

# **Green Growth and Transport in Himachal Pradesh**

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## 1. Introduction

Himachal Pradesh (HP) is a unique state in itself with some specific characteristics that sets it apart from most other Indian states. The state is a relatively small state with a population of around 6.9 million (GoI, 2011) of which 90% resides in rural areas. Of its total area of 55,673 sq. kms, 36,700 sq. kms are inhabited by 17449 villages which are scattered over steep slopes and narrow valleys. The population density of the state is around 110 persons per sq km, which is extremely low in comparison to the national average of 382 persons per sq km. The state is largely a mountainous region except a few pockets bordering the states of Punjab and Haryana with altitudes varying in the range from 400 meters to 7000 meters above sea level. Nearly two thirds of its geographical area is classified as forests which is also a major reason for low population density in the state. Apart from the geographical constraints, certain parts of the state experience extreme weather conditions limiting the working season and accessibility of these regions especially in winters. Tourism is a major economic driver in the state and contributes nearly 9.57% to the State Domestic Product (Draft 12th FYP (2012-17) & Annual Plan 2013-14). With a tourist season of as long as 9 months in a year, trends indicate that on an average, nearly 11 million tourists visit the state every year (Economic Survey of Himachal Pradesh 2013-14)

These specific characteristics of the state in terms of its difficult terrain, environmental fragility, remoteness, limited working season and huge inflow of tourists present more challenges than opportunities in context to the transport sector. Transport undeniably plays a key role in socio economic development of a region or state. Availability of adequate transport infrastructure and facilities attain paramount importance for overall growth of the state in a green or sustainable manner. Development of transport facilities and infrastructure has long been a focus of the state government since the declaration of full statehood in 1971. However, with increasing population and increasing mobility needs, the state is witnessing severe problems in terms of congestion, depleting air quality, increase in road accidents, and others.

In an endeavour to develop a future road map for green growth of the transport sector in HP, this chapter, therefore, seeks to provide a detailed analysis of the existing transport situation in the state highlighting the key trends related to transport sector for both passenger and freight mobility, the issues faced by the state and the government initiatives undertaken/being undertaken to address these issues in Himachal Pradesh.

## 2. Key trends

Provision of transport infrastructure in a hill state may not always be need based. One of the important objectives to provide transport infrastructure is to provide mobility access which may not be available otherwise. In case of HP, transport sector is primarily dominated by road transport sector with negligible presence of other modes like railways, civil aviation or water transport. With rapidly increasing population and increasing mobility needs, the pressures on the existing transport infrastructure have also increased significantly. This

section discusses in detail the key trends related to the transport sector in the state, in context to both passenger and freight mobility:

## 2.1 Infrastructure development trends

### 2.1.1 Road network

Road transport forms the backbone of the transportation sector in HP. The role of roads in movement of people and goods is therefore critical in the overall growth and development of the human settlements in Himachal Pradesh as they stand today. Contribution of roads has not only been in making the isolated regions accessible but has also improved the overall quality of life of the people by enabling and improving the overall movement of goods and services across the state. Given the above, development of roads has been a focus area of the state government since its formation.

In the administrative state of Himachal as it stood in 1948, there were only 288 kilometres of motorable roads in the state (Draft 12th FYP (2012-17) & Annual Plan 2013-14). Since then, the state government has been assigning a very high priority to road sector. By 1971 i.e. at the time of formation of full-fledged State, significant progress had been made and the total motorable roads in the state had reached 7609 kilometres. In 2012-13, 95 percent of the total road length of 34,647 kilometres in the state was motorable amounting to 32,965 kilometres. (Economic Survey of Himachal Pradesh 2013-14). In terms of availability of roads per unit area, the road density at the state level is only 0.62 km per sq. km, much lower than that at the national level value of 1.21 km per sq. km.

The road statistics show an extremely slow rate of growth of an average of 2.5% per year from 2004-05 till 2012-13. However, a large part of the state is still deprived of the benefits of the roads and resulting development. By the end of March 2012, only 55.19% villages of the state have so far been connected with motorable roads and about 43.91% villages are still deprived of the benefits of the road connectivity (Draft 12th FYP (2012-17) & Annual Plan 2013-14). Also, some of the roads are seasonal and get closed during winters and monsoons due to heavy snowfall, landslides and washouts.



**Figure 1:** Road Network in Himachal Pradesh

**Source:** <http://www.mapsofindia.com/maps/himachalpradesh/himachalpradeshroads.htm#>

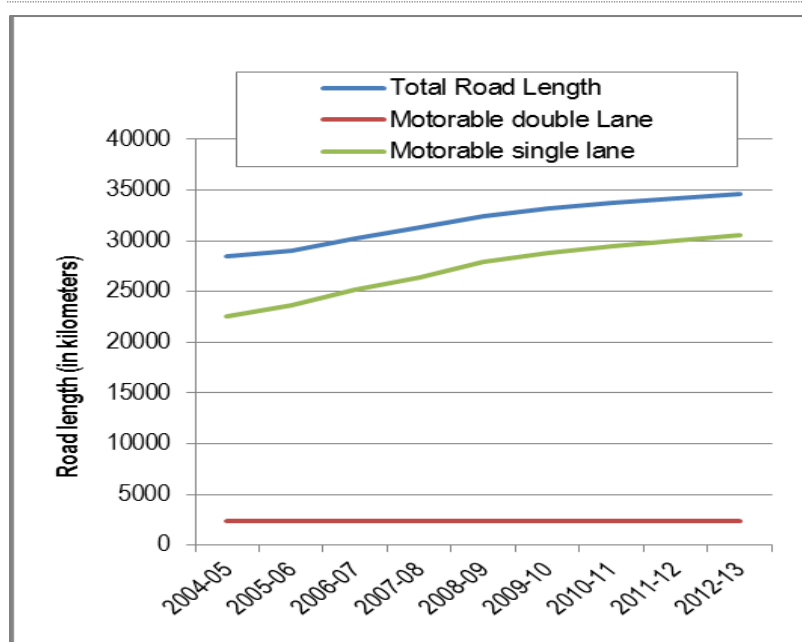
As per the state master plan, about 39,045 kms aggregate road length is required in the State to provide optimum connectivity to all the Census (17449) villages, the approximate fund requirement, at 2011-12 prices, for constructing the balance road length in the State, as well as all-weather roads, is INR 7,396 crores (Draft 12th FYP (2012-17) & Annual Plan 2013-14).

Also, out of the total motorable roads in 2012-13, only 7 % roads were double lane roads and nearly 90 % were single lane roads. While motorable single lane roads have grown at an average rate of 3.9 % per year between 2004-05 and 2012-13; motorable double lane roads have grown at an extremely slow rate of less than 1% (Table 1).

**Table 1:** Roads in Himachal Pradesh (in kms)

Year	Total Road Length	Motorable double Lane	Motorable single lane	Jeepable	Less than Jeepable
2004-05	28,467	2,355	22,567	442	3103
2005-06	29,011	2,369	23,599	390	2653
2006-07	30,264	2,374	25,210	381	2299
2007-08	31,371	2,377	26,434	365	2195
2008-09	32,450	2,377	27,925	345	1803
2009-10	33,171	2,384	28,832	300	1655
2010-11	33,722	2,403	29,464	290	1565
2011-12	34,169	2,411	29,999	276	1483
2012-13	34,647	2,415	30,550	260	1422

**Source:** State Statistical Abstract of Himachal Pradesh (various years)



**Figure 2:** Growth in road length over years (2004-05 to 2012-13)

**Source:** State Statistical Abstract of Himachal Pradesh (various years)

Data indicates that the primary focus of the government has been on providing access to the inaccessible villages/habitations in the state followed by conversion of existing non-motorable roads into motorable roads. Government programmes, both state and national level programmes like Pradhan Mantri Gramin Sadak Yojana (PMGSY), Border area road development programme, Jawaharlal Nehru National Urban Renewal Mission (JNNURM) and others have been discussed later.

### 2.1.2 Railways

Rail transport is almost negligible in the state. Not much progress has been made in rail transport since independence. Only 44 kms track has been laid in the past six decades (Draft 12th FYP (2012-17) & Annual Plan 2013-14). In 2014, the state had a total rail network of 296 route kms. In terms of the route kilometres per lakh population covered by the state rail network, HP has only 4.32 route kms per lakh population which is lower than the India average at 5.44. Also, in case of route kms per 1000 sq. kms of area, HP with only 5.32 route kilometres per 1000 sq. km, is much lower than the national average of 20 route kilometres per 1000 sq. km.

At present, there are only two narrow gauge railway lines connecting Shimla with Kalka (96 km.) and Jogindernagar with Pathankot (113 km.), also known as Kangra valley railway. While Kalka Shimla Railway is designated as 'World Heritage' railway by UNESCO; Kangra valley railway is on tentative list of UNESCO world heritage railways. Apart from these, a broad gauge line also exists which connects Nangal Dam in Punjab to Charuru (District Una). Currently, this line is being extended till Talwara (Punjab) with track operational till Churutakarla. The work is still under execution. (Economic Survey of Himachal Pradesh 2013-14)



Another broad gauge line is planned to come up from Bhanupalli-Bilaspur- Beri- Lehon a sharing funding pattern of 25% from state, 25% from Ministry of Railways and additional 50% from Ministry of Finance. The work on this line has yet not started (except survey work).(Economic Survey of Himachal Pradesh 2013-14).

### 2.1.3 Civil Aviation

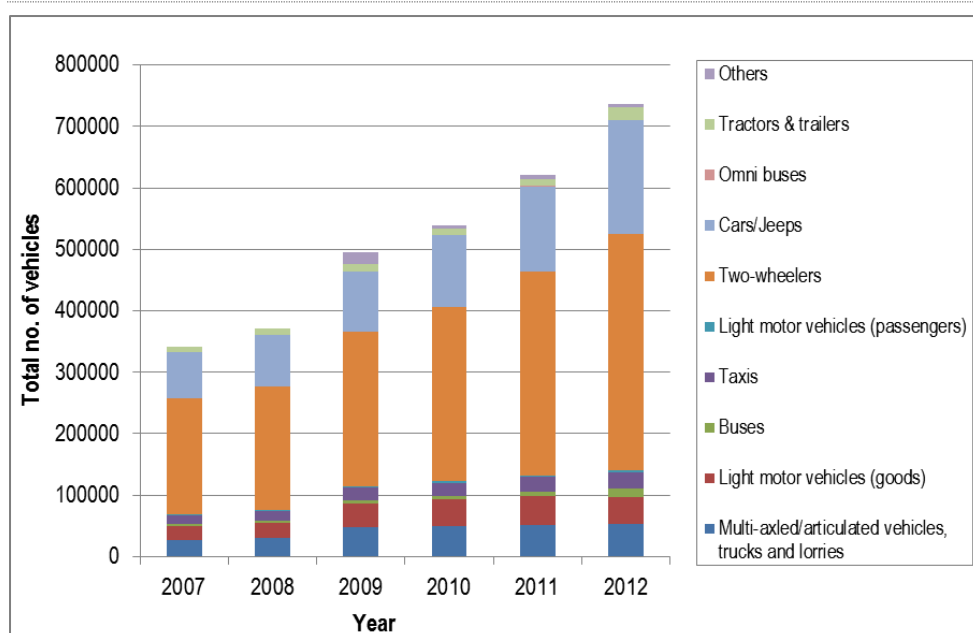
Like railways, the presence of air transport in HP is also negligible. At present there are three airports in HP, in Shimla, Kangra and Kullu-Manali. Apart from that, there are 57 operational helipads and 12 new helipads are also in offing. To provide better connectivity and open up remote and tribal areas to the tourists, the state government is planning to introduce heli- taxi services in the state (Economic Survey of Himachal Pradesh 2013-14).

## 2.2 Vehicle population and growth

The vehicle population in the state has shown a phenomenal growth over the past few decades. From an average growth rate of 2.7 % during 1980-85, growth rate of vehicle population in HP increased to 7.8% in 1995-2000 (Himachal SoER, 2005).After 2007, the vehicle population has grown at an average rate of nearly 17%.

The total registered motor vehicles in the state have been reported to be 736,604 as on 31<sup>st</sup> March 2012 that is a 18.5 % increase over a total of 621,714 vehicles registered in 2011(MORTH, 2012).Out of the total vehicles, non-commercial vehicles accounted for nearly 81 % of the total vehicles in 2012. The commercial vehicles were nearly 20 % of the total vehicles in the state. Two wheelers and cars dominated the vehicle composition, accounting for nearly 77 % of the total vehicle population. An average growth rate of nearly 15.5 % was observed in case of two wheelers from 2007-12; cars indicated a further higher average growth rate of nearly 20 % over the same time period. Apart from the above, nearly 0.2 million vehicles registered elsewhere enter the state during the tourist season that lasts for 9 months a year (Himachal SoER, 2005).

This clearly indicates an exponential growth in traffic volumes particularly personal vehicles in HP. This in combination with slow growth in road infrastructure and services has led to the rising problems of congestion, pollution, depleting air quality, etc. over the years. Easy availability of finance, rising affordability of the locals along with lack of adequate public transport system have led to the increasing preference of personalized modes. This therefore, calls in for a need to promote measures that wean people away from personalized modes and help promote more sustainable modes especially public transport. Figure 3 below shows the composition and growth in total vehicles in the state from 2007-12.



**Figure 3:** Total number of registered vehicles in Himachal Pradesh as on 31<sup>st</sup> March every year (2007-12)

**Source:** MoRTH (various years)

## 2.3 Public transport services

### 2.3.1 Intercity operations

Apart from the growing mobility needs of the locals, there is a heavy tourist inflow of passengers into the state placing additional pressures on the existing transport infrastructure. In absence of other modes, the onus of providing passenger services falls on the road transport system making buses the most important public transport mode in the state. Public transport system in the state mainly comprises bus transport service offered by the state owned road transport undertaking and the private operators plying their vehicles (including buses, taxis, etc.) under stage carriage permits.

Himachal Road Transport Corporation (HRTC) provides mobility services to the passengers within the state and also across interstate borders. The corporation also provides obligatory free, concessional and subsidized transport services to various sections of society. In addition, the corporation provides services to far flung remote areas where the traffic is low making operations infeasible on economic grounds. The total fleet strength of the corporation has increased from 733 in 1974 to 2297 in 2014 (Department of Transport, HP).

Private bus operators also play a dominant role in meeting the mobility needs of the people in HP. In 2014, the total number of private stage carriage buses operational in the state was 3367 which is nearly 1.5 times the number of public buses being run by HRTC.

### 2.3.2 Intra city operations

In the main cities in HP like Shimla and Kullu, HRTC has recently started intra city operations on main city routes. In absence of adequate public transport services provided by

the government for intra-city travel, the burden of meeting the intra-city mobility needs in the cities in HP mostly falls upon the contract carriage vehicles like taxis, mini buses etc. operated by the private sector.

With increasing mobility needs, a phenomenal increase in the segment of private run contract carriage vehicles has been observed in the segment of contract carriage vehicles in the state. The total number of light motor vehicles carrying passengers in the state has increased by more than 61 % in the last five years from 2007 to 2012. However, there are serious concerns in terms of quality of services and passenger security in these vehicles (Transport Policy, GoHP, 2014). In absence of adequate public transport services, the dependency on personalized modes has also increased over time in cities in HP bringing along problems of congestion, rising pollution levels, and others.

## 2.4 Freight transport

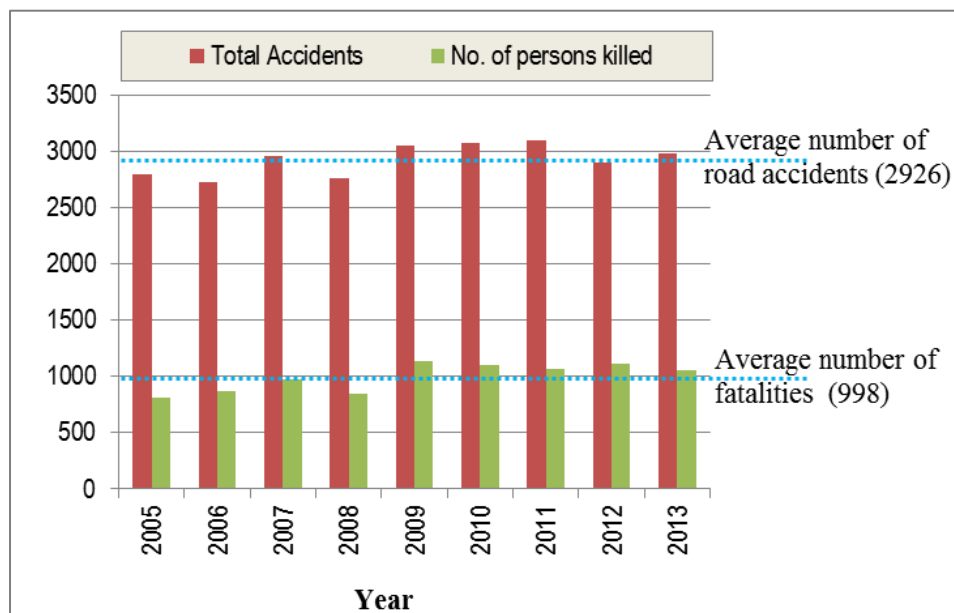
The state has had a huge and ever growing demand for movement of goods ever since its formation. With opening of new areas with development of roads, industrial and tourism development; need for movement of goods has increased phenomenally. The goods transport is also dependent on road transport in HP further adding onto extreme pressures faced by the road network.

The number of goods carriage vehicles (including trucks, lorries and light motor vehicles carrying goods) in the state have doubled up since 2007. The total number of goods carriage vehicles registered in HP in 2012-13 was 96,855. The number has grown at an average rate of growth of 16.35 % per year since 2007.

The state's transport policy clearly states that the freight segment in HP is characterized by proliferation of small operators with high operating costs in the absence of economies of scale, dominance of old and polluting fleet, cartelization of operators to enforce rates and terms as per their choice, and problems of overloading associated with ill effects in the form of accidents and damage to the roads. Also, it is realized that the goods transport has not seen any new innovation in technology and operation in the past many years due to which the transportation of farm produce and industrial products at competitive fares remains an area of serious concern (Transport Policy, GoHP, 2014).

## 2.5 Road safety

Road safety is a major concern in the state. In 2013, the total number of road accidents reported in the state were 2,981, registering a negligible average growth rate of 1%. The total number of fatalities reported in 2013 were 1,054 and reported an increase of nearly 30 % since 2005 (MoRTH, 2013). The total number of accidents per lakh population reported in HP in 2013 was 42.4, higher than the national number at 38.9 accidents per lakh population. Similarly, the total number of road fatalities per lakh population in HP in 2013 was 15, which was also higher than the national value of 11 fatalities per lakh population (MoRTH, 2013). The above statistics indicate that though the growth in accidents and fatalities over the years has been slow, but still the number is higher than the national average and needs immediate attention.



**Figure 1:** Trends in total number of accidents and fatalities in HP (2005-2013)

**Source:** MoRTH (various years)

### 3. Key Issues

Despite the geographical constraints and structural disadvantages like a difficult terrain, remoteness, environment fragility, extreme weather conditions and as a result a limited working season, the state has made slow but significant progress particularly in road transport sector in the last few decades. However, the sector faces several challenges as discussed in this section.

#### 3.1 Road network and transport

- Road connectivity and accessibility of remote areas:** The progress in terms of developing road infrastructure in the state has been extremely slow. This can be attributed to extreme difficulties in construction due to hilly terrain, high costs, limited capability of the state officials in working in difficult areas and limited working season. As a result, connectivity and accessibility of far flung areas like Kinnaur, Lahual and Spiti valley is a major challenge. As pointed out earlier as well, more than 40% of the total villages in the state suffer from lack of connectivity and the resulting development. Mobility therefore, not only in terms of passenger but also goods and services for the people living in these areas is limited. Also, where roads are available, some of the roads close down in winters in case of heavy snowfall or due to landslides in monsoons. In such conditions, physical accessibility of the far flung areas become impossible and lack or limited availability of transport services during this period not only makes the life of the people living in these areas difficult but also costlier.

- **Capacity and Quality issues:** At present more than 90 % of the overall roads are single lane roads. As a result, with increasing vehicle density, the road network is facing capacity issues and problems related to congestion have become severe. The quality of roads in certain areas also hinders smooth mobility in the state. Also, high capital and maintenance cost of roads due to hilly terrain coupled with limited financial capacity of the local government is a major reason for slow growth in the transport sector.
- **Heavy dependency on road transport:** There exists a huge imbalance in modal split in the state with heavy dependency on road transport. The key trends in the sector clearly indicate that the rate of supply of transport infrastructure and facilities in the state is much slower than the rate at which the demand and motorization has increased over the past few decades. As a result, problems like heavy traffic jams, high travel times, pollution, etc. have become more evident in the recent years. The increasing vehicle density and increasing share of private vehicles (two-wheelers and cars) further exacerbates the problem. Other factors like heavy inflow of tourists and tourist vehicles in the state almost all through the year and overlapping of the peak tourist season with the limited working season in the state adds further to the above discussed problems and are a major area of concern for the local government. Parking has also emerged as a major issue especially in tourist locations (like Shimla, Manali and others) over the past few years and calls for immediate attention.

## 3.2 Vehicles

- **Exponential growth of vehicles:** As pointed out earlier, the demand for mobility has far surpassed the rate of supply of transport infrastructure in the state. The exponential growth witnessed particularly in private modes in combination with slow growth in road network has resulted in increasing congestion in the state, both on highways and in cities. With growing aspirations and income levels, problems are expected to further rise in the business-as-usual case.

## 3.3 Public transport

- **Lack of adequate and quality Public Transport (PT) service:** Not only does the state lack adequate PT bus service to meet passenger demand (both inter and intra city), but also passenger transport sector suffers from several issues like unclear and fragmented responsibilities for different aspects of the supply management of sector services and infrastructure, inadequate resource mobilization and sub-optimal utilization of capacity. This has resulted in wastage of time and money in moving people, high opportunity cost of resources used to maintain or expand infrastructure capacity or to subsidize certain services, poor safety outcomes, economic loss and increase in inequalities, and adverse environmental impacts caused due to unplanned vehicular movement and inefficient use of non-renewable resources (Transport Policy, GoHP, 2014). Lack of availability of adequate services has also led to problems of overloading and overall poor quality of service and hence, increasing preference of personalized modes among the citizens.

- **Increasing dependency on private run modes of transport:** Absence of adequate PT services has resulted in penetration of unplanned private services like mini buses, tata magics, etc., particularly in cities of HP. These modes have gained significant popularity over time and offer extreme competition to the existing PT systems wherever available.

### 3.4 Freight transport

- **Inefficient freight transport systems:** Freight mobility in the state is found to be incompetent and highly inefficient leading to higher costs and poor quality of service. The main issues in this segment include increasing number of goods carriage vehicles, use of old and less efficient vehicles, overloading and associated issues of higher risk to accidents and damage to roads. Much needs to be done to improve the goods mobility in the state and make it more efficient.

### 3.5 Pollution

- **Depleting quality of air:** With increasing vehicle density in the state, the emission levels from the transport sector are also increasing leading to depleting quality of air. The problem is more prominent in the main tourist locations for instance, in cities like Kullu, Shimla and others.

### 3.6 Road safety

- **Increasing number of accidents:** While the overall rate of accidents and fatalities have maintained a constant trend over the years, the number is still high and efforts need to be made to increase the road safety levels in the state. Under-reporting or false reporting of accidents and lack of clarity or inadequate data on causes of accidents makes it further difficult to deal with the issue of road safety.

**Table 2:** Summary - Key issues

Key Issues	
1. <b>Road Network</b>	<ul style="list-style-type: none"> <li>▪ Road connectivity and accessibility of remote areas</li> <li>▪ Slow expansion of network</li> <li>▪ Capacity constraints (majority single lane roads)</li> <li>▪ Poor quality of roads in certain areas</li> </ul>
2. <b>Motorized vehicles</b>	<ul style="list-style-type: none"> <li>▪ Exponential growth of vehicles</li> <li>▪ High and increasing shares of personalized modes</li> </ul>
3. <b>Public Transport</b>	<ul style="list-style-type: none"> <li>▪ Lack of adequate and quality PT services</li> <li>▪ Declining shares of PT</li> <li>▪ Poor quality of PT services</li> </ul>
4. <b>Freight Transport</b>	<ul style="list-style-type: none"> <li>- High costs</li> <li>- Incompetitive and inefficient systems</li> </ul>
5. <b>Pollution</b>	<ul style="list-style-type: none"> <li>- Depleting quality of air especially in cities</li> </ul>
6. <b>Road safety</b>	<ul style="list-style-type: none"> <li>- High number of deaths due to road accidents</li> <li>- Under/false reporting of accidents lack of clarity/information on main causes of accidents</li> </ul>

## 4. Institutional Framework

The transport sector in HP is fragmented and involves multiple institutions. There is no single authority but multiple organizations that are responsible for various aspects of supply management of transport infrastructure and services in the state.

Development of roads is handled by four institutions: The National Highways are looked after by the Government of India, the state highways by the state Public Works Department (PWD), town roads by the Municipal bodies and the rural roads partly by the PWD and partly by the rural development department. (Himachal SoER, 2005). Compartmentalization of work and lack of a coordinating agency makes the matters rather complicated. Railways in the country fall directly under the responsibility of the Central government and therefore are not discussed in this state report.

At the state level, all matters related to registration of motor vehicles, issuance of permits, fitness certificates, driving licenses and adherence to pollution norms (as specified under the Motor Vehicles Act 1988 and the rules therein) are handled by the Transport Department, Government of Himachal Pradesh and the Regional Transport Authorities set up by the Department.

Public transport services in the state for interstate and intercity travel are provided by the Himachal Road Transport Corporation (HRTC). Apart from the public bus services, multiple private operators also operate within the state. However, the role of the government in operation of these private modes is mostly limited to registration and issuance of permits, driving licenses and tax collection.

The following table (Table 3) lists the multiple organizations involved at the three tiers to deal with the various aspects of road transport in the state of Himachal Pradesh:

**Table 3:** Institutions dealing with various aspects of transport sector

	Roads	Vehicles	Urban Transport	Public Transport	Pollution
CENTRAL	Ministry of Road Transport & Highways (MORTH)	Ministry of Road Transport & Highways (MORTH)	Ministry of Urban Development (MoUD)	Ministry of Urban Development (MoUD)	Ministry of Environment and Forests (MoEF)
	- National Highways Authority of India (NHAI)	- National Highways Authority of India (NHAI)	- JNNURM cell	- JNNURM cell	- Central Pollution Control Board (CPCB)
	Ministry of Rural Development (MoRD)	- National Rural Roads Development Agency (NRRDA)			
	HP Public Works Department	Department of Transport	Himachal Pradesh Housing and Urban Development Authority	Himachal Road Transport Corporation (HRTC)	HP State Pollution Control Board (HPPCB)

(HIMUDA)				
S T A T E	Himachal Pradesh Road & Other Infrastructure Development Corporation Limited (HPRIDC)	Regional Transport offices (RTO's)	Private operators	
	Public Works Department (PWD)		Urban Development authority/ department	City monitoring stations
	Urban Local Bodies (ULB's)		Urban Local Bodies (ULB's)	

To sum up the above, multiplicity of organizations with lack of clarity of roles and lack of coordination among these multiple agencies are the main issues in the institutional setup that hinders the overall coordinated growth of the transport sector in HP. Also at present, there are no set or uniform criteria/procedures/mechanisms set up for evaluation of transport projects or proposals. This accompanied by lack of adequate transparency in decision making procedures and planning processes in the state leaves ample opportunities or room for political interference.

## 5. Government role and initiatives in transport sector

### 5.1 Policies and programmes

The Government of HP made its first attempt in terms of a transport policy in 2004 wherein a comprehensive transport policy was launched for the state by the Department of Transport, Govt. of HP. The 2004 policy focused on spread of transportation network in rural areas, introduction of IT in transport operations, introduction of e-governance, etc. Though little progress had been made, an updated version of the policy was launched recently in 2014. The new policy highlights the sectoral needs, key issues and sets the priorities of the government to deal with the transport related issues in the state. The policy aims to develop transport infrastructure that makes mobility safe, comfortable and affordable.



**Box 1: Key features of the Transport Policy of HP, 2014**

***Policy Mission statement***

The government shall “provide state of the art transportation facilities to the travelling public with high standards of comfort and safety. In focus would be the equity considerations to provide luxury travel in public transport at affordable fares to the poor people of the state while simultaneously achieving a modal shift from private to the public transport. It will also promote quality goods transportation infrastructure at a reasonable cost with ability to handle high value cargo at shortest time and at minimal externalities (congestion, pollution and accidents). It can also facilitate in the realization of benefits for the Himachal economy by way of integration into external trade and investment patterns”(Transport Policy, GoHP, 2014).

The key **objectives** of the policy are as listed below:

- Provide connectivity to the remotest corner of the state enabling people to access services and facilities including markets for their farm produce
- Encourage most modern state of art goods transport vehicles entering the market for handling the farm and non-farm produce most efficiently and cost effectively for achieving export oriented growth;
- Mainstream Road safety concerns in the overall transport planning by bringing all the concerned departments on board.
- Reduce environmental externalities of transport in Himachal Pradesh by developing suitable tax and non-tax incentives and disincentives that encourage environment friendly transport and discourage polluting and unsafe vehicles
- Alternate modes of transport like cable cars, trams and non-mechanized modes will be encouraged to achieve sustainable transport development overtime.

**Source:** Transport Policy 2014, Department of Transport, Govt. of Himachal Pradesh)

The policy also emphasizes on the adoption and further use of policy of 60:40 (requirement of 60% rural areas) in formation of new routes in the state so as to spread the transportation network further in rural areas. A need for systematic collection of accident data in minute details in terms of type of vehicle and its details, along with the driver, owner and other parameters is also highlighted. For effective implementation of the policy, a need for regular monitoring and evaluation is realized.

Several programs have also been launched by the national government from time to time that provides funding assistance to the state government for development/provision of transport infrastructure and services. Ministry of Urban Development launched the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in 2005 with the objective of developing basic infrastructure in 63 cities of India in which urban transport was an important component. In Himachal Pradesh, only Shimla, being the state capital was selected to be included in the Mission. The pattern of funding for HP was in the ratio of 80:10:10 between Government of India, the State Government and the local Municipality. Improving the current transport system to deal with the traffic related problems in Shimla was one of the priority areas under the JNNURM wherein projects identified included widening and strengthening of major and arterial roads; construction of bye-pass roads, tunnels, overhead bridges and subways, etc.; development of alternate modes of transport

for example installation of ropeways, construction of vehicle parking lots on PPP model and others.

Pradhan Mantri Gram Sadak Yojana (PMGSY), a 100% centrally sponsored scheme was launched in 2000 with the objective of connecting every village of India with all-weather roads. The scheme aimed to connect habitations with a population of 250 persons and above. Approximately 5578 kilometres of roads have been built connecting approximately 1140 habitations in the state under this scheme between 2007-08 and 2011-12. During the period of 11th Five Year Plan, achievements under habitation connectivity and road length are 126.25% and 103.27% respectively. (Draft 12th FYP (2012-17) & Annual Plan 2013-14). Apart from the above, highways are also being done in the state under the National Highway Development Programme (NHDP) of the central government.

Another programme, Border Area Development Programme (BADP) started by Planning Commission, Govt. of India, aims to meet the special needs of the people living in remote, inaccessible areas situated near the border areas, i.e. the three blocks viz. Kalpa and Pooh Blocks of Kinnaur District and Spiti Block of Lahaul-Spiti districts having borders with China from 1998-99. The Planning Commission Govt. of India and Ministry of Home Affairs, Govt. of India has provided Rs. 3547.00 lakh during the period of 9th Five Year Plan beginning from 1998-99 to 2001-02 and Rs.4573.86 lakh during 10th Five Year Plan 2002-2007 as Special Central Assistance under this programme (BADP, HP). The scheme aims to provide connectivity to the three blocks by developing an adequate and reliable network that allows reliable supply of goods and services to these areas during the working season.

Apart from the above, National Bank for Agriculture and Rural Development (NABARD) also finances major schemes in Roads & Bridges under the Rural Infrastructure Development Fund (RIDF). It is a major component of Annual Plan 2013-14 for building infrastructure to supplement growth in productivity. In the Annual Plan 2013-14 an outlay of 423.50 crore had been proposed which constitute 10.33 % of the total plan outlay (Draft 12th FYP (2012-17) & Annual Plan 2013-14).

## 5.2 Ongoing/ future projects

Transport has long been high on the agenda of the state government. The large investments planned in the sector indicate the strong commitment of the HP government in developing a well-developed transport system. Under the Twelfth Five Year Plan, nearly 21 % of the total proposed outlays focus on the transport sector, a little more than 15 % of the total outlays under the Eleventh Plan. The Annual Plan 2013-14, the second year under the Twelfth Plan period (2012-17), also gives second priority to transport and communication sector with a proposed outlay of INR 865.14 crore (21.10 %) to link feasible villages with motorable roads and maintenance of the existing infrastructure (Draft 12th FYP (2012-17) & Annual Plan 2013-14).

The projects and investments planned in the various areas of the transport sector are discussed below:

**Roads:** Given the high dependency of the state on the road transport sector, the state government pays extreme attention to providing all weather road link connectivity to as

many habitations as possible in the state. As per the state Annual Plan 2013-14, about 39045 kms aggregate road length is required in the State to provide optimum connectivity to all the Census (17449) villages, the approximate fund requirement, at 2011-12 prices, for constructing the balance road length in the State, as well as all-weather roads, is about Rs. 7396 crores. The Twelfth Plan envisages construction of about 7,500 kms of roads connecting all the villages and habitations with the population more than 100 persons in the State. National Highways with a length of about 2000 kms are also proposed to be constructed in the State during the Twelfth Five Year Plan period. (Draft 12th FYP (2012-17) & Annual Plan 2013-14).

The department also gives attention to ensuring maintenance and upkeep of already constructed roads in the state during the Twelfth Plan. The State Government also proposes to initiate the process of constructing tunnels and bridges with the financial assistance of multilateral agencies with the objective of reducing the distance between various destinations during the Twelfth Plan. The transport department looks at providing cable ways, transportation connectivity and facilities to the areas which cannot be connected with road network due to one reason or the other can be ensured (Draft 12th FYP (2012-17) & Annual Plan 2013-14).

**Public Transport:** Discharge of quality public transport services also attains paramount significance on the agenda of the transport department in HP. Buses for intra city transport have been recently started on the main arterial roads in a few main cities like Kullu, Shimla, and others, if any. However, there is still a long way to go for the state government in way of provision of adequate and safe PT services for intercity as well as intra city mobility. During the 12th Plan, the corporation has a target to purchase 1500 buses (300 buses per annum) to replace over aged buses in order to provide efficient and well co-ordinated conveyance facilities to the people (Draft 12th FYP (2012-17) & Annual Plan 2013-14). Construction of bus stands on Public Private Partnership (PPP) mode has also recently caught attention of the corporation. A couple of bus stands have been and are being built on PPP model in the state. The state government also looks at promoting the construction of bus stands on PPP basis during the 12th Five year Plan.

It is seen that majority of the projects and investments done or planned are in the area of road development including bridges and maintenance activities. Other areas particularly road safety and freight transport have not achieved much attention till now in terms of investments and policy actions.

## 6. Way forward

In HP, the transport sector is largely dominated by the road transport with negligible presence of other modes of transport that have resulted in severe social and environmental costs to the economy. To promote overall green growth of the transport sector in HP, certain priority areas have been identified requiring interventions on the following lines

## 6.1 Strengthen and upgrade road network

Road transport forms the backbone of the state and therefore providing 100% connectivity to all the remote areas in the state via all-weather roads should be the top priority of the government so as to enable people access their socio economic needs.

## 6.2 Addressing the capacity issues

Enhancing capacity of the existing road network also assumes importance in HP given the high dependency of the state on roads for mobility of passengers and goods. The state government must look at double-laning of the network starting with the core network.

## 6.3 Assess and explore other modes of transport

Unburdening the road transport and hence the related problems also appear to be important in context of promoting green growth of the transport sector in HP. Government must properly assess (physically, technically and financially) the possibility of developing or extending the use of other modes i.e. water transport, railways or helipad services etc. to meet the rising transport demands within the state.

## 6.4 Promote use of more sustainable modes

A strong and efficient public transport system is a must for overall green growth of the transport sector. Provision of adequate and quality PT services for both intercity and intra-city services attains paramount importance. Focused investments must be planned in capacity creation and provision of adequate PT infrastructure. This would need to be accompanied by travel management measures. Presently, a large part of passenger and mobility needs are met by private run modes. The state government must look at integrating and better organizing these modes in the overall transport system of the state.

## 6.5 Discourage/ disincentivise use of private modes

In view of the rising private vehicles and the related problems like pollution, parking, traffic jams, and others, the state must adopt strategies that discourage the ownership and use of private modes. However, it's to be noted that these measures will only be helpful when supported by provision of adequate and quality PT services and infrastructure for non-motorized transport users.

## 6.6 Improve efficiency of existing fleet

The overall efficiency levels of the vehicle fleet in HP are found to be low. Old, out-dated and poorly maintained vehicle fleet in HP pose serious risks in terms of safety and harmful emissions. It is important that the state government gives due attention to improving the efficiency levels of the existing fleet. To mitigate these risks, setting up of an effective inspection and maintenance regime attains paramount importance. This would include strengthening of vehicle maintenance standards and stricter enforcement mechanisms.

## 6.7 Promote use of clean/ alternate fuels

Given the rising concerns of depleting air quality or rising pollution levels in the urban centers, it is important that the state must encourage and promote the use of cleaner fuels in the long run. The state is energy surplus and therefore, electric vehicles/hybrid vehicles can prove to be a good alternative. However, it is important that adequate supply of appropriate technology and infrastructure is planned and implemented before planning the switch to newer technologies.

Table 4 below lists the interventions required in the transport sector in HP. Only measures related to roads and road transport are discussed here as other modes namely, railways and civil aviation fall under the purview of the central government. The role of state government is mainly limited to acquisition of private land and allotment of government land for setting up the required infrastructure, providing basic urban services (water supply, sanitation, etc.), provision of surface access through multi-modal linkages and maintenance of law and order. The concerned authorities (state/local bodies) should provide well designed roads linking the stations/terminals to the city along with an integrated good multi modal transport system including provision of sufficient parking space.

**Table 4:** Interventions suggested for green growth of the road transport sector in Himachal Pradesh

<b>Roads</b>	<ul style="list-style-type: none"> <li>- Upgrade and strengthen road infrastructure to meet mobility demands               <ul style="list-style-type: none"> <li>o Improve connectivity and accessibility to rural and far flung areas</li> <li>o Capacity augmentation (single to double laning)</li> <li>o Improve quality of roads</li> </ul> </li> </ul>
<b>Intercity Public Transport</b>	<ul style="list-style-type: none"> <li>- Plan to address issues of existing bus corporations (poor financial performance, low efficiency, etc.)</li> <li>- Promote use of IT to improve system efficiencies</li> <li>- Increase bus fleet as well as supporting capacity of the bus agencies to meet the growing demand</li> </ul>
<b>Urban Transport</b>	<ul style="list-style-type: none"> <li>- Develop city mobility plans with PT and NMT as an important components and also keeping tourist demands in mind</li> <li>- Provide adequate and appropriate PT systems</li> <li>- Improve and integrate contract carriage services</li> <li>- Manage travel demand through introduction of pricing strategies, etc.</li> </ul>
<b>Freight mobility</b>	<ul style="list-style-type: none"> <li>- Develop a freight mobility plan (for state as well as city specific)</li> <li>- Plan and develop required infrastructure for efficient modal transfers and an efficient logistics system</li> </ul>
<b>Pollution</b>	<ul style="list-style-type: none"> <li>- Introduce stricter emission norms</li> <li>- Develop a roadmap to promote use of clean fuels in the state</li> <li>- Develop Air quality improvement plans for the most polluted cities (introduction of no emission zones or pedestrianized zones)</li> <li>- Discourage older fleet               <ul style="list-style-type: none"> <li>o Organize a statewide vehicle scrapping program</li> <li>o Introduce Green tax for old, poorly maintained vehicles</li> </ul> </li> <li>- Develop required infrastructure for achieving a shift to cleaner fuels as per the roadmap</li> <li>- Develop a robust Inspection &amp; Maintenance regime</li> </ul>

Safety	<ul style="list-style-type: none"> <li>- Set up a road safety body with clear goals and functions</li> <li>- Develop a state road safety improvement with detailed understanding of the causes of accidents and hotspot areas</li> <li>- Organize Road Safety Awareness Program (driver training, children education, etc.)</li> <li>- Implement identified measures to improve safety (measures related to road design improvements, education, and others should be looked into in detail)</li> </ul>
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To effectively implement the above roadmap in the state, reforms in terms of required institutions and finances are required so as to allow and facilitate transition to a green economy. A wide range of reforms could support greening of the transport sector in HP. These are discussed below.

## 7. Enabling instruments

### 7.1 Institutional instruments

The institutional reforms do not aim to reorganize the existing institutional setup in the state but looks at developing a more robust policy monitoring mechanism for effective implementation of the integrated transport policy and ensuring more coordinated development of the transport sector in the state on a greener path. To do so, the following suggestions are made:

- **Setting up a Unified Himachal Pradesh Transport authority at the state level:** In view of the envisaged priority areas that reflect need for green interventions across various dimensions of the transport sector in HP, it is suggested that a unified transport authority/body with clearly defined roles and functions must be set up at the state level. This body will be primarily responsible for coordination, integration and overseeing implementation of the transport policy i.e. monitoring the performance of the transport sector in accordance with the agreed upon objectives and targets on a regular basis. It is at this level that clear roles and responsibilities of the multiple city and state-level entities with regard to public transport, land use and transport integration, multi-modal integration, safety, facilities for walking and non-motorised transport (NMT) must be defined.
- For effective functioning of the institution, it is realized that the state transport authority must be provided with adequate control, capacities and financial resources to be able to steer integrated transport planning and infrastructure development in the state. The body should be empowered enough to be able to screen investments in the transport sector according to the 'green transport' criteria. It is suggested that tools like Life Cycle Analysis (LCA) framework should be used to evaluate and appraise programmes and projects, before decisions on funding in the transport sector are made.
- **Improved functioning of the existing institutions:** Improving the functioning of existing institutions involved in the transport sector is also essential. This would include strengthening of the institutions in terms of human resource development through training and capacity building and improving transparency and accountability in procedures and systems.

- **Empower city governments through UMTA's to deal with city specific urban transport issues:** Urban transport responsibilities should be transferred to metropolitan and city authorities with time. The states should empower the city governments through setting up a dedicated authority for urban transport at the city level. The main role of this organization should be responsible for coordination among the various agencies/institutions involved in urban development, delivery of urban services and transport planning at this level.

## 7.2 Financial instruments

There is a need to shift the finances and funding from supporting unsustainable forms of transport to more greener forms of transport in all aspects i.e. technology, capacity building, infrastructure, operations etc. It is also essential to ensure the financial flows from different sources (government/multilateral agencies/others) complement each other and collectively works towards the larger objective of promoting green growth of the sector.

- **Creation of Himachal Pradesh Mobility Fund** at the state level can help in ensuring supply of funds into the transport sector in the state. However, it is important that the transport projects/programmes are critically evaluated on the criteria of sustainability in the transport sector.
- **Attract or promote Private sector funding:** Public private partnerships in the transport sector are increasingly becoming common. It is advised given the huge costs involved in developing transport infrastructure in hilly regions that the government should look at leveraging private financing in different aspects of the transport sector by way of designing appropriate markets through incentivizing investments in developing and operating green transport interventions (e.g. bus systems and ropeways).

## 7.3 Other instruments

- **Build transport database:** For better management of the sector and performance monitoring, some basic pre-requisites in terms of availability of adequate information/data must be ensured. To begin with, it is important to generate an overview of which information/data is available and also assess the reliability or accuracy of the gathered information. Subsequently, identify data/information gaps and plan for collection of the same. A database management center should also be set up at state and city level where all the collected information is made easily available to all the relevant organizations working in the transport area.
- **Sensitization and awareness generation:** Increasing awareness of the general public about alternate modes of transport or methods of travel can lead to modal choices and behavioural changes. By communicating the social and environmental implications of motorized transport and the many benefits of green transport in ways that directly relate to people's lives (for example, improved health and reduced costs) can lead to shift in modal choices. Organizing public awareness campaigns for different target groups and driver training and education are some representative examples.

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