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EcoLogistics

Low carbon freight for sustainable cities

LOW CARBON ACTION PLAN FOR URBAN FREIGHT FOR SHIMLA CITY

ICLEI
Local Governments
for Sustainability

This document is a deliverable of the "*EcoLogistics: Low carbon freight for sustainable cities*" project. The strategies discussed in the action plan were validated with the members of multi-stakeholder working group and subsequently well received by Municipal Corporation of Shimla (MCS).

About the EcoLogistics project

Supported by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) through the International Climate Initiative (IKI), ICLEI's EcoLogistics project (2017 - 2021) aims to increase the capacity of governmental and non-governmental actors to build strategies and policies to promote low carbon and sustainable urban freight in Argentina, Colombia and India, involving nine cities and regions:

- Argentina: Córdoba, Rosario, Santa Fe de la Vera Cruz (Santa Fe)
- Colombia: Capital District of Bogotá, Metropolitan Area of the Aburrá Valley (AMVA), Manizales
- India: Kochi, Shimla, Panaji

For more information, please visit: sustainablemobility.iclei.org/ecologistics

About ICLEI - Local Governments for Sustainability

ICLEI – Local Governments for Sustainability is a global network working with more than 2500 local and regional governments committed to sustainable urban development. Active in 125+ countries, we influence sustainability policy and drive local action for low emission, nature-based, equitable, resilient and circular development.

Acknowledgement

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Disclaimer

The information in this report is based on the findings of the report *"Low Carbon Urban Freight Action Plan for Shimla under 'Eco Logistics – Low Carbon Freight for Sustainable Cities' Project",* and close consultation with various stakeholders in Shimla. ICLEI South Asia does not, guarantee the accuracy of the information in this document and does not accept responsibility for consequences of their use. For further information, please contact iclei-southasia@iclei.org.

FOREWORD

The EcoLogistics Project being implemented in Municipal Corporation of Shimla with help of ICLEI South Asia, focusing of reducing carbon emissions, has brought the focus on city freight sector which usually remains silient and a secondary feature in City Plans. However, movement of goods form a vital component in economic system and growth of the city. The initiatives carried out throught EcoLogistics project are advanced in its vision to identify, map and project the urban freight sector. It is for the first time that the efforts were made to record the urban freight sector of Shimla.

The baseline report for EcoLogistics project has been prepared by ICLEI-SA already. Shimla's Low Carbon Action Plan for Urban Freight Sector (LCAP-UF) contains long-term freight goals for an efficient and optimized urban freight movement with focus on emission reduction on one hand and as well addressing local specific issue like air quality, road safety, traffic congestion, economy on the other hand. Development of LCAP-UF was made possible through study of goods supply chains of the city and interaction with various stakeholders in the city.

The LCAP-UF will strengthen the vision of the city to improve the traffic issues and development or urban freight sector in the city. I am hopeful and elated about the Shimla's LCAP-UF report which will guide the development of city's urban freight sector towards reducing emissions and growth.

Ashish Kohli
Commissioner
Municipal Corporation of Shimla

Ashish Kohli

Commissioner
Municipal Corporation of Shimla


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1. ECOLOGISTICS PROJECT

Freight transport is at the core of today's global economy; in emerging regions such as Asia, the logistics industry accounts for 15 to 25 percent of the GDP. However, urban freight also has adverse impacts in cities, including traffic congestion, poor air quality, noise pollution and intensity of road accidents. Estimates by the International Transport Forum (ITF) say that the global freight demand will triple between 2015 and 2050[1]. Reducing the negative impacts and improving the efficiency of urban freight offers great potential to local governments for defining and developing sustainable infrastructure, policies and programs.

To this end, ICLEI South Asia is implementing the EcoLogistics project in three Indian cities: Kochi, Shimla and Panaji. The project focuses on enhancing capacities, strategies and policies to promote low-carbon urban freight through local action. A first-of-its-kind global initiative, the project is assisting cities to develop Low Carbon Action Plans for Urban Freight, support the implementation of demonstration projects in cities, and suggest national policy recommendations for the urban freight sector. The project is supported by Germany's Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMU) through its International Climate Initiative (IKI) program.

The EcoLogistics project promotes transportation of goods by giving priority to health, safety, low emissions, and people-centered urban development. It encourages circular and regional economies, while limiting the environmental impact of freight transport. Through the EcoLogistics initiative, ICLEI aims to transform urban logistics in cities through effective regulatory, planning and administrative instruments at all levels of government. The goal of this project is to promote low-carbon urban freight (EcoLogistics) policies and practices that contribute to climate change mitigation, towards meeting the ambitions of the Nationally Determined Contributions (NDCs) in Argentina, Colombia and India. It follows the strategy of:

- Avoid (and reduce) the freight volume and haul distance,
- Shift (and maintain) to more sustainable modes of freight transportation, and
- Improve the logistics operations by use of better technology and operations.

1. OECD/ITF (Organization for Economic Co-operation and International Transport Forum). ITF Transport Outlook 2019. (2019). Retrieved from https://www.oecd-ilibrary.org/transport/itf-transport-outlook-2019_transp_outlook-en-2019-en

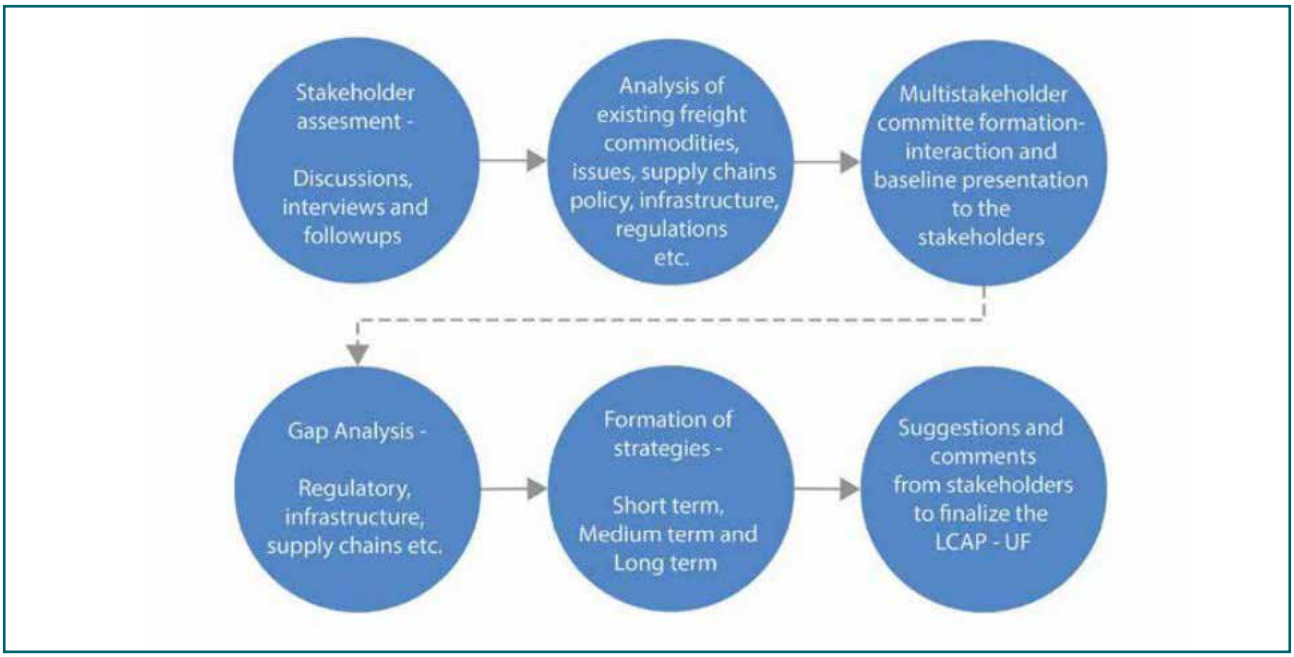
2. A LOW CARBON ACTION PLAN FOR URBAN FREIGHT IN SHIMLA

The Low Carbon Action Plan developed for Shimla under the EcoLogistics project discusses the significance of the freight sector and its operation along with the major actors involved in the sector. Though freight movement in most of the cities is unorganized and is a major contributor to GHG emissions, it also plays a major role in their economic development. Therefore, this document, in continuation with the baseline report on the freight sector of Shimla city, suggests actions that should be taken over a period of time to improve the freight sector in line with national policies and initiatives.

2.1. Process of LCAP-UF Formation

As discussed above, a low-carbon action plan for urban freight will help city governments and private stakeholders to take specific actions to reduce emissions from the freight sector. The following steps were undertaken to develop the low-carbon action plan for Shimla.

- Urban freight sector mapping- Trips were undertaken across Shimla to identify the freight hotspots as well as public and private stakeholders, followed by their interviews, to understand the freight sector better.
- Literature review- This step was taken throughout the project duration to understand the sector in general, map its aspects, study and learn from the experiences and actions taken by other cities to organize it and to reduce associated emissions.
- Collection of data specific to freight sector in the city- This step involved collection of secondary data related to freight from various sources, largely private and government departments. It also included the analysis of ongoing and proposed initiatives, existing policies, rules and regulations related to the sector, and the freight movement in the city.
- Evaluation of city freight information- The information collected was analyzed to identify sector-specific supply chains, infrastructure, policies and regulations.
- Stakeholder engagements at regular intervals- This step began with the identification of all the stakeholders, both public and private, engaged in freight activities of the city. Stakeholder engagements were done mostly at regular intervals/ throughout the project to understand their concerns. A multi-stakeholder committee was constituted at the beginning of the project, comprising both public and private freight sector representatives. The issues identified for the city and the proposed interventions were discussed and verified with the multi-stakeholder committee.
- Primary surveys to validate and strengthen the available information - These surveys were done to understand the existing freight load on the city from different sources and the expected demand in the future.
- Data analysis and mapping of issues, barriers faced by multiple stakeholders- This step included analysis of data, along with discussions with various stakeholders to identify the problems being faced by them. The collected Information was analyzed to identify the gaps in the freight infrastructure and regulations.
- Preparing recommendations in the form of a low-carbon action plan with actions that the city should take to better organize the freight sector, leading to improved economic growth and reduced emissions.



2.2. Scope of Low Carbon Action Plan - Urban Freight

This document attempts to sensitize the decision makers on the importance of the freight sector and the movement of freight vehicles in cities, with the help of a set of proposed actions. It also emphasizes the importance of collecting and maintaining comprehensive data and indicators for the sector in order to analyze trends and to forecast demand. Additionally, this document discusses the need for comprehensive stakeholder engagements (private and government agencies) at regular intervals to seek their opinion and also to help them identify solutions.

For the EcoLogistics project, the Shimla Planning Area has been considered as the influence area for the urban freight sector. Satellite centers around the city also play this role in varying degrees in the supply chains of the city.

The document is largely divided into the following sections:

Understanding the city begins with an introduction of Shimla city, its location, administrative boundaries, and the transport sector and network, followed by a description of the freight sector, its hotspots, supply chains and major actors.

Chapter 4, **'Opportunities and Challenges related to Freight Sector'**, dwells upon the initiatives taken at central and state levels for the freight sector, followed by actions, in Shimla.

The **'Low Carbon Strategies and Actions'** suggested for the city are listed with probable time frames.

The report culminates with the Pilot Demonstration Project envisaged and approved to strengthen and assist freight activities in the city.

3. UNDERSTANDING THE CITY

Shimla is located at 31.1048° N and 77.1734° E, on a ridge of seven hill spurs: Jakhu Hill, Elysium Hill, Museum Hill, Prospect Hill, Observatory Hill, Summer Hill and Potters Hill. Cart Road forms a circumference around the main settlement and important buildings of the city, which also include some buildings dating from the pre-independence period. The road network developed over a period of time to connect smaller settlements with Cart Road, and eventually, the built-up area spread along the transportation corridors of the city.

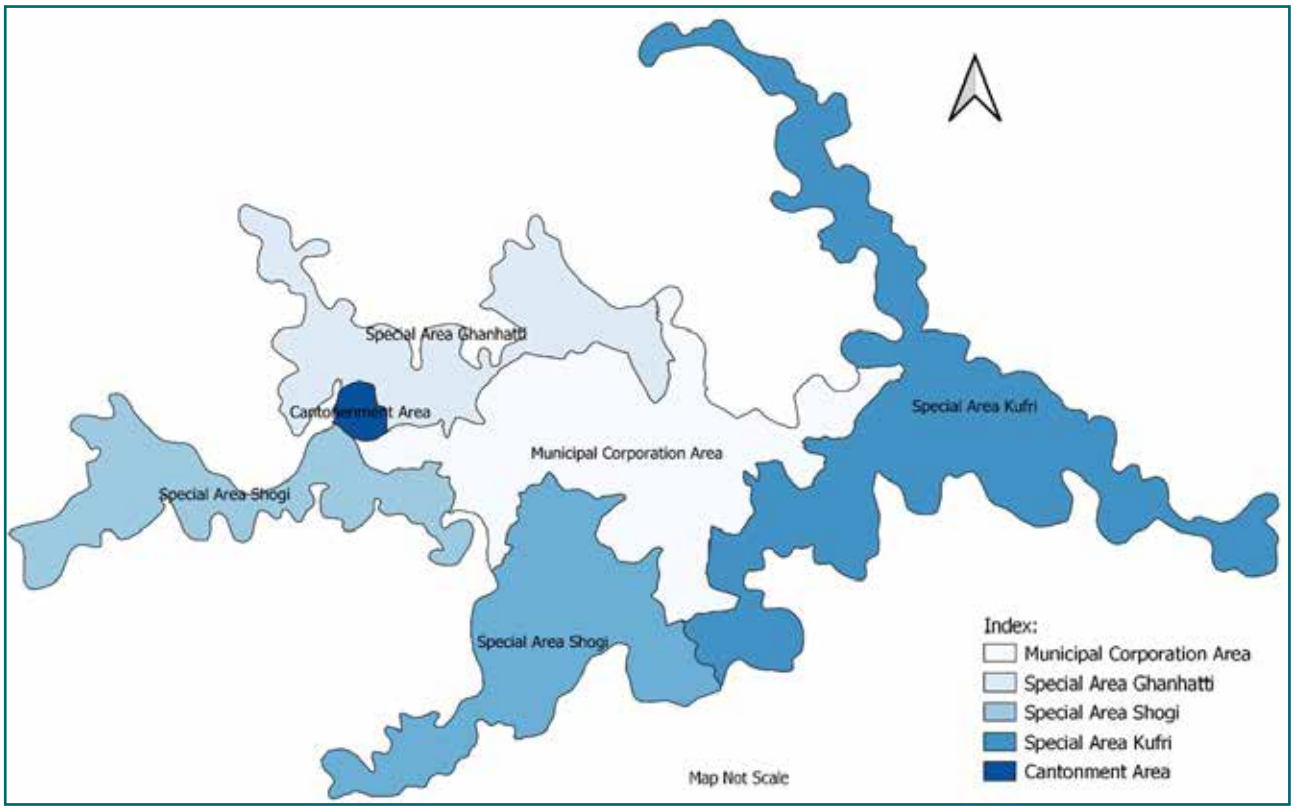


Figure 1: Shimla Planning Area

The city population was approx. 1.69 lakh (2011 Census), with a decadal growth rate of 17%, and spread across 35.34 sq.km. The core zone is congested, hosting the majority of commercial activities including wholesale and retail ones. In recent times, commercial activities have started shifting out, but the core area and some stretches of Cart Road near Subji Mandi, Anaj Mandi and Lakkad Bazaar still witness traffic congestion during peak hours and reduced traffic speed throughout the day due to space constraints caused by loading and unloading of goods and parked freight vehicles. Commercial activities have expanded along the roads, resulting in growing freight and logistics activities across the city, leading to unsafe road conditions and adding to pollution.

Shimla has been working to improve its overall infrastructure, though few initiatives have been taken to organize the freight sector. Limited freight-related infrastructure, absence of bylaws related to the freight and logistics sectors, and the spread of commercial activities are some of the issues that have affected the overall aesthetics, planning and development of the city.

In order to have organized economic development, Shimla, from time to time, has envisioned undertaking mobility and freight-related projects to develop adequate infrastructure. The City Development Plan of Shimla aimed at providing more safe mobility options on a high-priority basis. In addition to this, the City Mobility Plan of Shimla intends to provide public and goods transportation

that is safe, efficient and environmentally sustainable. Congestion of roads due to an increasing number of vehicles, lack of parking space and commercial activities along transportation corridors have prompted the authorities to consider shifting of wholesale market activities to the outskirts of the city. Bypasses as well as a four-lane project (from Chandigarh to Shimla) are being built to deal with the increasing traffic load on city roads. The authorities are also trying to improve the last-mile connectivity for commuters. Electric buses and taxis have been introduced by the Himachal Pradesh Road Transport Corporation.

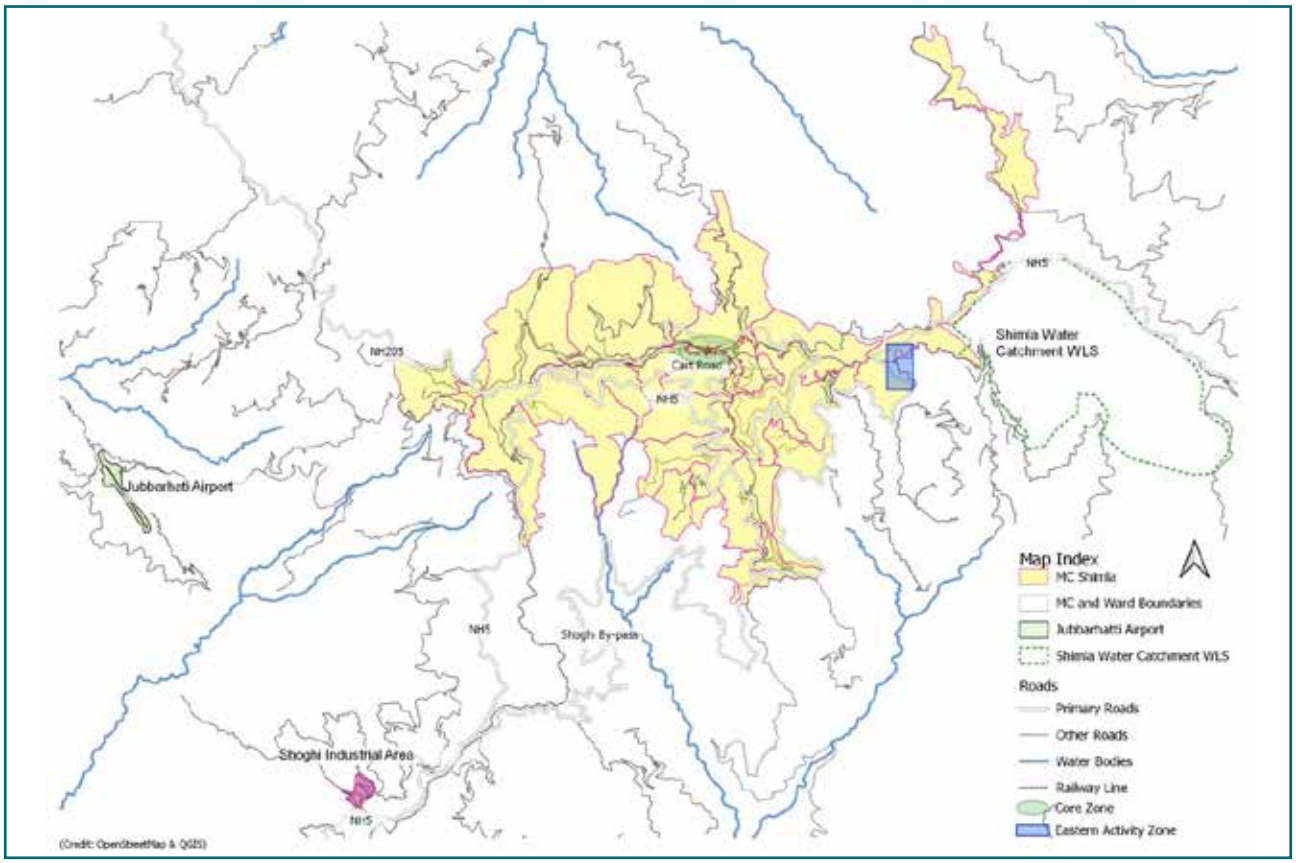


Figure 2: Shimla City Map

Municipal Corporation Shimla (MCS) has 25.02% land under traffic and transportation, whereas only 3.75% of the land is under traffic and transportation in the Shimla Planning Area. Additionally, the city roads are narrow, with hills on one side and the valley on the other, and with real estate development, reducing the scope for widening of the roads. For assisting mobility in hilly terrain, horizontal and vertical transportation systems are developed in addition to notification of roads with restricted access or that have been sealed-off. The use of non-motorized transport is encouraged through footbridges and pathways in the valley.

In the previous decade, approximately 26,000 vehicles were registered with the Shimla Road Transport Office, of which 5000 were goods vehicles. Traffic congestion is a regular feature, because of through traffic, tourist vehicles and an increase in the number of registered vehicles. An origin-destination survey conducted under the City Mobility Plan (2012) showed that 23% of the vehicles were through traffic. An origin- destination survey conducted by the National Highways Authority of India (NHAI) in March 2020 showed 48.02% of through traffic originated in Shoghi and 26.33% in Dhalli, revealing that a very significant percentage of the traffic in Shimla is external in nature. This traffic doesn't halt in Shimla, but passes through the town, increasing congestion and travel time of vehicles and contributing to emissions.

Slow development of parking infrastructure, in comparison to the number of vehicles being registered, and the lack of parking space for freight vehicles have resulted in roadside parking, which leads to reduced traffic speed and greater congestion, especially during the peak hours. As a result, there is increased pollution (noise and air), as well as risks for pedestrians. Various developmental reports have pointed out the need for more parking space; AMRUT and the Smart City Mission are trying to address this issue, along with already-developed multilevel parking facilities built on a public-private partnership (PPP) basis. Most of the roads lack footpaths for pedestrians, and there is limited scope for widening roads because of the terrain. Along with this, compact commercial areas in linear form along narrow roads lead to unsafe conditions. Shimla has a single arterial road, i.e. Cart Road, which is connected to other roads of the city and is largely five meters wide. As per the City Mobility Plan, during peak hours, it sustains load beyond its capacity, i.e. between 3577 passenger car units or PCUs (Old Bus Stand) to 1023 PCUs (IGMC) during the morning peak hour (Primary Survey-2011), while the Indian Roads Congress (IRC) specification recommends 750 PCUs/hour [IRC:86-1983]. Under the Smart City Mission, Cart Road is being widened at many points and junction improvement projects are being implemented as well.

Shimla has a predominantly road-based transportation network, though it also has rail and air connectivity. The road pattern of the city is linear and parallel, governed by the terrain, with mainly tri-intersections on the main arterial road. The road categories of Shimla are given in Table 1.

Table 1: Existing Road Network Category of Shimla

Name of the road	Category of road
Cart Road/ circular road/ motor round road	Main Arterial Road
NH 5, NH 205	National highways
Shimla bypass, Panthaghati- Shoghi bypass, Sanjauli-Dhalli bypass	Bypass
SH 13, SH 16	State Highways
All roads connecting to Cart Road	Municipal roads
The Ridge, The Mall and the roads of central Shimla leading to The Ridge and The Mall	Sealed/ restricted roads

Source: Comprehensive Mobility Plan, Shimla

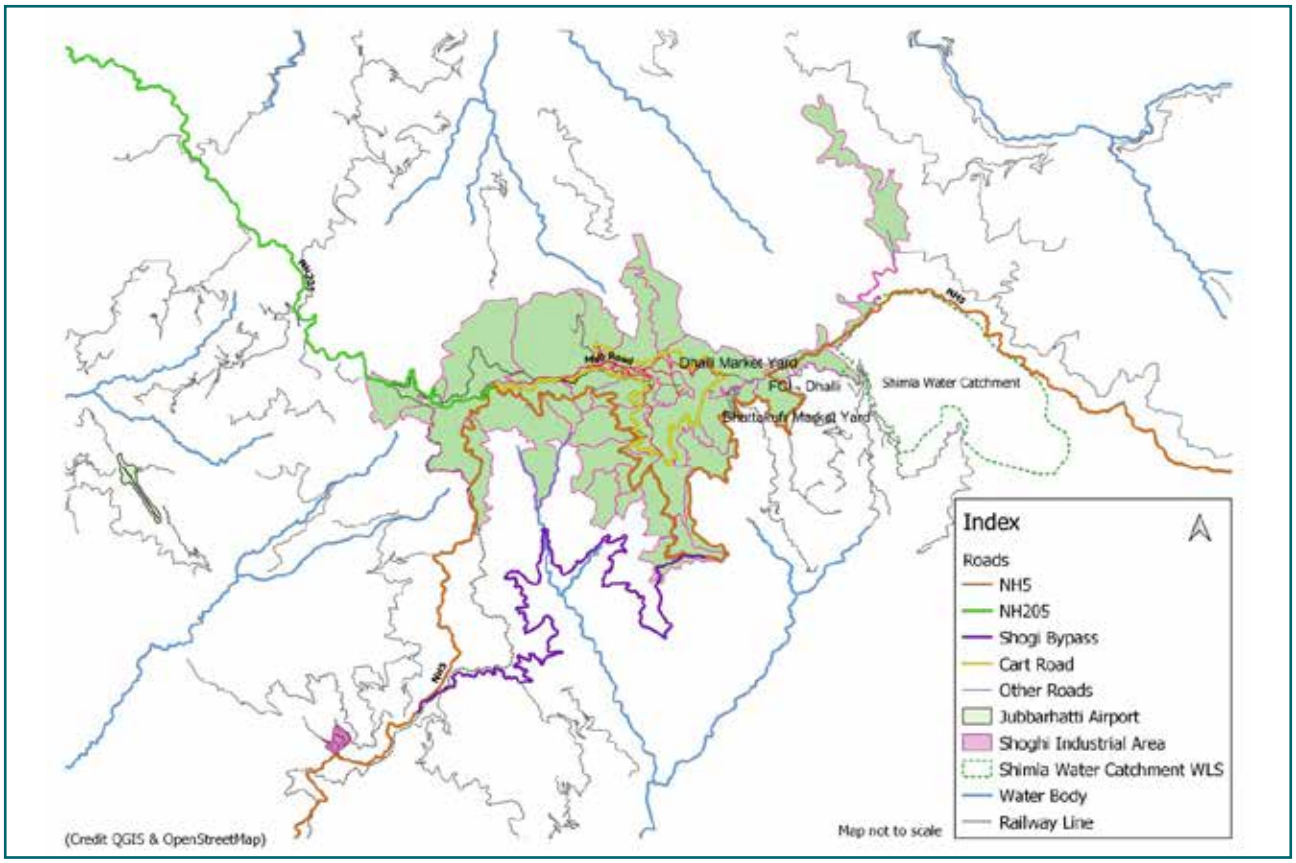


Figure 3: Road Map of Shimla City

3.1. Existing Freight Corridors in Shimla

3.1.1. Cart Road

Cart Road, also known as Circular Road, is about 18-km long and between 5m and 8m wide. As the city's main artery, Cart Road has more than 60 intersections with municipal roads, and is the only road connecting the opposite ends of the city. It has a large load of passenger and freight vehicles, despite the existence of multi-storied parking facilities. The main reason for excessive freight movement on Cart Road is the presence of major logistics and freight activities near the Old Bus Stand and Lakkad Bazaar, and the unloading and shifting of goods from freight vehicles that causes traffic congestion, as shown in Figure 4.

Figure 4: Freight activities on Cart Road

3.1.2. National Highway 5 (NH5)

The two-lane National Highway 5, which stretches over 30 km in Shimla, has a right of way that is largely 15m wide. It has intersections such as Dhalli tunnel, Panthagathi- Shoghi bypass and Tutikandi crossing. The Panthaghati- Shoghi bypass separates from the NH5 at Panthagathi and merges again with it at Shoghi. This stretch hosts freight hubs, including warehouses of the Food Corporation of India (FCI) and Himachal Pradesh State Civil Supplies Corporation Limited, and market yards of the Agriculture Produce Market Committee (APMC) on the eastern part, as well as sanitary shops, retail establishments, eateries, automobile shops, showrooms and hotels along the entire length of NH5 in Shimla.

Figure 5: Freight vehicles on NH 5

All these activities attract freight movement and impact pavement width and the right of way because of parked vehicles and business activities, thus reducing the overall capacity of the national highway. The agricultural produce from Shimla and Kinnaur districts are transported to Punjab and Delhi through NH5. While it has helped to reduce the load on Cart Road and Central Shimla, the NH5 is now facing congestion issues.

3.1.3. National Highway 205

National Highway 205 in Shimla is about 6km long and 15m wide (similar to NH5), and is mostly used by heavy goods vehicles overloaded with cement being transported to Shimla. There are cement warehouses at Solah Meel on the highway. Small agricultural producers also have storage facilities on NH205. Additionally, Shimla is expanding towards NH205 and the stretch has already developed bottlenecks at Totu and Ghanhatti.

Figure 6: Freight vehicles on NH5

3.1.4. Shoghi Panthaghati Bypass

The Shoghi Panthaghati Bypass in Shimla is about 23km long, originating at the diversion on NH5 at Shoghi and merging with the highway at Panthghati. This bypass was built to divert apple trucks passing through the city, and therefore is mostly used by freight vehicles to carry vegetables and apples from APMC market yards to Punjab and Delhi. There are also stores, godowns and eateries on the bypass that need to be regulated.

Figure 7: Shoghi- Panthaghati Bypass

Two four-lane projects - Parwanoo- Solan- Shimla- Dhalli (NH5) and Shimla- Mataur (NH205) - are proposed to be built near Shimla. The first project is in progress, while the detailed project report is being prepared for the second project. These NHAI projects are proposed to be beltways that will prevent through traffic from entering Shimla and help to regulate the economic and growth sectors of the city.

3.2. Freight Hotspots in Shimla

Freight movement is important for the economic development of any city. Cart Road, NH5, NH205 and the Shoghi-Panthaghati bypass play major roles as freight corridors of Shimla, which allow transportation of commodities to wholesale hubs for further distribution. The wholesale market of Shimla is located in the core area, with timber market in Lakkad Bazaar, and the grain and vegetable market in Lower Bazaar.

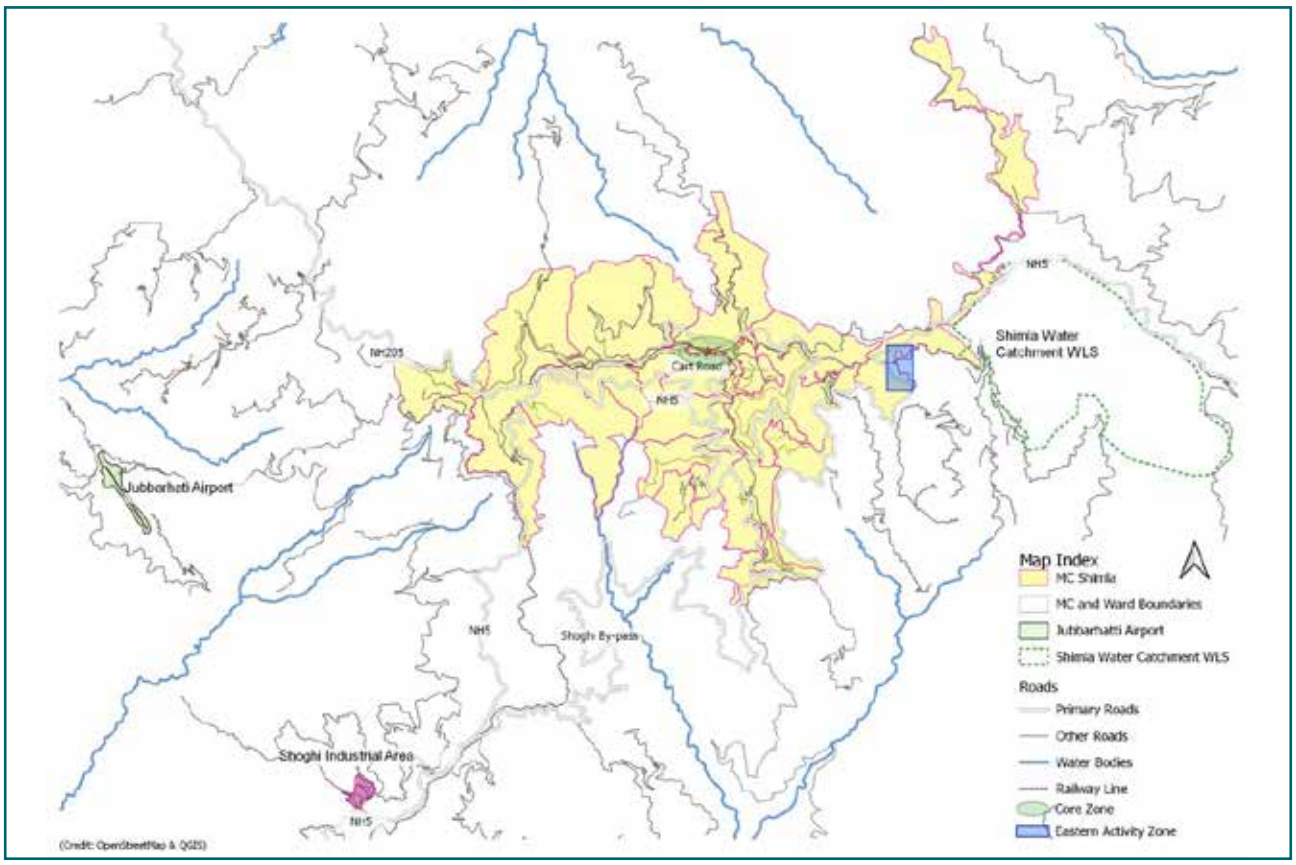


Figure 8: Map of Shimla City, showing major freight hubs

3.2.1. Establishments

Shimla has more than 7000 commercial establishments, of which 3% reportedly deal in wholesale goods and the rest are involved in retail business. Ever since the city was established, the wholesale market has been located in the core zone, surrounded by retail markets. With the city's expansion, both activities have come up in other areas too, mostly along the transport corridors.

3.2.2. Core City

The core city or central Shimla zone constitutes the area developed in pre-independence times. The Mall, Middle Bazaar and Lower Bazaar are located on the southern side of the core area and Lakkad Bazaar is located on its northern side. Vegetables and fruits are brought to Sabji Mandi and Anaj Mandi in the Lower Bazaar from adjoining districts of Sirmaur, Solan and Bilaspur, and the neighboring states of Haryana, Punjab and Uttarakhand. Goods are loaded and unloaded near Gohra hospital and transported to Sabji Mandi by porters and light commercial vehicles (LCV) like pickups. Since there is no space demarcated for loading and unloading of goods, all heavy goods vehicles are parked along the road. With an increase in population and lack of space and storage areas in the core zone, some of the activities be shifted to other parts of the city.

The core city still attracts large volumes of freight traffic, as the majority of transport operators and mandis are located here. They are greatly dependent on porters for loading/ unloading of consignments from freight vehicles and for delivery to business establishments. Freight and logistics activities in the core zone are completely private and are market governed. As the high volume of activities on Cart Road often causes traffic jams, the movement of heavy goods vehicles has been restricted between 7am and 10pm, though there is no restriction on LCVs.

Figure 9: Loading/ Unloading on Cart Road (Core zone of Shimla)

About 58% of the shops in the wholesale market are vegetable and fruits shops (Figure no. 10) as Shimla is tourist city; it has high number of hotels and eateries present to serve tourists which increase the consumption of fruits and vegetables.

The wholesale market attracts almost 281 tons of goods, receiving an average of 80 vehicles daily (45% are heavy goods vehicles or HGVs) with 1161.4 vehicle kilometers travelled. Around 560 head-load workers are involved in transporting goods from Cart Road to wholesale establishments, making around 5822 trips in all. With the average trip length of 0.9 km, they carry approximately 72 tons per day.

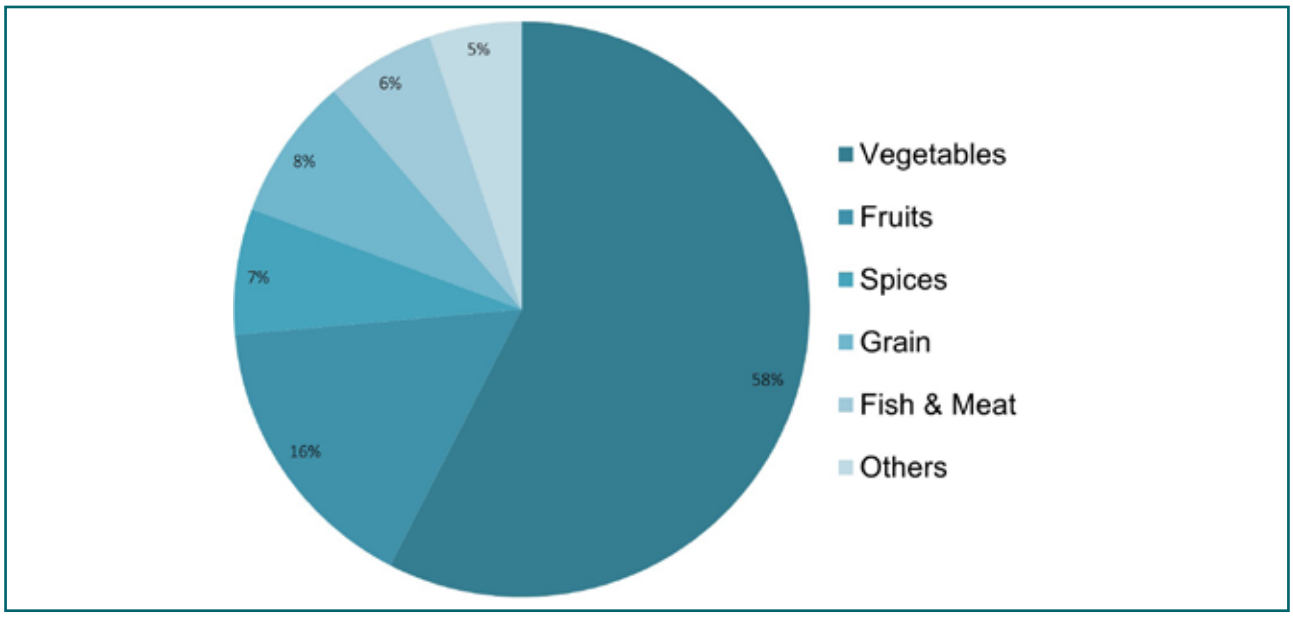


Figure 10: Wholesale establishments of Shimla city

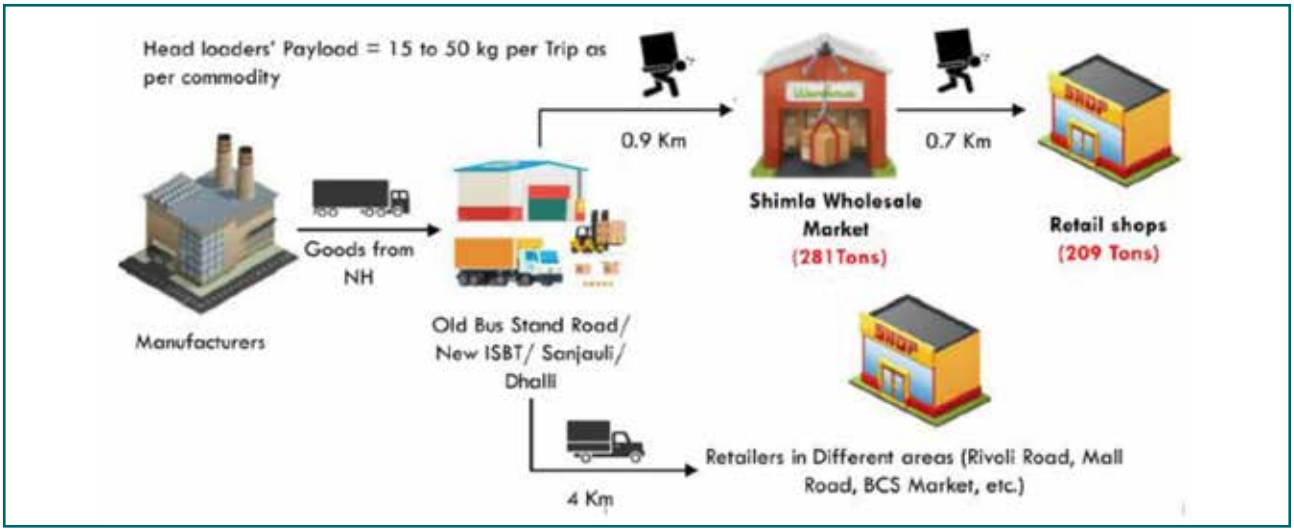


Figure 11: Supply chain to wholesale markets in core area of Shimla

3.2.3. Retail Segment

Anaj Mandi, distributors and transport operators are the main channels through which shops in Shimla procure various consumer goods and FMCG products. Apart from The Mall, Lower Bazar and Sanjauli road (main shopping centers), Shimla has neighborhood markets and convenience stores. The transportation of goods to these markets takes place throughout the day. Many commercial establishments located on NH 5 and NH 205, directly procure goods from distributors located near Punjab border because of lowers costs.

Shimla is expanding at a fast pace. The construction sector's growth has been fuelled by the fact that it's the state capital and a tourist city. The cement supplied by different companies is stored in warehouses at Solah Meel, from where it is transported by trucks daily between 5am and 6am to storage areas of cement distributors in the city. Sanitary and plywood shops are located mostly on NH5 / Shimla Bypass. These shops receive shipments before 6am, but the shops located near Panthaghati, towards Bhattakufar, receive deliveries in HGVs throughout the day. The winter here is usually severe, and it is cold during the monsoon too. Timber is traditionally used for constructing buildings and the interiors to maintain a pleasant temperature. Timber is brought from Himachal Pradesh State Forest Department depots located at Baddi, Ponta Sahib and Sundernagar, where timber is auctioned.

An analysis of the retail establishments in Shimla shows that the majority are bakeries, restaurants and clothes shops, given the tourist nature of the city.

The total daily inflow of goods is estimated to be 246 tons, of which the maximum goods are for bakeries and restaurants, followed by vegetables and fruits and grocery shops. These four categories have a total daily commodity inflow of 226 tons, coming from wholesale establishments. The inflow should be equal to the total outflow from wholesale establishments. But it is greater than that because approximately 8% commodities come directly to retailers from outside, bypassing the wholesale market. Figure 13 shows the goods distribution chain for commodities that directly go to retailers from distributors, bypassing the wholesale market. The goods from different company distributors reach Cart Road at Old Bus Stand or the distributors' storage areas in HGVs. From there, the goods are transported to the retailers with the help of head-load workers, who cover an average distance of 1 km per trip, with a load of 15 kg to 50 kg. Shipments to other locations are transported in LCVs.

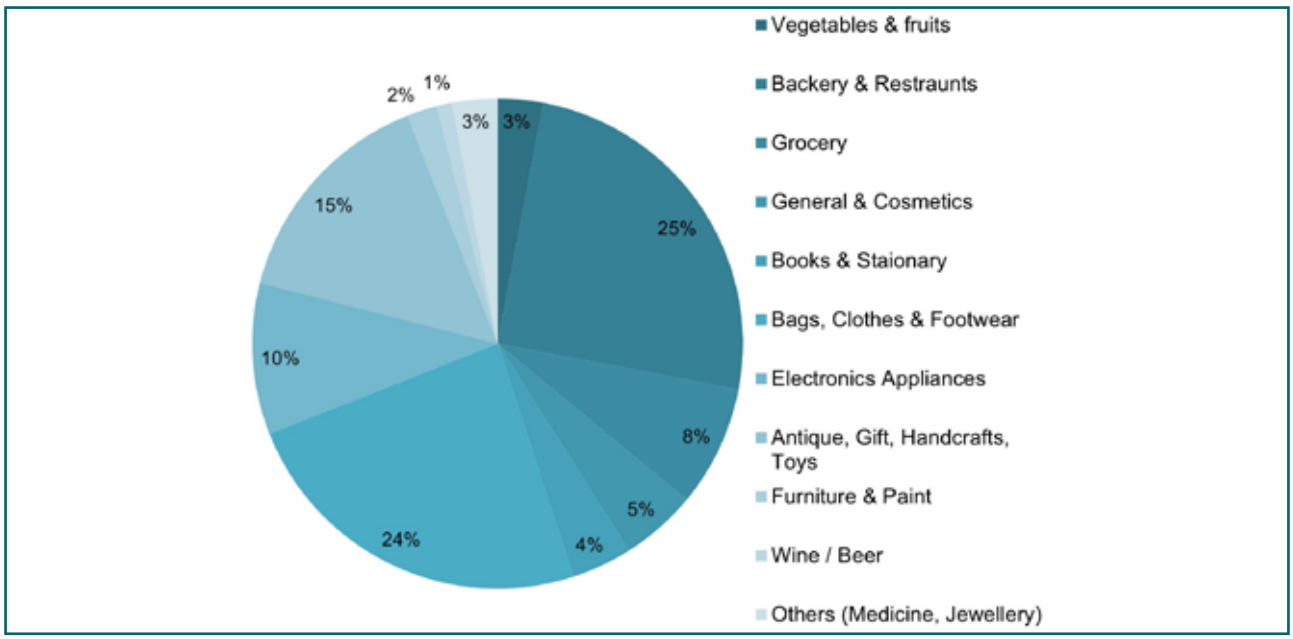


Figure 12: Classification of retail establishments of Shimla City

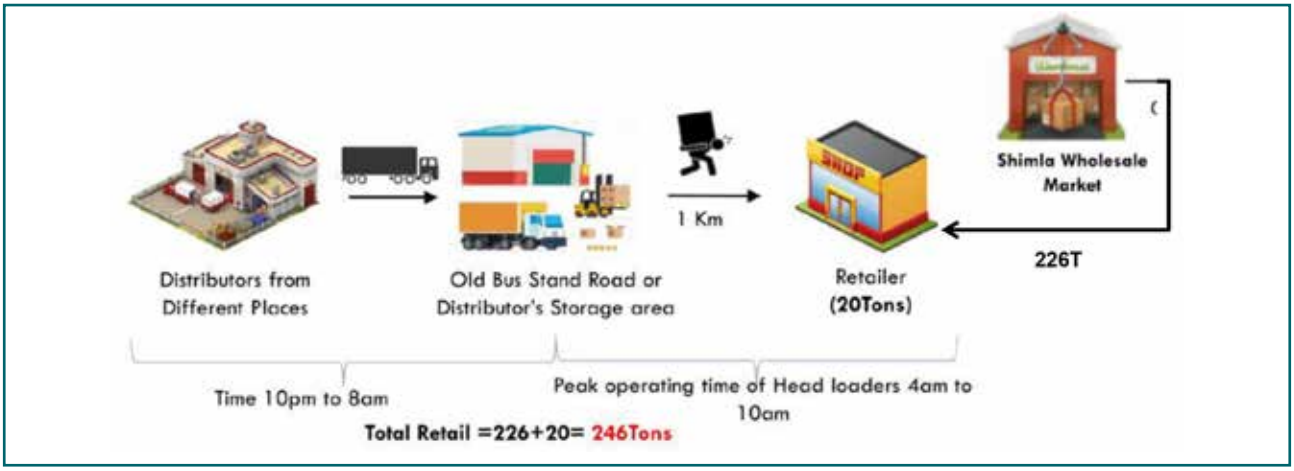


Figure 13: Supply chain to Retail establishments

The city consumes 191 tons of goods daily, on average. Therefore, the daily commodity consumption per 1000 population is 0.78 Tons and per capita commodity consumption is 0.78 kg. The total commodity consumption is calculated by subtracting the stock level from the total inflow.

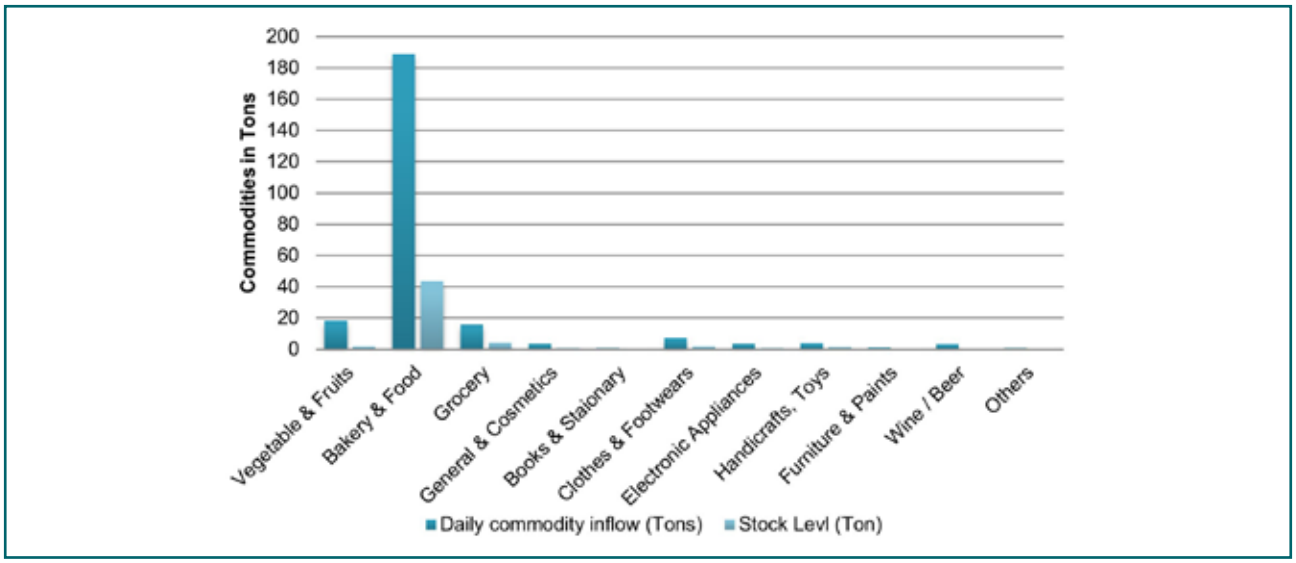


Figure 14: Total commodity consumption in Shimla

The minimum build-up area is for retail establishments with commodities ordered daily such as vegetables and fruits, whereas establishments that make monthly orders of goods like electronics or handicrafts have the maximum built-up area. It has been observed that as the frequency of ordering of goods increases, the built-up area of establishment increases.

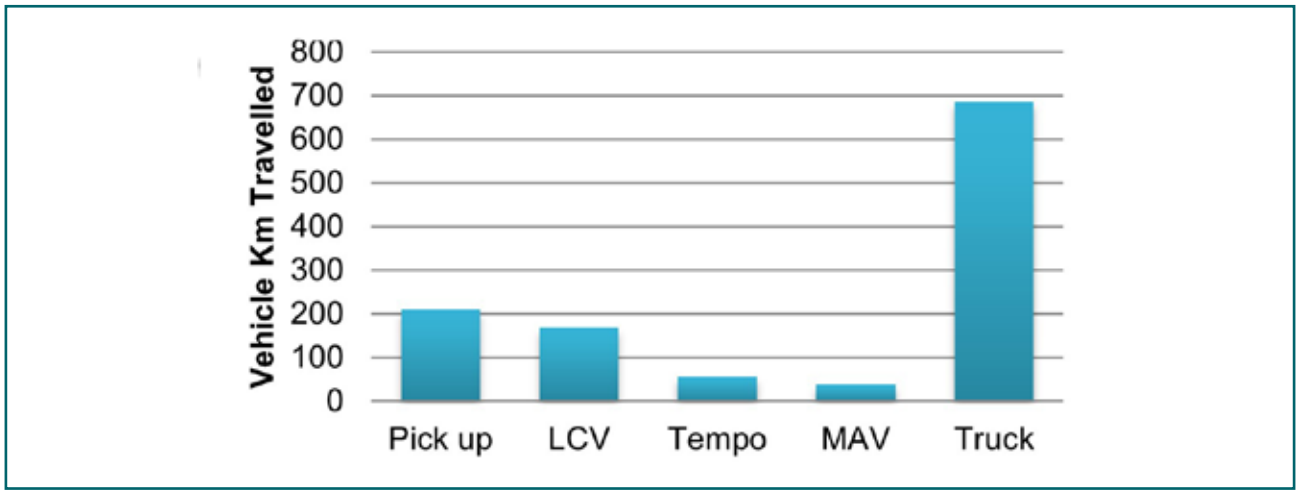


Figure 15: Vehicle Kilometre Travelled - freight traffic from mandi & outside to wholesale establishments

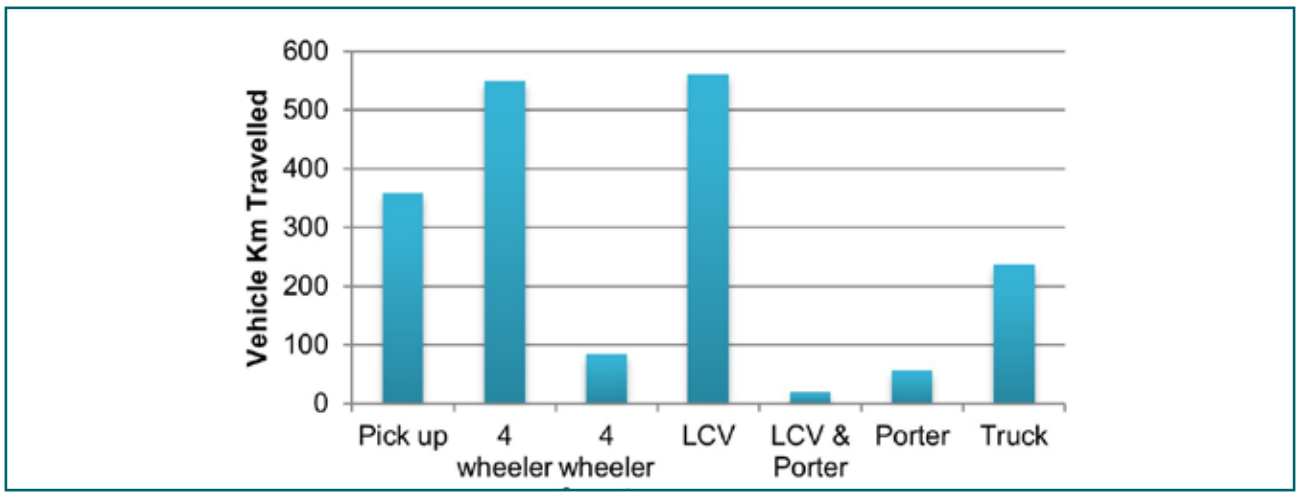


Figure 16: Vehicle Kilometre Travelled - freight traffic to retail establishment from within city and outside

An attempt was made to estimate the freight vehicles kilometers travelled (VKT), loaded and empty. However, the last leg delivery from the retail unit to the customer was not considered. Analysis showed that the goods were brought mostly via HGVs and that internal deliveries were made by LCVs and porters. Figures 15 & 16 validate this finding.

3.2.4. Dhalli Bhattakufar

Dhalli Bhattakufar, located in the eastern part of the city, also sees a lot of wholesale activity. Unlike the core zone, activities in Dhalli Bhattakufar area are mostly operated by the government. Therefore, except for the apple season, freight and logistics activities in this section happen during a specified time period daily. This zone contains two APMC market yards and warehouses of FCI and Himachal Pradesh State Civil Supply Corporation Ltd. Dhalli Bhattakufar zone becomes very chaotic as the number of freight vehicles entering the town daily is very high. Heavy goods vehicles are parked by the roadside, causing traffic jams on the national highway and also degrading the road surfaces. The traffic jams also adversely affect businesses and economic activities that were established before APMC.

Figure 17: Freight vehicles at Apple Mandi, Bhattakufar

The market yards at Dhalli receive vegetables from Shimla and Kinnaur districts in LCVs. Consignments are also transported to Delhi, Ambala and Chandigarh through heavy goods vehicles. Figure 18 showcases inbound and outbound goods traffic from Dhalli Market Yard, showing the preference for LCVs for transporting goods through the market yard.

Bhattakufar market yard receives fruits from Shimla and Kinnaur districts, mostly in LCVs, as presented in Figure 19. However, the ton per kilometer transported through HGVs (53768) is higher than LCVs (4610).

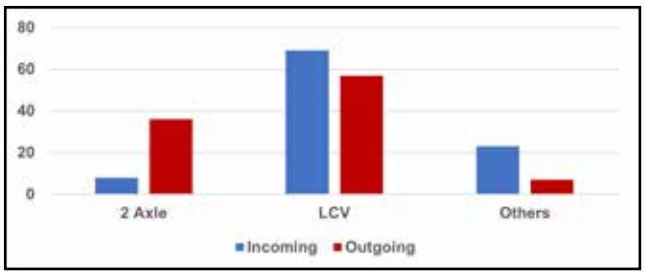


Figure 18: Inbound-outbound freight traffic movement at Dhalli Market Yard

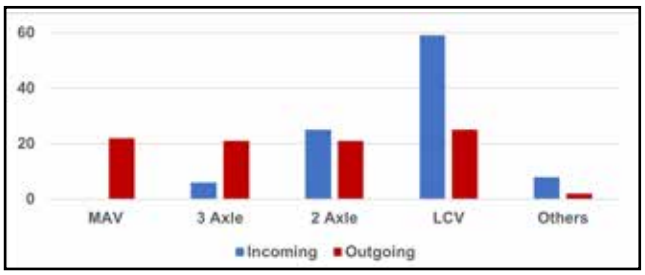


Figure 19: Inbound-outbound freight traffic movement at Bhattakufar Market Yard

Dhalli vegetable market yard receives goods from 100 km away, while consignments are sent up to 200 km away.

On the other hand, Bhattakufer Market yard receives goods from a distance up to 100 km away and while fruit consignments are sent up to 1000 km away, as presented in figure 21.

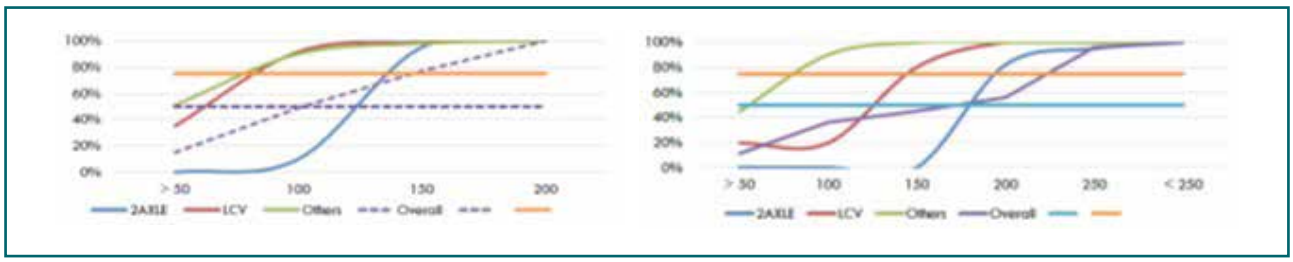


Figure 20: Inbound and Outbound mode wise TLFD of Dhalli Market Yard (vegetables)

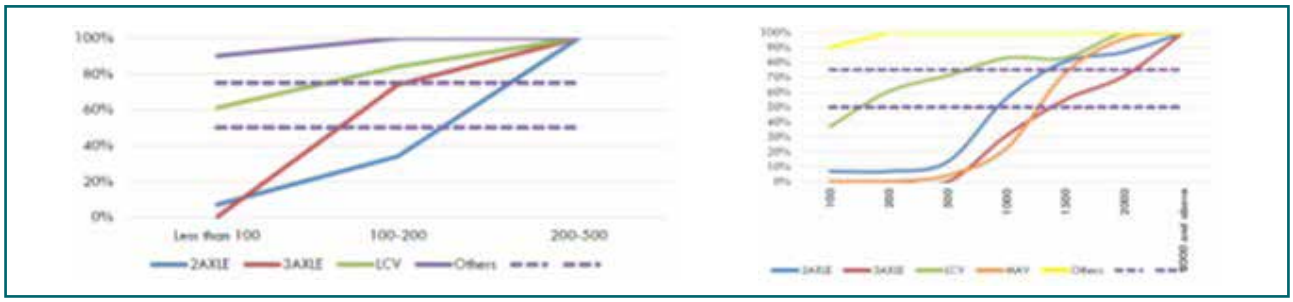


Figure 21: Inbound and Outbound mode wise TLFD of Market yard (fruits)

Activities such as construction, timber, and scrap business, e-commerce and newspaper distribution are also located at various locations in the city. These activities also involve loading, unloading and transportation of freight, which lead to traffic congestion and emissions.

Parking Surveys in Shimla, conducted under the EcoLogistics project, showed that the maximum demand by freight vehicles is for short-term parking (0-2 hours), especially near commercial areas, as depicted in Figure 22.

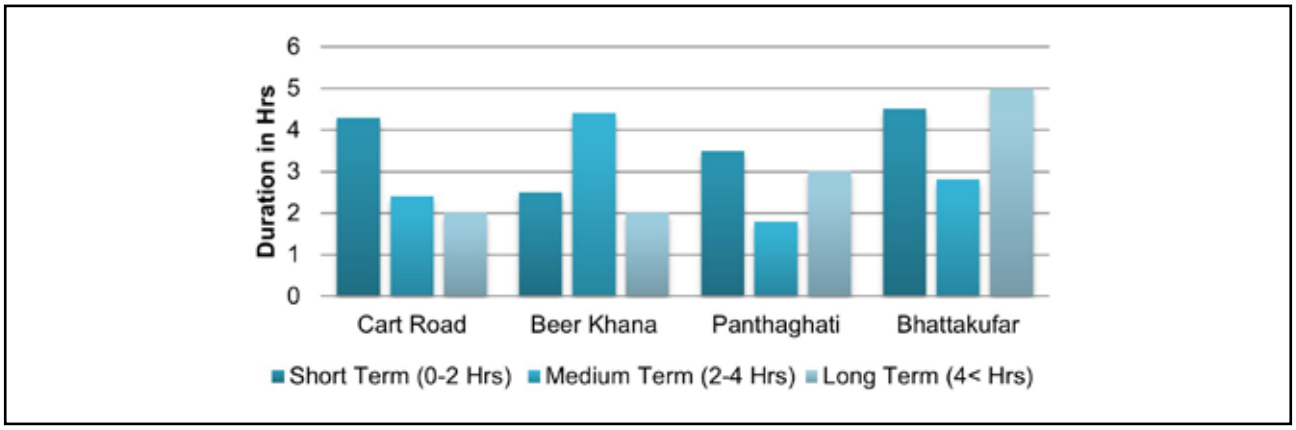


Figure 22: Parking duration captured by Parking Surveys

3.2.5. E-commerce

Shimla has approximately 21 courier establishments in various locations such as Khalini, Kasumpati, and Lower Bazaar. Of these, 17 are associated with e-commerce companies or are offices of leading e-commerce companies. Most of them are located within residential areas. The majority of the consignments to such establishments come in LCVs from Chandigarh. Since there are no operational restrictions for pickups in town, these establishments don't have any specific time for receiving consignments.

The goods handled by e-commerce delivery service providers are largely non-perishable in nature (93%). Further, apparel and lifestyle goods, along with beauty healthcare goods, account for one-

third of the commodities delivered in the city. They mostly arrive in pick-ups, but sometimes trucks also do the job. Deliveries are made on foot, two-wheelers or by bus. Some courier companies have four-wheelers, which make a single trip daily to delivery packages area-wise to the final delivery persons.

Seventy percent of the deliveries are made over long distances (10-15 km & 15-25 km); and 41% are made by two-wheelers and 38% by four-wheelers. Interestingly, public buses are also utilized by delivery boys to transport consignments in the city (13%). This trend of higher dependence on cars can be attributed to the physiographic characteristics of the city as it is easier to make more deliveries by using four vehicles. Figure 23 show the type of vehicles used in the delivery of consignments.

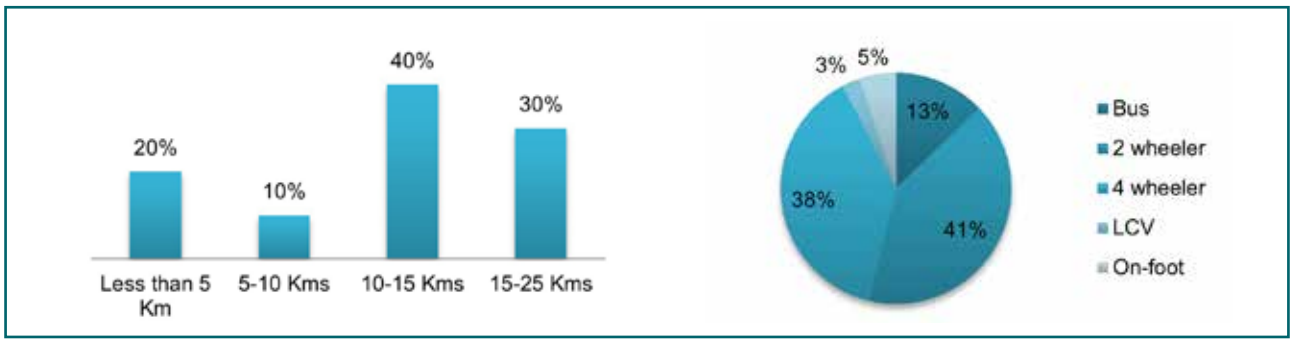


Figure 23: a) Average Distance travelled for making deliveries; b) Mode used for making deliveries

On average, journeys of 138,256 km are made daily to deliver goods in Shimla. However, a large portion of this is external in nature (136,614 km) and only 1643 km pertains to supply chains of local commodities.

Figure 24: E-commerce sector's operations in Shimla City

3.2.6. Total Vehicle Kilometers Travelled and Emissions produced by Urban Freight Sector in Shimla:

The total number of kilometers travelled by cargo vehicles in different urban freight supply chains in Shimla is shown in Figure 25. LCVs, followed by HGVs, travel the maximum distance.

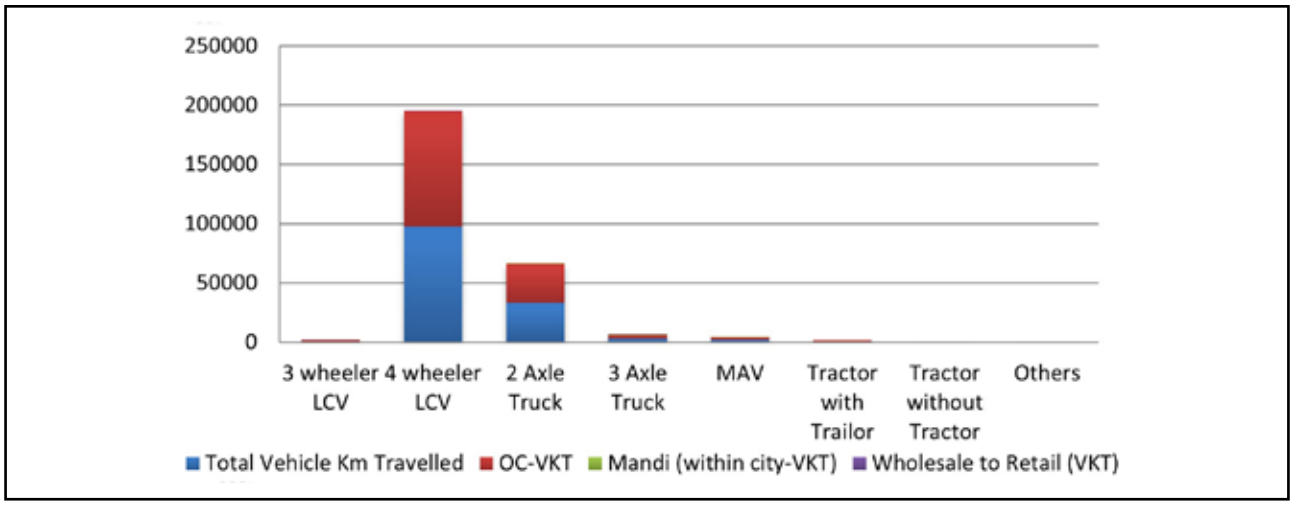


Figure 25: Total Freight Traffic Vehicle Kilometre Travelled (VKT) in Shimla – Per day

The emissions generated by the movement of cargo vehicles were calculated. Based on the total vehicle kilometer travelled it was calculated that 44.0826 tons of carbon dioxide equivalent is emitted by goods vehicles in single day in Shimla. It was found that four- wheeler LCVs followed by HGVs are the major polluters from the urban freight sector in the city. Other modes of transport play a miniscule role in the road emissions. Figure 26 presents the findings of the study carried out as part of the EcoLogistics project.

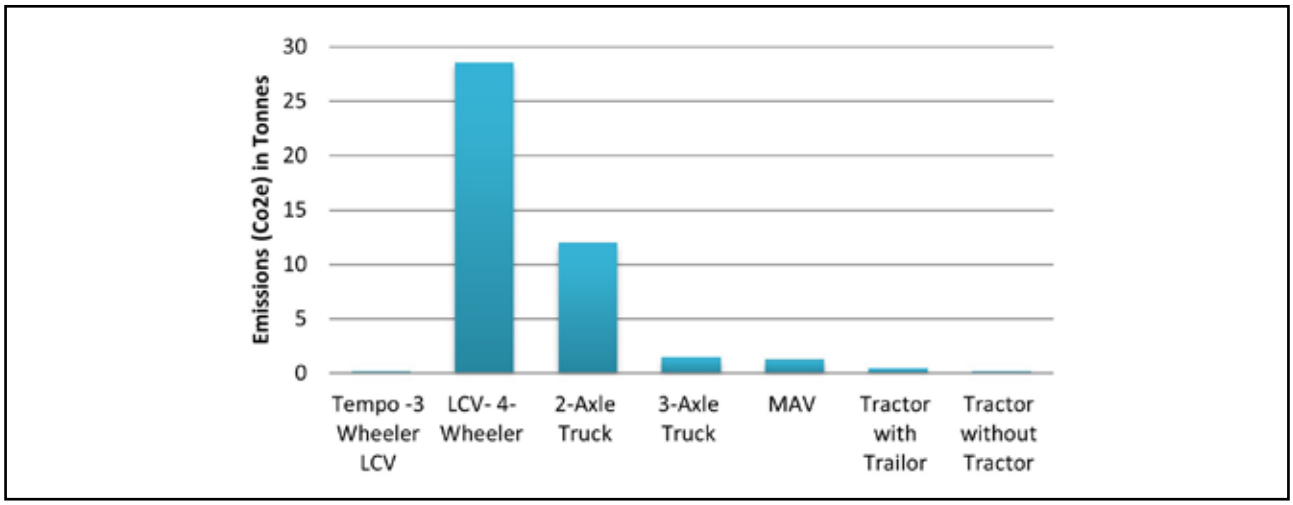


Figure 26: Emissions from freight vehicles in Shimla city

3.3. Major Actors involved in freight activities in Shimla

Government and private stakeholders are the major actors in the logistic sector of Shimla:

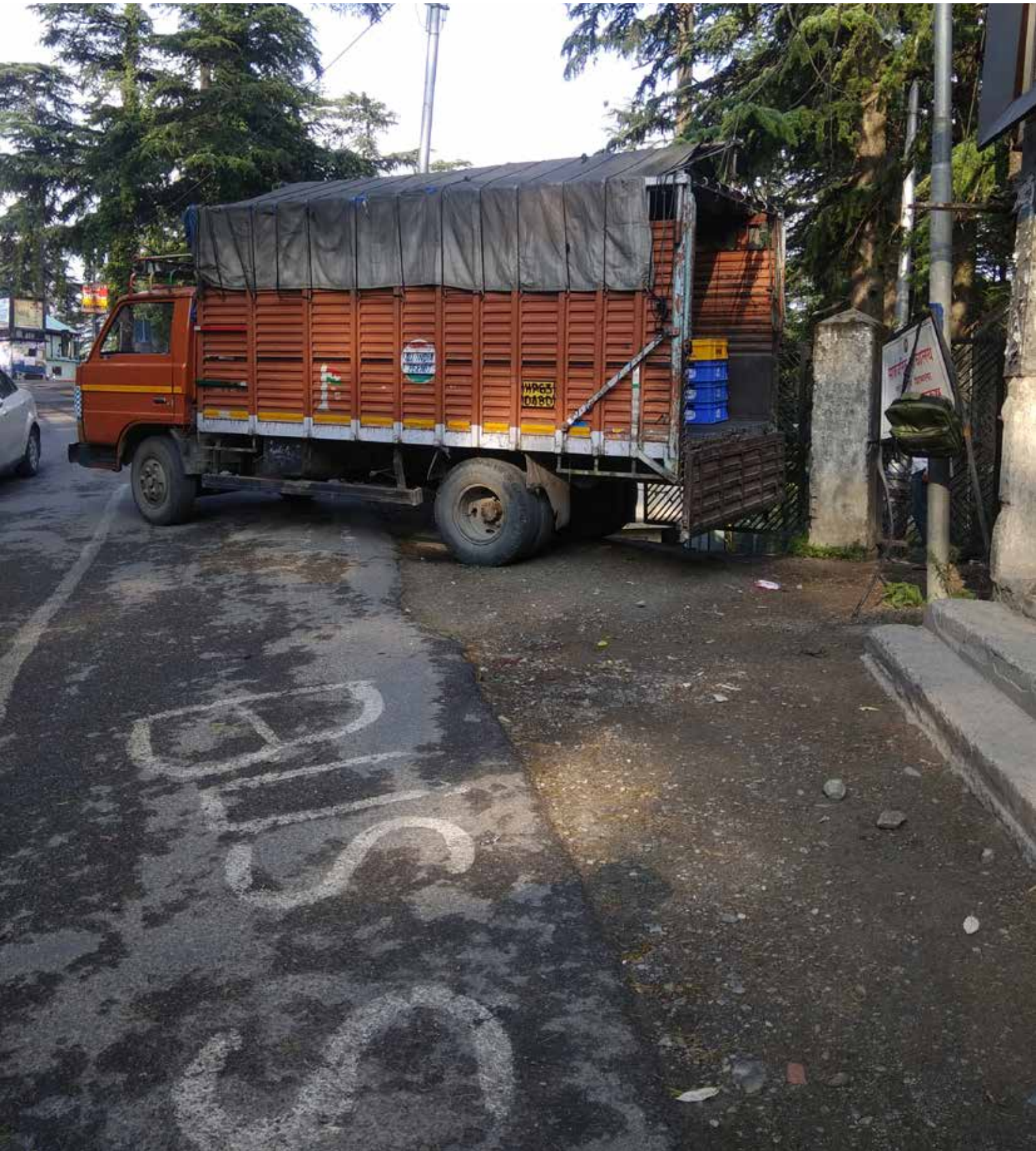
- **Municipal Corporation Shimla** is entrusted with the development related matters of the MC areas and for providing basic civic amenities. Given the central role of the ULB in city infrastructure development, MCS was approached to play the role of nodal agency in the execution of the EcoLogistics Project.

- **The Transport Department** is a state-level department and is responsible for developing rules for passenger and freight vehicles. This department has enacted and amended various acts from time to time, related to taxes on registration of vehicles etc.
- **The Town and Country Planning Department** is responsible for managing land under different land uses, based on existing and future requirements. It plays a major role in the allocation of land for freight-related activities in the cities.
- **The National Highway Authority of India** maintains national highways 5 & 205 that pass through the city. It is a major stakeholder for developing activities along the national highways.
- **The Traffic Police department** controls and manages the movement of passenger as well as freight vehicles in the cities.
- **The Himachal Road Transport Corporation** is involved in providing passenger services in the state. It also operates goods transport vehicles for providing food and essential commodities to remote corners of the state.
- **Himachal Pradesh Public Work Department (HPPWD)** is engaged in planning, constructing and maintaining roads, bridges, ropeways and buildings in the city.
- **Agricultural Produce Market Committee (APMC), Shimla & Kinnaur** involves the highest traffic of logistics vehicles related to agriculture and horticulture produce.
- **Shimla Beopar Mandal** - Shimla has multiple local commercial market unions. However, Shimla Beopar Mandal (SBM) is the umbrella union of all the commercial establishments in the Shimla City. SBM is continuously involved in communication with the administration for provision of services and infrastructure to the commercial community of the city.
- **Transport Operators/ Logistics Companies** - Shimla has 14 transport operators who are involved in bringing goods and commodities for various establishments, and 13 of them are located on Cart Road at Lakkad Bazaar and near the Old Bus Stand, which leads to slowing down of traffic. Businesses from Shimla book orders with the traders or distributors of the source city, the transport operators provide their vehicles to transport the goods to Shimla. They also provide loading and unloading areas, and space for storage of goods and commodities for a short duration during which goods are either collected or delivered by the operators.
- **Porters** - They play a major role in the last-mile delivery of goods. Since the entry of trucks is restricted between 7am and 10pm in Shimla, the loading and unloading of goods from trucks is carried out between 3am and 6am with the help of porters, though it becomes very difficult during extreme weather conditions.
- **Truck Unions** - As mentioned earlier, road transport is the main method of transporting goods to and from Shimla; therefore, heavy goods vehicles play a vital role in freight movement. The movement of trucks is governed by truck unions located at different locations in the city. Shimla has reportedly three truck unions, which have 350-400 vehicles each including tippers, tempos, and vehicles with two, four and six axles.
- **Pick-up unions** - LCVs play a major role in the movement of goods in Shimla. Pickups are considered to be a better choice of goods vehicles due to the narrow lanes in the city. Commodities such as newspapers and e-commerce consignments are also brought in pickups to Shimla. Small farmer cooperatives also use pickups to bring their produce to the mandis from Shimla and surrounding districts. Shimla has two registered pickups unions that work within city limits in the distribution of FMCGs, cement, sanitary goods and fruits and vegetables.

Figure 27: Pickup Union office located in Shimla

- **Multi-stakeholder committee** - Under the EcoLogistics Project, a multi-stakeholder committee has been notified in the city. The committee includes members from offices like district administration, transport department, town and country planning dept., NHAI and HPPWD. The Shimla Beopar Mandal has also been made a member of the committee.

All the above actors have been consulted at regular intervals throughout the project for their opinion on regulation of freight activities in the city, keeping in mind the future growth and economic development of the city.



4. OPPORTUNITIES & CHALLENGES RELATED TO FREIGHT SECTOR IN SHIMLA

4.1. Opportunities

4.1.1. Freight-related initiatives at Central and State Level

The Department of Heavy Industry formulated the Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME I) in 2015 to promote the manufacturing of electric and hybrid vehicle technology and to ensure its sustainable growth in the country. The scheme has laid greater emphasis on providing affordable and environment friendly EV public transportation options for the masses, including charging infrastructure. In continuation of the vision of the national government, the State Government of Himachal Pradesh has notified the draft Electric Policy to make the state a global hub for EV development and manufacturing. The policy also aims to promote sustainable transport systems in the state, development of public and private charging infrastructure for encouraging the use of EVs and providing subsidies, incentives to the EV manufacturing industries.

Additionally, the Logistics Division under the Ministry of Commerce and Industry has improving urban freight movement in planned manner, working closely with GIZ, RMI and RMI India. The ministry plans to launch a Freight Smart City contest in 2022 to provide a platform to cities to improve the city logistics sector.

4.1.2. Ongoing and proposed actions related to freight movement in Shimla

Though Shimla is implementing several projects under various missions and programs, the development of the freight sector has been minimal. Since freight is related to economic development of the city, from time to time its importance has been recognized by the city and plans have been made to organize activities related to freight movement in Shimla. Several city planning documents like the City Development Plan, City Mobility Plan and Development Plan of Shimla have identified wholesale activities in the core zone and the supporting freight and logistics activities as a matter for concern.

- City Development Plan suggests shifting of non-confirming activities to the activities zone in Shoghi to the west of the city. Wholesale commercial activities in grain, vegetables and timber have been taken into consideration. The plan estimates that due to the shifting of these activities out of the city, 25% of the traffic will be reduced.
- Comprehensive Mobility Plan of Shimla (2012) also suggested shifting of non-confirmative activities as one of the proposals for reducing the traffic load on city roads. This plan suggests a Truck Terminal at Shoghi along with wholesale activities. A freight terminal is also proposed in Dhalli. Bypasses were also proposed at Shoghi and Sanjauli to reduce the stress on NH-5 and Cart Road.
- The recently prepared SITRAM (Shimla City Traffic Regulation and Management Plan-2021) has divided the city into eight sectors and has identified solutions as per the traffic issues in the sector. The identified interventions include restrictions on the entry of freight vehicles based on their size and the plying of freight traffic.
- MCS is pursuing the shifting of wholesale activities from the core zone, and alternative sites are being explored. An area of 4383.83 sqm at Darni-ka-Bagicha has already been transferred to APMC for the development of a Vegetable Market Yard, to which activities will be shifted from Lower Bazaar's Subji Mandi. Once completed, this will reduce the considerable stress on Cart Road. MCS is communicating with various stakeholders for shifting the bulk of the activities from the core zone. Land for the shifting of Anaj Mandi and Timber Market has also been identified at Bhattakufar, near the city limits, and the process of transfer of land is being followed up. Shoghi and Sanjauli Bypasses have already been developed by NHAI and HPPWD.

The shifting of the grain market and the timber market, and Transport Operators and Transport Nagar are still in the pipeline.

- In Sanjauli and Chotta Shimla, the exercise of identifying space for loading/unloading goods from freight vehicles is being carried out by DC Administration in coordination with Shimla Beopar Mandal.
- The proposal of development of a new vegetable market yard near Totu on Totu-Tara Devi road towards the western periphery of the city is under progress with the Marketing Board Department.
- HRTC Department has conceived a proposal to utilize the space available in long-distance public buses for carrying consignments (freight activity).

Bigger infrastructural projects, which will have ancillary reverberations on the city's freight sector, are listed below:

- A four-lane bypass project (NH5) from Chandigarh is being constructed by NHAI to help divert through traffic from the city. Another four-lane road is proposed from Bilaspur towards Shimla to reduce the travel time and distance between Mandi and Dharamshala, and Shimla.
- Ropeway and Rapid Transport System Development Corporation of State (RTDC) project for Shimla is being developed on PPP basis. The approx. 22-km project will cost an estimated Rs. 1200 crore.
- Cart Road is being widened at seven points through HPPWD under the Smart City Mission. A project for installing an escalator at Jakhu Mountain is also being planned. The city Police Department is installing 60 CCTVs at critical, vantage and significant points in Phase-I. In phases II & III, the CCTVs installed by the police or other para-statal bodies will be integrated and thereafter, an intelligent traffic management and e-platform will be established. Various multi-level parking areas are being planned and developed under AMRUT and the Smart City Mission.

Stakeholder consultations, one-to-one discussions/ primary surveys - As discussed in the baseline report, regular discussions during multi-stakeholder committee meetings, one-to-one discussions carried held public and private stakeholders and primary surveys conducted with porters, wholesalers, retailers, truck and pickup unions have indicated that they accept initiation of steps towards organizing the freight sector, which will further help to reduce emissions. All the stakeholders consulted play a major role in implementing freight-related activities in Shimla.

4.1.3. Challenges

Shimla has been witnessing low annual population growth, but still it has been stretching its carrying capacity due to its peculiar location. With increase in population growth and change in its demographics, the consumption patterns have changed considerably and this has also led to changes in business patterns in the core city's trade community. Many of the bulk trade activities have shifted away from the city, which now receives much of its goods from bordering cities like Chandigarh, Zirkapur and Parwanoo.

Though e-commerce companies have already marked their presence in the city and the COVID-19 pandemic has also increased people's comfort in using online platforms, local traders have raised their concerns about the same. The main challenge is the network of e-commerce companies located in residential areas; their operations, as they continue to grow, might result in conflicts in due course of time.

Cart Road experiences freight traffic-related issues throughout the day. During the peak apple season, which coincides with the vegetable season too, NH5 experiences exceptional traffic and other stresses, which result in congestion and degradation of roads, which in turn leads to reduction

in traffic speed. Hardware establishments on main arterial roads also cause traffic problems due to the operation of LMVs at all hours. Though the parking infrastructure is improving in the city, it is inadequate in comparison to the number of vehicles being parked on the roads and the people's behavior, hindering the prospects of exploring more PPP-based parking projects in the city. The National Green Tribunal's order banning construction activities beyond 2.5 floors in Shimla is also hampering plans for constructing public infrastructure quickly.

As an EcoLogistics project city, Shimla has mapped its urban freight sector and has presented it on national and international platforms. The baseline of freight sector has been developed and approved. The city is also creating an environment for promoting and creating EV-friendly infrastructure in line with national and state government policies.

5. LOW CARBON STRATEGIES AND ACTIONS SUGGESTED FOR SHIMLA

Based on the interactions with the stakeholders, and mapping of Shimla's freight sector, the following set of actions and strategies have been developed to regulate and streamline the freight sector, promote economic development and reduce emissions from the sector.

Low Carbon Strategy	Measures	Time Frame	Role of Stakeholders	
			Public Stakeholders	Private Stakeholders
Regulation of freight fleet to reduce pollution	Categorisation of freight fleet based on its age. For instance, commercial vehicles should be categorised into age groups of 0-5, 5-10, 10-15 and more than 15 years for easy management and development of data. As per the vehicle scrapping policy of Government of India, freight vehicles that are more than 15 year old are to be de-registered if they fail to get fitness certificates. As a disincentive, the fees for the fitness certificate and fitness test should be increased for commercial vehicles that are more than 15 years old. Any freight vehicle that is more than 15 years old or does not have fitness certificate or PUC certificate shall not be allowed within the city limits.	As per the Vehicle Scrappage Policy of Government of India, heavy goods vehicles have to be mandatorily tested fitness by April 2023 and other vehicles by June 2024. The requirement of checking of documents before vehicles are allowed entry into the city should be implemented immediately.	Orders regarding restrictions on the entry of overloaded and/or old freight vehicles should be passed by District Commissioner-Administration in consultation with the Regional Transport Office. Traffic police should closely monitor freight vehicles and intercept overloaded vehicles from entering the city. Vehicles should be checked for excess loads through weigh-in-motion technological options.	Transport operators, freight vehicle operators and establishment owners should comply with government directives.

Low Carbon Strategy	Measures	Time Frame	Role of Stakeholders	
			Public Stakeholders	Private Stakeholders
Time regulation: There should be rationalisation of the hours during which freight vehicles are allowed entry into the city to avoid conflict during peak traffic hours.	No multi-axle vehicle should be allowed to operate in the city between 7.30am and 10pm. Plying of goods vehicles (pickups & small trucks) should be regulated during peak hours (from 9.30am to 10.30am and from 5pm to 6pm).	This intervention has already been notified for the Cart Road, but it should be applied across the city in 2023.	This initiative should be notified by District Commissioner-Administration and enforced by Police Department.	Compliance and planning of deliveries accordingly.
Apply restrictions on storage/ wholesale/ hardware distributors/ timber-related commercial activities in residential areas.	Make amendments in Shimla Developmental Plan to restrict development of bulk commercial activities in residential areas. Separate areas shall be demarcated in City Master/ Development Plan for such bulk freight attracting/ producing activities. Adequate parking and loading space shall also be provided in such identified locations to offset future issues.	Amendment of Shimla Developmental Plan with notification and should be completed by 2023.	Town and country planning department and MCS shall develop guidelines and bylaws for restricting wholesale/ storage activities within residential areas. District Commissioner-Administration shall notify the shifting of activities from core zone to new area. This can be incorporated through ongoing master planning of the city.	

Low Carbon Strategy	Measures	Time Frame	Role of Stakeholders	
			Public Stakeholders	Private Stakeholders
Formulation of Freight-Logistics Body as an extension of stakeholders' committee.	Identification of representatives from additional Govt. Depts. and transport operators, freight operator unions, Shimla Vyapar Mandal, representatives of smaller Vyapar Mandals, logistics companies, hotel association, mayor/ two elected representatives in addition to the existing multi-stakeholder working group. Notification of formalisation of freight logistics body of Shimla Region by State Government. It should be an independent body or a subsidiary of departments like Industries, Excise and Taxation etc. for it to be enabled for working towards development of urban freight sector of Shimla. Committee shall set in motion the convergence of information and data of city's urban freight on a single platform.	Identification and contact development with stakeholders on immediate basis (2022), taking reference from ongoing EcoLogistics project. Notification for the body should be completed by 2024.	MCS to take lead in identifying and contacting the representatives and in working towards formation of body.	Active participation in the formation of freight logistics body and meetings. Data sharing with the freight body for data-driven identification of the issues.

Low Carbon Strategy	Measures	Time Frame	Role of Stakeholders	
			Public Stakeholders	Private Stakeholders
Integrating freight infrastructure interventions in City Master/ Development Plan.	Freight planning concepts (loading/ unloading space near commercial areas, adequate parking space for freight and consumers' vehicles near commercial areas, urban and micro consolidation centres, truck terminals etc.) shall be integrated in building bylaws and Shimla Developmental Plan by Town and Country Planning Department. Adapting on-street loading zones in building bylaws and Shimla Development Plan Document. Land demarcation for Urban and micro consolidation centres in City Development Plan.	In ongoing Development/ Master Plan, the process of Shimla logistics and freight infrastructure concepts should be incorporated on immediate basis Post surveys and identification of on-street loading zones Identification of land for consolidation centres should be made by MCS, Town and Country Planning Department and Revenue Department by end of 2022	Town and Country Planning department shall develop a policy document for freight-logistics infrastructure planning. MCS, HPPWD and NHAI shall carry out a joint exercise for identifying on-street loading zones.	Private stakeholders to give access to data for document preparation.
Regular urban freight data collection and management	Regular data collection through various public and private stakeholder into following broad categories: Commercial establishments, Urban fleet, Freight vehicles flow Freight infrastructure inventory Major freight generators Major freight corridors Freight data shall be collected annually by MCS for the decision making process.	Members of stakeholders' committee shall identify the data gaps required for decision making in freight sector by mid-2022 Detailed map of data collection shall be finalised by the committee by the end of 2022.	District Administration, MCS, Industries Dept., Regional Transport Office, Himachal Pradesh State Agriculture Marketing Board, Civil Supply, Statistics and Excise and Taxation Department shall work towards developing the mechanism to capture freight data in a holistic manner.	Shall assist in providing the missing information.

Low Carbon Strategy	Measures	Time Frame	Role of Stakeholders	
			Public Stakeholders	Private Stakeholders
Eco-Driving: Attitudinal and behavioural measures	Training of freight vehicle drivers about methods of fuel conservation. Such trainings shall be provided to drivers of government departments in the beginning and then will be expanded to private freight vehicle drivers	Government institutes such as Petroleum Conservation Research Association provides trainings. Keeping the pandemic situation in mind, such trainings shall be taken up in the second half of 2022.	Driver training programme shall be carried out for all government departments in Shimla for drivers operating government vehicle fleet.	Freight vehicle drivers to participate in training when provided private freight vehicles.
Awareness drives / capacity building regarding freight sector	Educating stakeholders, including general public, about importance of freight mobility for the economy of the city. Sensitisation drive for freight vehicle drivers regarding road usage by vulnerable population. Public awareness drive about road usage and difficulties experienced by freight vehicle drivers.	With the ongoing pandemic, such trainings can be taken up later in 2022. Social media platforms and published materials should be developed and used in 2022	Hold a series of awareness drives to educate the stakeholders. Participation of councillors and other political representatives in city wards in such awareness drives shall be mandatory.	Consultation-cum-awareness drives amongst freight vehicle operators and shopkeepers.
Utilization of public transport buses (HRTC) for moving consignments within and between cities.	Using public buses for bringing courier/ e-commerce consignments from other cities. If found successful, proposal may be extended to other services like tabloids. Use space available in public buses for distribution of goods within the city.	Policy preparation and notification by Himachal Pradesh Road Transport Corporation for utilisation of available space in public transport buses for consignments shall be completed by end of 2023.	Himachal Pradesh Road Transport Corporation shall develop and regulate the policy for carrying the parcels. The rates for this service shall be regulated by HRTC.	Explore the options available with Himachal Pradesh Road Transport Corporation for goods movement.

Low Carbon Strategy	Measures	Time Frame	Role of Stakeholders	
			Public Stakeholders	Private Stakeholders
Control parking through standardised road signage for city.	Demarcate city into zones in context of the issues faced on road stretches. Identify time regulations for each zone. Develop standardised signage complying with IRC:SP:73-2007. Installing signage showing rules about time regulations, parking, no-parking, no-stoppage, restricted/ sealed-off roads, etc. information across the city.	Identification and design components to be completed by the end of year 2022. Pan-city implementation shall be completed by end of 2023.	MCS with NHAI, HPPWD and Traffic Police shall develop and define types of signage, colours, fonts etc.	To comply with the parking control norms and time regulations.
Demarcating on-street loading zone requirement	On-street loading zones shall be identified on Cart Road and national highways in city. Time regulation policy shall be developed for other city roads for on-street loading activities. Areas such as Kachi Ghatti, Tara Devi, Khalini, BCS, Vikas Nagar, Panthaghati, Mehli, Bhattakufar, Dhalli etc. shall benefit from such interventions.	Post-identification, such sections/ points shall be notified by end of 2022. Demarcation of loading zones should be completed by end of 2023. Identification for other city roads shall be carried out by MCS by end of year 2024.	MCS in consultation with NHAI, HPPWD and private stakeholders shall identify and notify the potential points for unloading zones and acknowledge stretches that see greater idle parking by freight vehicles.	To comply with the parking norms and demarcation of loading zones.

Low Carbon Strategy	Measures	Time Frame	Role of Stakeholders	
			Public Stakeholders	Private Stakeholders
Establishing parking-cum-storage infrastructure on Cart Road for aiding commercial establishments in core zone and Sanjauli Market space.	A comprehensive study shall be carried out about traffic flow and commodity flow in core zone and Sanjauli Market. Based on the requirement for additional storage space by commercial establishments, land parcels shall be identified on Cart Road near the core zone commercial area, Sanjauli Market and other Neighbourhood markets. The structure shall have parking space at the road level and other levels should be developed and utilised as storage areas for commercial establishments or logistics companies. These structures should be fitted with cargo lifts for effortless movement of the consignments. A comprehensive policy for usage of this infrastructure shall be developed by MCS. A plan for delivery of consignments to be planned after consultation with stakeholders for these areas.	Study shall be carried out by the end of 2023. Land parcels shall be identified by end of 2024. Plan to make deliveries shall be prepared by end of 2025 or early 2026. Forest clearances shall be taken, if required, by end of 2026. Construction shall be completed before 2031.	MCS along with revenue dept. and other parastatal departments can identify land near commercial centres. MCS will take forest department clearances. MCS or HPPWD can develop the storage-cum-parking infrastructure. With stakeholders' consultation, MCS will chart out a plan for deliveries.	Compliance with the time, space and days' restrictions as delivery plan. Payment of rent for usage of infrastructure.
Development of resting pedestal for porters	Identification of areas in city that don't have roads where freight vehicles can go. Identification of space in such stretches on pavements, stairways for development of resting pedestals for porters.	Identification of points as per requirement and development can be completed by 2022.	MCS shall identify land where porters' resting pedestals shall be developed.	

Low Carbon Strategy	Measures	Time Frame	Role of Stakeholders	
			Public Stakeholders	Private Stakeholders
Delivery of consignments to markets in core zone through e-cargo vehicles	Deliveries to establishments on The Mall, in Lower Bazaar etc., before 6am, and solely through e-cargo vehicles. One-way flow of freight vehicles should be allowed. Direction could be from Cart Road to AG Office Road or DC Office Road towards High Court Road from the Mall and Lower Bazaar Road or vice versa. One-way movement of traffic could be finalised after consulting stakeholders.	Permission can be granted in 2022 to promote the utilisation of e-freight vehicles in Shimla city.	District Administration can, after consultation with stakeholders, bring notification for permitting plying of e-cargo vehicles between 3am and 6am in the core commercial area for deliveries.	Compliance with the notification. Adoption of the use of e-cargo vehicles.
Shifting of activities out from Eastern Activity Zone.	Comprehensive traffic and transportation study shall be carried in Eastern Activity Zone. Impact of these activities on city traffic and corridors shall be studied. Entire or partial operations of FCI and APMC market yards shall be shifted away from city.	Study shall be completed by the end of 2023. Identification of land for shifting of activities shall be identified by FCI, APMC and revenue department by end 2024. Shifting shall be carried out by end of 2027 after development of alternative locations for warehouses and market yards.	Along with FCI and revenue department, MCS shall carry out the exercise for identifying suitable land for FCI warehouse. FCI to consult with Head Office for the shifting of warehouse from congested location.	

Low Carbon Strategy	Measures	Time Frame	Role of Stakeholders	
			Public Stakeholders	Private Stakeholders
Shifting of non-confirmative activities (from core area) to outskirts of city.	Shifting could take place towards Western Activity Zone in Shoghi. Transport Nagar should be developed towards Shoghi and Dhalli-Bhattakufar or New Four lane Roads. Timber merchants are willing to shift to Bhattakufar/Dhalli, while transport operators find Shoghi location favourable Approximately 250 bighas of land have been identified at Shanan as an alternative location for shifting of wholesale activities. Trade Hub for Shimla should be developed towards Shoghi's Western Activity Zone which will serve wider section of traders from Shimla City.	The obtaining of an NOC from the local body in Bhattakufar, outside MCS jurisdiction, and the planning shall be completed by 2025. Meetings for identifying space requirement along with final area identification for Transport Nagar and Trade Hub shall be carried out by DC Administration with MC Shimla and other stakeholders shall be completed by 2023.	MCS will procure a no-objection certificate. Thereafter, the process for development of infrastructure along with the finances required for the same shall be identified and planned.	Shifting of business establishments from core area to an alternative site as agreed
Development of truck terminal	Based on the recommendations of the Comprehensive Mobility Plan, land for truck terminals near Shoghi and Dhalli shall be identified. Planned truck terminals shall be developed with adequate parking and storage infrastructure. Provision of facilities for truck drivers like resting space, washrooms, eateries, communication connectivity, mechanic shops etc. shall be developed	Land identification for development of truck terminals shall be completed by 2025. Clearances of any kind to be completed by 2027. Truck terminals to be developed by 2031.	MCS along with District Commissioner-Administration shall identify the land for the truck terminals in consultation with affected stakeholders.	Compliance and shifting of offices from within city limits to designated location.

Low Carbon Strategy	Measures	Time Frame	Role of Stakeholders	
			Public Stakeholders	Private Stakeholders
Intra-City Distribution Strategies	Use of sustainable transport modes, i.e. e-tugs for last-mile deliveries in core zone market. Development of infrastructure for vertical mobility of consignment: Gravity ropeway system, Cargo lift Use of existing (tourist) lift.	Based on the approval by city administration and availability of finances, this shall be implemented by 2023. Since second sub-strategy also involves the component of land availability, it may take MCS three to five years to develop and implement this strategy.	MCS will have to identify the space for installation of vertical mobility infrastructures.	Traders will be involved to identify the space and develop a project on PPP basis.
Redesigning of APMC Dhalli Mandi	Scenario 1: Removal of shops and temporary structures to develop loading/ unloading space and parking bays. Shifting of the shops etc. in second floor of auction platform. Shifting of weighing bridge within mandi premises. Scenario 2: Expanding the area by 1.8 ha. ITS-based ticketing system at entry/ exit using RFID tag Facilities like restrooms, staff quarters, banks, ATMs, separate staff parking and idle parking spaces Separate loading/unloading bays. Temporary shops within mandi area. Three additional auction platforms.		Himachal Pradesh State Agriculture Marketing Board to explore the strategies and implement the same.	

Low Carbon Strategy	Measures	Time Frame	Role of Stakeholders	
			Public Stakeholders	Private Stakeholders
Regional Goods Distribution (Regional Urban Consolidation Centre)	The regional distribution centre is proposed to be developed at Pinjore Kalka Urban Complex, All freight for Shimla region will arrive at RDC. The shipments will then be distributed through LCVs/ HGVs which will then take produce from Shimla Region to other parts of the country. Different supply chain movements have also been proposed: Source consolidation for source delivery, Source consolidation to further consolidation, Source consolidation-drop & pickup deliveries.	Due to involvement of various administrative bodies, this project shall take up to a decade for development and execution.	District administrations of Shimla and Solan would be required to take up the project and its implementation. The Urban Consolidation Centre shall be developed by Himachal Pradesh State Agriculture Marketing Board.	
Low-carbon strategy for solid waste management	Deployment of EVs for solid waste management in city.	As per the availability of the e-cargo vehicles suitable for hilly terrains, MCS will procure such vehicles in the next two to three years.	Procurement of e-cargo vehicles by MCS	
Potential of Electrification of Freight Vehicles	Deployment of EVs for freight movement.		Transport department shall include e-cargo vehicles in the State EV Policy. MCS / NHAI/ HPPWD / State Electricity Board shall work towards developing extensive network of EV charging stations pan city.	E-cargo vehicles shall be adopted and procured by private freight vehicle operators in Shimla

5.1. Pilot demonstration project

The EcoLogistics project aims to reduce carbon emissions from Shimla's freight transport sector. Besides the low-carbon actions/ strategies suggested in the above section, a pilot demonstration project has been identified to help the city mitigate carbon emissions from the freight sector. The project is briefly detailed below.

Project name: Sensitizing road users and freight operators through low-cost interventions to manage freight movement.

Objectives of the pilot project

The demonstration project has been developed:

- To demonstrate ways to address congestion and related emission issues caused by freight transport on identified road stretches, by introducing low-cost interventions such as delineation of loading/ unloading zones, and the installation of signage to help regulate the flow of traffic.
- To improve freight-operator and road-user behaviour by providing training to the city staff and to generate awareness amongst relevant stakeholders.
- To encourage and educate the freight operators and drivers through improved road communication in order to promote environment friendly behaviour, and improve vehicle and fuel efficiency.
- The demonstration project would also focus on impacting and improving the behaviour of the stakeholders towards optimal space utilization, reducing congestion, and understanding and following signage.

Project Activities

The demonstration project is envisaged to be implemented for a period of five months.

The proposed project activities have been categorised into three phases: Preparatory Phase, Execution Phase and Evaluation and Documentation Phase.

Phase I - The Preparatory Phase is proposed to be completed within one month. The activities proposed under this phase include:

- Compiling background information - The project team will compile information about loading/ unloading of illegal parking of private (if any) and freight vehicles, road conflict and blockages etc. on the identified roads. The baseline study for Shimla will also be referred to for other parameters such as traffic volumes, characteristics, time of access and type of freight vehicles.
- Developing a route plan (on a map) - Based on the information gathered, and on the baseline study regarding vehicular movement, data on accidents (if any), freight activities on the stretches, a routing plan (on a map) indicating proposed movement/ direction for the freight vehicles to follow and use, finalisation of areas for delineating loading/ unloading zones etc. would be developed in order to streamline vehicular movement and to reduce excessive traffic congestion and chaos on both stretches.
- A signage scheme will be prepared to minimise conflicts, and will include information about space usage for loading/ unloading zones, timings (duration allowed), and type of vehicles allowed. The signage plan will be in line with the standards laid out in Indian Road Congress Codes and with the restrictions imposed by the traffic police.
- Consultations with government and private stakeholders will be carried out to discuss the demonstration project. Their feedback on the routing plan, delineated areas for loading/ unloading for freight vehicles and signages will be incorporated.
- Terms of references (ToR)- would be developed for hiring contractors to procure and install signages and for delineating loading/ unloading zones in consultation with MCS following their existing protocols.

- A bidding process for hiring contractors to procure and install signages and for delineating loading/ unloading zones would be initiated through MCS.
- The project team will assist MCS in floating and evaluating the ToRs to hire the contractors.
- Meetings with city officials: As mentioned in the objectives above, the demonstration project will also focus on creating awareness amongst city officials and stakeholders involved in freight activities about the strategies for reducing emissions from the freight sector. In order to achieve this, consultation meetings would be conducted with all stakeholders to discuss and present the demonstration project, before implementing it.
- Three consultation meetings will be held by the project team (two during the preparatory phase and one at the end of the project to present the findings) with government (MCS, elected representatives, traffic police, HPPWD and NHAI) and private stakeholders (e.g. commercial establishment owners) to discuss the demonstration project details with them. The details would include the maps indicating delineated areas for loading/ unloading, and communication through signages, among others. The feedback from the different stakeholders would be documented and incorporated.
- In addition to this, two training workshops would be organised for freight drivers and operators as discussed below:
  - Two training workshops for freight operators would be conducted with the help of a national level agency - Petroleum Conservation Research Association, Chandigarh. The training would be facilitated by ICLEI South Asia and would focus on emission awareness, fuel conservation and good driving habits that impact the behaviour of the operators. About 30 drivers/ freight operators will be trained during these workshops. These training workshops would be conducted before on-ground implementation of the demonstration project.
  - The IEC material developed by the agency would be reviewed by the project team before conducting the workshop

Phase II - Execution Phase:

- Demarcation of loading/ unloading zones for freight vehicles – Single-line spaces will be marked with paint for parking by freight vehicles (pickups and trucks), and for loading and unloading of consignments on the road, as per the available right of way on the stretch. As per preliminary estimates, space for loading/ unloading of about 38 trucks would be provided on each stretch under the demonstration project. (Note: The number of freight vehicles may vary slightly, depending upon the ground conditions.)
- Installation of signage - Information about timings for using the loading/ unloading zones will be provided through onsite signage, which will have information about identification of the stretch as a truck zone, restrictions on idle parking, among others. This would be based on existing time regulations as identified by traffic police in SITRAM and will also be discussed and explained in consultation with shop owners and freight drivers. The signage will be procured and installed in line with standard codes by Indian Road Congress (IRC) will be done (IRC:SP:73-2007). The communication on the signage will be strictly in accordance with the IRC codes and with the existing city regulations. A tendering process (21 days at least) will be followed to select the contractor for procuring and installing the signage. Feedback will be sought from the government and private stakeholders before finalising the design of the signage.
- Up to 16 signage boards (4ft X 2ft) will be installed in truck zones and loading/ unloading spots, while around 11 boards (2ft X 2ft) will be installed as facility signage. The signages will be installed 50m apart for better communication, as indicated in IRC codes. (Note: The number of signages may vary slightly, depending upon the ground conditions.)

Phase III - Monitoring Evaluation & Documentation Phase:

- The monitoring of the pilot project will be carried out for a period of 15 days during the day (from 9.30am to 5.30pm - deliveries from wholesalers to retailers take place during this period) with the help of the following:
  - It is assumed that a period of 15 days would be sufficient to study the project impact on reducing emissions and on the behaviour of freight operators and drivers. The monitoring would be done during the day to address the issues faced due to daytime traffic only.
  - Consultation drives with stakeholders
  - Coordination and supervision of the activities implemented to monitor the speed of all vehicles, incidents of defaults in parking, among others.
  - Two additional staff will be hired for a period of one and half months for assistance in monitoring and evaluation activities, coordinating activities, demarcation of loading zones, assistance to drivers, project monitoring, feedback from the establishment owners and freight vehicle operators, documenting information during the monitoring phase, among others.
  - Five staff from Police Department/ MCS will be involved in managing and monitoring the movement of freight vehicles in the identified stretches.

- Project documentation- videos/ photos would be used throughout the monitoring period to capture drivers' behaviour and the difference made after project implementation.
- Short interviews of all stakeholders will be conducted to document the user experience after implementation of the pilot project.
- Analysis and documentation of the project outcomes
- Learning and recommendations in the form of a report will be prepared and shared with all stakeholders. It will include draft guidelines for freight vehicles, focusing on speed limits, time restrictions, enforcement of guidelines, introduction of penalties against defaulters, and design of signage, among others.

Stakeholders involved

- **Municipal Corporation Shimla (MCS):** Being the nodal agency of the EcoLogistics project, MCS will play a major role in the implementation of the demonstration project. All project activities would be undertaken on road stretches within the municipal limit, in consultation with MCS, which will also give support in seeking the approvals required for implementing the demonstration project, and installation of signage and markings on road stretches. It will also provide venues for conducting consultation meetings and training workshops (for freight operators and drivers).
- **Traffic Police:** It will assist the team during the project implementation and monitoring phase. The activities proposed under the pilot project are in line with the Shimla City Traffic, Regulation & Management Plan (2021) developed by the Traffic Police Department.
- **HPPWD and NHAI:** Responsible for maintaining parts of the stretches identified for the demonstration project, they will provide technical design inputs while planning and demarcating the loading/ unloading zones. Both agencies will also support the project by providing details of road sections having existing road geometry, right of way etc. of the identified stretches.
- **Freight operators** will also play a major role in the project implementation as they have been involved in discussions related to the EcoLogistics project in Shimla. Awareness generation activities through training workshops would be organised for them, which will focus on the relevance of emission reduction and use of signage to improve communication. Their experiences during the project implementation and monitoring phases would be captured through short interviews.
- **Traders/ shopkeepers** involved in business activities on the identified stretches, along with customers, will also be made aware about the project and its benefits. Their experiences during the project implementation and monitoring phases would also be documented.

- **Ward Councillors** (political representatives) will be part of all the stakeholder meetings to discuss and make them aware about loading/ unloading zones, and signages. They will also be involved and encouraged to generate awareness about the benefits of the demonstration project.
- **ICLEI and its team** will play a major role in coordinating and managing the project on the ground and in sensitising stakeholders and documenting the lessons learnt.

Expected project impact

- Demarcated zones for loading/ unloading of freight and the guided movement of freight vehicles through the identified stretches with the help of routing and signage will help to ensure smooth traffic flow and reduce traffic congestion, leading to reduction in carbon emissions.
- Demarcated areas for freight will help in minimising conflicts on the road, thus saving the time of the road users (reducing normal operating hours), reducing accidents and in improving the road experience. It will also help to impact the behaviour of different users who use roads for different purposes.
- Improved communication in the form of signages will benefit all road users, including freight operators, pedestrians and shopkeepers. It will also reduce the risks arising from abrupt stopping of freight vehicles on roads.
- The training and consultation meetings of the demonstration project will create more awareness, visibility and acceptance about the freight and logistics sectors in the city, through discussions among and feedback of various stakeholders and the city government.
- Shimla will be better equipped for implementing similar low-cost interventions related to all kinds of vehicular movement (and not just freight vehicles' movement). The learnings from the project will help the city to explore opportunities for upscaling and strengthening it.
- Reports, IEC material and proceedings reports developed as a result of the training will help the city officials to further sensitise freight operators and citizens.
- Being the state capital and based on its experience, Shimla can influence other cities to implement similar interventions.
- The demonstration project will also be an effective platform for the government and private stakeholders to interact on freight-related issues, and innovative solutions to resolve them. The finalisation of route plans and identification of loading / unloading zones would be done after consultation with all stakeholders.
- The project will sensitize and help to improve the behaviour of all stakeholders sharing the road space for freight activities.
- The identification of the area for loading and unloading of goods, along with the mentioned time limit, will reduce the time taken for the said activity and also reduce congestion.

Scale-up opportunities

- Based on the results and documented learnings of the two stretches, MCS can maintain and strengthen the interventions on them. Additionally, MCS can identify more stretches in other locations for similar interventions. This will also boost the on-going initiative of the Traffic Police Department Shimla, under which it proposes to smoothen the city traffic flow, including freight movement. Additional project components can also be added to strengthen the project based on the feedback received from the users, freight operators and other stakeholders.
- Similar interventions can also be implemented in other cities of the state. It will help to streamline the freight movement, which is also in line with National Urban Transport Policy.
- The learnings, project documentations, and IEC material from the training workshops can also be used again by Shimla and other cities in the state to implement similar projects.

Next steps

As part of the EcoLogistics project, the ICLEI South Asia project team will support MCS in implementing the pilot project, and in documenting its learnings.

For more information, please contact

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