehicle ownership</li> </ul>	
	<ul> <li>90 km motorable roads accessed by public transport</li> </ul>	
	<ul> <li>16% of motorable roads have footpaths</li> </ul>	
	<ul> <li>Only one public lift in city for vertical mobility</li> </ul>	
	• 42% on-foot trips	
	<ul> <li>410 m ropeway and 3.6 km under construction</li> </ul>	

Source: Shimla Municipal Corporation, 2017. 11

The vehicular volume has grown by 23 percent, thereby increasing the parking demand in the city. The city has only 4,311 ECS parking available, while the demand is currently at 14,500 ECS parking. New parking lots are

under development in PPP mode. Traffic congestion is very frequent in Shimla, especially in the tourist season, when traffic comes to a standstill for several hours on the major roads.

#### **Tourism**

The city witnesses a large influx of domestic and foreign tourists as well as a floating population. Shimla is a preferred tourist destination. The number of tourists has increased from 7.14 million in 2005 to 18.45 million in 2016. The floating population, too, has increased from around 56,000 in 2001 to around 80,000 in 2016; these people are primarily engaged in tourism and service-provision activities.

The peak season for tourists is the summer months. Moreover, Shimla is a weekend destination for people living in Delhi and Chandigarh. The city, however, is not equipped to deal with the rising tourist numbers. Therefore, the tourist season puts a severe strain on the infrastructure, with respect to availability of water supply, garbage disposal and mobility. The floating population, too, burdens the existing infrastructure and contributes to encroachments and unauthorised constructions, which are incompatible to natural areas.

#### **Energy Needs**

The energy need of urban areas is becoming one of the most critical issues in urban management. Shimla requires energy for heating during winter months. There is a ban on the use of wood for heating purposes. In the recent years, focus has shifted to renewable energy. Renewable energy sources, such as hydropower, supply the total energy demand. Two solar plants, installed under the solar city plan, currently generate 35 KWP (kilowatt peak) capacity. A recently commissioned waste-to-energy plant is now producing 1.7 MWH (megawatt hour) of energy. There is also a plan to convert streetlights into solar-powered lamps. <sup>15</sup>

#### **URBAN MANAGEMENT**

Urban management agencies face numerous challenges in managing urban growth and development. The Constitution (74th Amendment), 1992 gave the urban local bodies (ULB) the power to manage creation and provision of urban services. However, in many states, the actual transfer of services from the state to local government is yet to take place.

In Shimla, several state departments are still actively involved in urban services management (Table 3). In many cases, they have joint responsibility with the Shimla Municipal Corporation (SMC). For instance, the bulk water supply is planned, constructed and managed by the State Department of Irrigation and Public Health. The SMC is only responsible for the supply and distribution of water. This partial division of responsibilities for water supply results in inefficient management of services, as the planning and distribution of water are carried out by separate agencies. In the case of sewerage and drainage services, the planning and construction of the infrastructure is done by the state department, whereas the operations and maintenance are overseen by the SMC. The SMC entirely manages solid waste management and the internal roads. However, the SMC faces shortage of technical personnel. Vertical mobility, which is a key element in Shimla due to its hilly terrain, is managed by the Public Works department and not by the SMC. The SMC is also not responsible for essential aspects such as urban housing in the city, which is directly managed by the state department of HIMUDA.

**Table 3: Institutional Setup for Urban Management** 

Services	ervices Planning and Implementing Ag		ing Agency
	Design Agency	Construction	Operations and Maintenance
Bulk Water Supply	I&PH	I&PH	I&PH
Water Supply and Distribution	SMC	SMC	SMC
Sewerage	I&PH/SMC	I&PH/SMC	I&PH/SMC
Drainage	I&PH/SMC	I&PH/SMC	SMC
Storm Water Drainage	I&PH/SMC	I&PH/SMC	SMC
Solid Waste Management	SMC	SMC	SMC
Main Roads and Bypasses	PWD	PWD	PWD
Internal Roads	SMC	SMC	SMC
Street Lighting	HPSEB/SMC	HPSEB/ SMC	SMC
Fire Services	SMC/Fire Dept	SMC/Fire Dept	SMC/Fire Dept
Open Spaces/Parks	TCP Department	SMC	SMC
Transportation	RTC/HPBMDA	HRTC/ HPBMDA	HRTC/ HPBMDA
Vertical Transport	PWD	PWD	Tourism Dept
Housing	HIMUDA	HIMUDA	HIMUDA
Basic Services to Urban Poor	DoUD/SMC	SMC	SMC
Urban Forest	Forest Dept.	Forest Dept.	Forest Dept.
Public Conveniences	I&PH/SMC	NGO	NGO

Source: Bhavna Karki, 2015.16

(Note: SMC: Shimla Municipal Corporation; I&PH: Irrigation and Public Health; PWD: Public Works Department; HPSEB: Himachal Pradesh State Electricity Board; HIMUDA: Himachal Pradesh Housing and Urban Development Authority; DoUD: Department of Urban Development; NGO: Non-Government Organisation; HRTC: Himachal Pradesh Road Transport Corporation; HPBMDA: HP Bus Stand Management and Development Authority; TCP: Town and Country Planning.)

With respect to the financial condition of the local body, the SMC has been in deficit for the last few years. The ULB is dependent on the state to meet its revenue expenditures. Its decision-making and fiscal powers are still not fully devolved from the state government.

The State Finance Commission recommends that 2.75 percent of the state's own tax and non-tax revenues be given to the local bodies. So far, the state has not complied with this, and only 0.12 percent of the tax sources are given to the local institutions. Moreover, the SMC has received only 18 percent of the aggregate amount of the grants distributed by the state government, which is low as compared to its population share of 25 percent. The SMC needs to strengthen its revenue-generating capability. The cost recovery of operation and maintenance expenses is still inadequate. Given that the municipal corporation will be playing a greater role in urban service delivery, its capacity must be built in the areas of tax collection and recovery.

#### POLICY REFORMS TO PROMOTE SUSTAINABLE DEVELOPMENT

In the last decade, the SMC and the Himachal Pradesh government have adopted important policy changes and new policy resolutions, to promote sustainable urban development in the city. Some of these include:

- a) Use of renewable energy: The Ministry of Renewable Energy has prepared a solar master plan for the city. Solar passive building design is now mandatory in public/government buildings and has been incorporated in the Himachal Pradesh Town and Country Planning Rules, 2009. The conversion of city streetlights to solar lights is underway.
- b) Water conservation: Mandatory sloping of two-thirds of the roof area to promote rainwater harvesting, as part of the Himachal Pradesh Town and Country Planning Rules, 2009.
- c) Protection of natural environment: Policies such as avoiding construction of building settlements on river sites, complete ban on felling trees, ban on firewood and coal for heating, and ban on smoking in public spaces.
- d) Waste management: Ban on use of polythene bags in the city.
- e) Use of alternative energy: A waste to energy plant, in operation since January 2017.
- f) Parking policy: New vehicle registration in Shimla is allowed only if parking is available. It is the second state in India to have this policy. Furthermore, in terms of overall urban transportation, there is a need to reduce vehicle ownership in the city. This will substantially reduce the traffic congestion.

Some of these policy changes are critical in retaining the natural heritage of Shimla. However, city residents, too, need alternative options. Escalators/lifts and ropeways are important components of vertical mobility that can ease the mobility issues of the residents as well as the tourists.

Smart alternatives are required to solve the many issues of urban development in the face of resource—natural, manpower, financial—constraints. In Shimla, due to its physiographic and climatic conditions, there is a need for constant innovation to unlock potential resources and ensure frugal use. The Ministry of Urban Development—now called Ministry of Housing and Urban Affairs—has chosen Shimla under the Smart Cities Mission to be developed as a smart city in June 2017. The Shimla Municipal Corporation prepared a detailed smart city proposal describing aspects that require immediate attention for the sustainable development of Shimla. The proposal contains plans and initiatives to accomplish the much-needed improvements in service levels through optimal resource utilisation. There is significant emphasis on the use of modern technologies to improve various aspects of city life, including mobility and liveability. Table 4 summarises the key proposals given in the smart city plan that aim at sustainable urban development.

Table 4: Key Proposals for Sustainable Urban Development

Aspects	Proposed Measures in Smart City Plan		
Disaster risk reduction	Replace dilapidated and unsafe building stock with new and earthquake resilient structures		
Heritage preservation	230 acre retrofitting along arterial roads		
Encourage non-motorised transport infrastructure	<ul> <li>Tunnels proposed</li> <li>Vertical mobility through 22 lifts and escalators</li> <li>Public bike sharing</li> <li>Trail walkators</li> <li>Sky walks</li> <li>Green trails and shade structure</li> </ul>		
Decreasing congestion	Bypass roads proposed		
	Parking spaces increased		

Source: Shimla Municipal Corporation, 2017.18

#### **CONCLUSION**

Hill states have fragile ecosystems and must adopt a development path that does not disturb their ecological balance. Shimla needs to rethink its development strategy. Critical issues such as land availability, energy, water

and waste management, mobility, and infrastructure provision need to be dealt with particular care and must be tailor-made for Shimla through smart, urban solutions aided by smart technology, good governance and active civic participation. This can help bring in the much-needed transformation towards sustainable development.

In light of the features of Shimla's urban development presented in this report, the following suggestions are proposed:

- a) The city of Shimla houses 25 percent of the state's urban population. It is necessary to look beyond the city by undertaking a regional planning exercise to identify and develop newer urban centres. Such a measure will not only significantly reduce the pressure on Shimla but also bring about regional development.
- b) There is a need for policy change regarding the notification of urban centres, given the fact that many settlements in Himachal Pradesh do not qualify as "urban" simply because they do not have the minimum density threshold of 400 persons per sq. km. Thus, the density threshold must be revisited in the light of settlement structure in the hill areas, which are spread thinly on available built up space.
- c) Greater convergence of activities and programmes undertaken by the various departments in the city must be ensured under a common policy framework. This will help improve service provision. Such an initiative will also benefit the Special Purpose Vehicle, proposed to be created for implementing the smart city mission.
- d) Facilitation of know-how/knowledge and technology transfer between Shimla and other hill cities of the state—e.g., Dharamsala—is essential to manage critical issues such as urban mobility, meeting energy needs and managing waste disposal. ©RF

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