

KARNAL

MOBILITY SECTOR



PROMotion of Inclusive, Sustainable growth and diversity to strengthen Local Governments

Project PROMISE





Title: Promotion of Inclusive, Sustainable Growth and Diversity to Strengthen (Mobility sector- Learnings & Practices) Local Governments- Experiences from Karnal city, Haryana, India

Publisher: ICLEI- Local Governments for Sustainability, South Asia

Authors: From ICLEI South Asia

Narender Nain, Avantika Arjuna, Ashish Rao Ghorpade

Edited by the Communication Team of ICLEI South Asia

Design: Crossed Design

Copyright: ICLEI South Asia (2019)

Year of Publishing: 2019

Acknowledgements:

The documentation of this report would not have been possible without the valuable contribution and support from the project city administrators, officials and other stakeholders. The project team would like to thank the members of the core group committee, experts at the project exchange workshops for their valuable suggestions to the study team. The team would also thank European Union for providing the overall guidance and support in the successful compilation of the document.

ICLEI SA would also like to thank Administrative Staff College of India (ASCI)- the partner organisation and members of the advisory committee for their valuable suggestions to the study team in the form of suggestions and guidance during this exercise.



DISCLAIMER:

This document has been produced with the financial assistance of the European Commission (DCI-NSAPVD/2015/368-827). The contents of this document are the sole responsibility of ICLEI South Asia and can under no circumstances be regarded as reflecting the position of the European Union.

The presentation of the material in this publication does not imply the expression of any opinion whatsoever on the part of the authors concerning the legal status of any country, territory, city or area or of its authorities, or concerning delimitation of its frontier or boundaries. Moreover, the views expressed in the publication do not necessarily represent the decision or the stated policy of the author organizations. While every effort has been made to ensure the correctness of data/ information used in this report, the authors do not accept any legal liability for the accuracy of inferences drawn from the material contained therein or for any consequences arising from the use of this material.

CONTACT:

ICLEI South Asia Secretariat C-3, Lower Ground Floor, Green Park Extension New Delhi- 110016, India iclei-southasia@iclei.org http://southasia.iclei.org/



Message

Greetings!

Urban areas in India are growing at very fast pace majorly due to shift from rural areas and expanding infrastructural needs of the existing population of the city. The city governments play a significant role in addressing the above needs but at the same time it becomes difficult for the city governments to tackle the problems holistically due to their minimal capacities, and limited budgets. In order to assist the cities, the project team through this exercise has developed a holistic approach for the city governments to prioritize their projects/ initiatives within available resources based upon citizen feedback.

We are glad to provide our support in association with Administrative Staff College of India (ASCI) in the Mobility sector in Karnal which is also being developed as Smart Cities. This has been a unique initiative by engaging with the project city, its stakeholders including the technical staff, political representatives, end users- comprising of women, youth population, and people with special needs irrespective of age, gender and caste.

I would like to express our gratitude to European Union for providing us an opportunity to assist the city governments with regard to different sectors in each project city. I would also wish to thank the members of city core group committee and national advisory committee for their continuous support provided towards completion of this report.

Warm Regards, Mr. Emani Kumar Deputy Secretary General, ICLEI – Local Governments for Sustainability & Executive Director, ICLEI South Asia

Project Supported By



Implementation Partner



Partner Cities









Implemented By



The Delegation of the European Union to India and Bhutan performs a variety of tasks aimed at enhancing the relations between the EU and India (and Bhutan) including cooperation on regional, global and security issues, close trade and economic ties, sectoral dialogues on smart and sustainable urbanisation, research and innovation as well as people-to-people contacts. Established in 1983, the EU Delegation to India is headquartered in New Delhi and relations with India have evolved significantly with the 2004 strategic partnership.

Administrative Staff College of India (ASCI) was established in 1956 and is now a premiere Institute for research, training, capacity building and information, dissemination in Urban development and management.

Karnal Municipal Corporation Karnal, Haryana

Ajmer Municipal Corporation Ajmer, Rajasthan

Jabalpur Municipal Corporation Jabalpur, Madhya Pradesh

Greater Warangal Municipal Corporation Warangal, Telangana

ICLEI - Local Government for Sustainability is the leading global network of more than 1,750 cities, towns and regions committed to building a sustainable future.

Table of

CONTENTS

1.	Introduction to the Project	12
2.	City Profile	14
3.	Rapid Assisment of Mobility Sector	16
	3.1 Existing city bus service in Karnal	16
	3.2 Non-motorised transport	17
	3.3 Parking	20
	3.4 Instuitional setup pertaining to Mobility Sector in Karnal	20
	3.5 Future plans of the city	20
4.	Outreach Initiatives	24
	4.1 Citizen engagements	25
5.	Additional Assistance to the city on Mobility Sector	34
	5.1 Route rationalisation of city bus service	34
	5.2 Parking design at the Kunjpura road	35
	5.3 Perception of stakeholders on pedestrianization of Karan Gate Market	37



PROMotion of Inclusive, Sustainable growth and

diversity to strengthen Local Governments

Mobility Practices, Learnings from Karnal

6. Recommandations	38
6.1 Safety and security	38
6.2 Parking	39
6.3 Non-motorized transport	40
6,4 Intermediate public transport	40
6.5 Public transport	4
6.6 Users with special deed	4
6.7 Integrated Command and Control Centre	4
6.8 Institutional framework	4

1 Introduction

PROMISE project- "Promotion of Inclusive, Sustainable growth and diversity to strengthen Local governments" is being implemented by ICLEI South Asia in association with Administrative Staff College of India (ASCI) with support from European Union. The project is being carried out in four Indian cities representing different geographical locations- Ajmer in Rajasthan, Karnal in Haryana, Jabalpur in Madhya Pradesh and Warangal in Telangana. The project was initiated in the selected cities in early 2016 and will continue to run till March 2019 with an objective to strengthen the local governments in carrying out the service level improvements. The project has been designed with an aim to help the selected cities to develop their capacity to plan, conduct, manage and evaluate their projects in an inclusive manner with a focus on all communities, vulnerable groups irrespective of their gender or religion.

The overall objective of this project is to improve Local Authority's capacity to perform as local development actors for improving local quality of life in an inclusive manner by supporting local authorities to create, enable and institutionalize equitable and inclusive governance mechanisms, with an aim to support development of smart and sustainable growth in cities. The proposed project shall strengthen capacities of local authorities for integrated, participatory, inclusive and sustainable development and efficient resources mobilisation and utilization to enhance service delivery, increase community participation and promote diversity in the urban system. The specific objective of the project is to develop a PROMISE tool for outcome based planning and evaluation of the development actions of local authorities. The PROMISE tool intends to help the cities in the following methods:

- Build managerial and technical capacity of local governments to develop projects jointly by engaging with and involving city staff, community, private sector, project team experts, local stakeholders and jointly implement projects in the city.
- Mobilize available opportunities and utilize resources in a diverse and strategic manner and help local governments to better leverage the opportunities available under national programs such as Swachh Bharat Mission, HRIDAY, Smart Cities and AMRUT, through well-defined criterion for project evaluation and implementation based on outcomes.

- Enable local Governments to adopt participatory planning in project prioritization and execution.
- Ensure equitable and inclusive service delivery mechanisms through participatory governance that reach all sections of society, including the most vulnerable.
- Improve accountability of local authorities to diverse stakeholders and local communities.
- Acknowledge and promote diversity in local working environment of cities by encouraging citizen engagement in developmental project planning and execution.

Besides the PROMISE tool, various other activities are being undertaken in each project city. This report addresses the details of the activities undertaken in Karnal pertaining to mobility sector under the ongoing project. As per the scope of the project, a pilot area has been selected in each project city in consultation with the Municipal Corporation with an aim to carry out a detailed study and interventions at a small scale and if found appropriate, the same may be replicated by the Municipal Corporation in other parts of the city. Ward No. 11 has been selected as a pilot area in Karnal. This area comprises of commercial, residential and institutional spaces and also forms a part of Area Based Development Plan under Smart City Project Karnal.

As mentioned above, the ongoing project also aims to promote engagement with the city. In this regard, a core group committee at city level has been formed in each project city in order to interact and have views from various experts. The core group committee of Karnal include the following experts.

- Hon'ble Mayor/ Sr. Deputy Mayor, Municipal Corporation Karnal
- · Commissioner, Municipal Corporation Karnal
- · Chief Engineer, Municipal Corporation Karnal
- Superintending Engineer, Municipal Corporation Karnal
- Deputy Municipal Commissioner, Municipal Corporation Karnal
- · Executive Officer, Municipal Corporation Karnal
- Deputy Town Planner, Municipal Corporation Karnal
- · Municipal Councillor, Ward No 11, Karnal

This report comprises of following topics.

· Introduction to the project

This section provides the background of the study and outlines the study objectives, tasks and approach and methodology followed to complete the project.

· City profile

This section assesses the demographic profile of the city along with its connectivity, land use profile, and growth directions of Municipal Corporation Karnal (MCK).

. Rapid Assessment of the Mobility Sector

This section talks about the existing scenario of mobility sector in the city. This section is highly dependent on the level and amount of information made available by the municipal authorities.

Outreach Initiatives

It discusses about the initiatives taken in the city under the PROMISE project to understand the priorities of the citizen's w.r.t mobility and also to sensitize them about improving the plight of mobility sector in their city.

Recommendations

Based on the project findings, this section discusses the areas of interventions suggested to be undertaken in the study area.

2 City Profile

Karnal lies on National Highway 1, which connects Delhi to Ambala and further to Amritsar through Grand Trunk Road (G.T. Road). It is located at a distance of about 123 kms from Delhi and 130 kms from Chandigarh. Owing to its strategic location, Karnal is well connected with other major towns of the State and that of the

adjoining States by a good network of roads. Amritsar-Delhi main double broad-gauge railway line also passes through Karnal making it easily accessible from other parts of the country as shown below in the map.

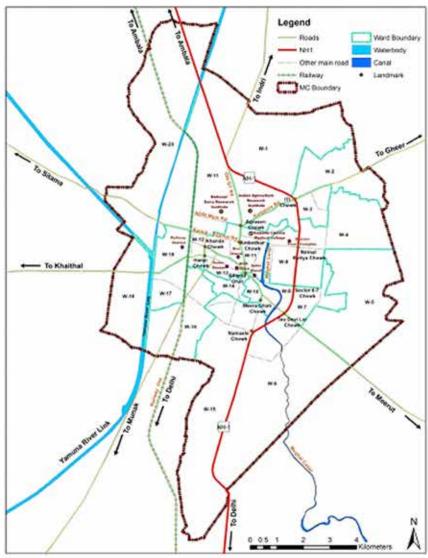


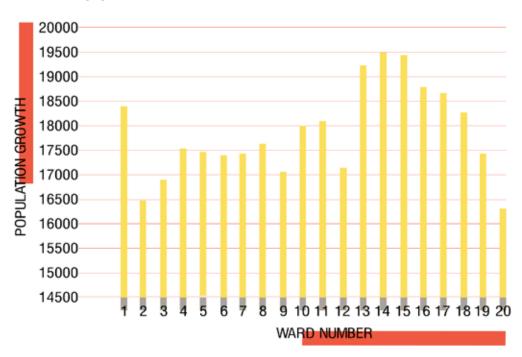
Figure 1: Location of Karnal

As of now there are 20 wards in Karnal, while there were 31 wards as per Census 2011 because few of the wards were merged during ward bandi process by Municipal Corporation of Karnal in 2013. There has been a considerable increase in the population which is attributed to the constitution of Municipal Corporation in 2010 and also to the inclusion of 15 villages in the Municipal Area. The figures below show the population growth of Karnal from 1941 to 2017 and ward wise population of the city respectively.

Decadal Population of Karnal



Ward wise population of Karnal



3 Rapid Assessment of Mobility Sector

With increase in population and area of the city, travel needs of the people have also increased. Currently the major modes of travel in Karnal include bus service, auto-rickshaws, e-rickshaws, public bicycle sharing, private taxis and personal vehicles for commuting in and around the city.

A considerable increase in the number of two wheelers and cars has also been observed in Karnal. The number of two wheelers has increased by 37% from 2007 to 2016. Maximum percent (77.7%) of vehicles in the city are petrol based, followed by diesel (22.2%), while a very negligible percent of the vehicles are CNG based, due to the absence of a CNG station in Karnal.

3.1 Existing City Bus Service in Karnal

Recently Karnal, upgraded its city bus service with assistance from Chief Minister's office. The city now has six buses catering to three different routes and covering a distance of 84 kms. The buses have been purchased at a cost of 16 million (Rs. 1.60 crores), with assistance from the Chief Minister's scheme. Initially the city bus service was not a popular mode of transport in the city as most of the commuters were not aware of the service. With passage of time, it has been observed that the ridership of city buses has increased to some extent.

Frequency of the city bus service being 30 minutes in Karnal is also one of the reasons that it is not a preferred mode of travel by the citizens. Earlier, only one city bus was being operated by Haryana Roadways in the city. It covered a distance of 14 kms in the city and made 10 trips per day. This bus service covered only the central part of the city and had 21 bus stops in the route, out of which 5 stops were located within ward number 11- study area for the project.

Bus stops for the entire city include Shiv colony, Prem Nagar, Ram Nagar, Rest house, Hansi Chowk Railway road, Government girl's school, Fish market, Committee chowk, Bus stand, Gandhi chowk, Aggrasain chowk, Hospital chowk, Single chowk, Sector 12, Sector 8, Sector 7, Amar hospital, Shiv mandir sector 6, Karan Vihar, Sector 5 and Sector 6.



Figure 2: Additional City Buses inaugurated in Kamai



Figure 3: City Buses started under the CMs scheme

3.1.1 Fare Structure of City Buses in Karnal

The fare structure for AC and Non-AC buses was developed by Haryana Roadways in July 2013 and has not been revised till date as shown below in the table. The fare is Rs. 5 up to 5 Kms, Rs. 10 for 6 to 10 Kms, Rs. 15 for 11 to 15 Kms, Rs. 20 for 16 to 20 Kms, Rs. 25 for 21 to 25 Kms, Rs. 30 for 26 to 30 Kms and 75

paise per additional km for above 30 Kms for Non-AC Buses and Rs. 10 up to 5 Kms, Rs. 20 for 6 to 10 Kms, Rs. 30 for 11 to 15 Kms, Rs. 40 for 16 to 20 Kms, Rs. 50 for 21 to 25 Kms, Rs. 60 for 26 to 30 Kms and 150 paise per additional km for above 30 Kms for AC Buses.

Haryana Roadways

Upto 5 kms- Rs. 5

6 km to 10 km- Rs. 10

11 km to 15 km- Rs. 15

16 km to 20 km- Rs. 20 21 km to 25 km- Rs. 25

26 km to 30 km- Rs. 30

Above 30 km- 75 paise per additional km

For AC Buses

Upto 5 kms- Rs. 10

6 km to 10 km- Rs. 20

11 km to 15 km- Rs. 30

16 km to 20 km- Rs. 40

21 km to 25 km- Rs. 50

26 km to 30 km- Rs. 60 Above 30 km- 150 paise per additional km

Karnal

Upto 5 kms- Rs. 5

6 km to 10 km- Rs. 10

11 km to 15 km- Rs. 15 16 km to 20 km- Rs. 20

21 km to 25 km- Rs. 25

21 NII 10 23 NII- 118, 23

26 km to 30 km- Rs. 30

No fare structure mentioned for AC buses

Fare Structure

3.2 Non-Motorized Transport

3.2.1 Public Bike Sharing Scheme

Karnal has dedicated cycle tracks (1.5 kms wide) along both sides of smart road. The length of smart road is 2.50 kms which starts from Ambedkar chowk and ends at Baldi Bypass in the city. The Municipal Corporation of Karnal and Police Department initiated a public cycle sharing scheme on 22th June of 2016 in the city with 250 sanjhi cycles and 17 operational docking stations on Public Private Partnership (PPP) mode to promote Non-Motorized Transport (NMT) in the city. The initiative was operated on PPP model

with a private partner- Pioneer, who is entitled to advertisement and revenue collection rights. Each cycle is used 1.6 times a day for mean trip length of 3.3 kms on an average. It was found that 1,786 trips originated and 1,781 trips terminated between 5:00 AM to 8:00 PM in the month of February 2017 and Sector 12 and Government school docking station have maximum usage of Public Bicycle Sharing (PBS), rather than others docking stations in the city.

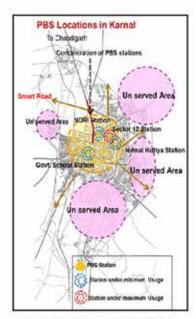


Figure 4: Location of docking stations- PBS

As per the reports published by Ministry of Housing and Urban Affairs n best practices, it was observed that almost 61% people used PBS for commuting to work, followed by 27% for commuting to educational institutions and only 12% use it for leisure. It was found that Sector 12 and Government school docking station have maximum usage of PBS in the city. The city has also received best practice projects award in Urban Transport by Ministry of Housing and Urban Affairs, in 2016. The scheme as of now covers approximately 30% of the city's area having its docking stations at the following locations (Refer Figure 4 for map):

- · Government Senior Secondary School/ DAV College road
- Nagar Nigam office
- · Guru Nanak Khalsa College Railway road
- · Forest division office

- Railway station
- · Government College Karnal, Railway road
- Sabzi Mandi chowk
- Super Mall entry at sector 12
- · Nirmal Kutiya chowk
- · ITI chowk
- NDRI chowk
- ISBT Exit gate
- Kachwa road
- · Old fire brigade
- Police station civil lines
- Kalpana Chawla Hospital chowk
- Mughal canal market Sabzi Mandi Bridge
- Mughal canal market opposite Vodafone store.



Figure 5: Docking Station at NDRI



Figure 6: Docking Station at Police Lines

The private partner who manages the PBS service in Kamal offers a free usage of PBS for first half an hour, after that it takes Rs. 10 on hourly basis as fare for using PBS in the entire city. The private partner also collects revenue from advertisement rights. It is observed that PBS is also not a favorable mode of transport because it caters only to the central parts of the city and the existing cycles are not well maintained by the service provider. The opinion collected from the users on PBS are documented in outreach section of the report.

3.2.2 E-Rickshaws

Travel through E-Rickshaws is a preferred mode by citizens of Karnal. It is observed that currently there are 4,318 registered auto-rickshaws, 1,021 goods three wheelers, 907 taxis and 800 E-Rickshaws including 25 E Sakhi Rickshaws in the entire city. Out of the total 800 E-Rickshaws, only 438 E-Rickshaws are registered with Road Transport Authority. The remaining E Rickshaws are plying on the roads without registration. Most of these E Rickshaws are bought from Shamli in Uttar Pradesh at cheaper rates and hence they run in the city without registration.

Municipal Corporation of Karnal distributed 50 E-Rickshaws to

the people belonging to Economic Weaker Section of the Society through District Innovation Fund (DIF). A total amount of Rs. 60 lakh was allocated for this scheme in which 90% subsidy was provided by MCK through the fund received from DIF and a provision of bank loan was made for the remaining 10% amount. Charging stations which were also used as parking lots for 50 E- Rickshaws were developed by MCK to support the beneficiaries. The facility is now closed due to pending electricity bills, hence the E-Rickshaws are charged by their beneficiaries at home only. It was also observed by the project team that most of the beneficiaries have sold their E-Rickshaws and started another occupation.





Figure 7: Distribution of E Rickshaws under District Innovation Fund

3.3 Parking

The number of motorized vehicles in the city has increased in the past. Though there has been a considerable increase in the number of motorized vehicles, there are no paid parking lots in the city, except at bus stand and few private locations at railway station, which charge at flat rates. In early 2017, Municipal Corporation of Karnal developed a parking mechanism at Kunjpuara Road, by marking yellow strips on both sides of the road. There is no parking area available in the city for parking intermediate modes of transport such as auto rickshaws, E Rickshaws due to which people park their vehicles on the road during day and in front of their houses during the night.

The Government of Haryana passed a notification on 8th March 2017 for facilitating parking needs in the state. The policy allows for

the use of vacant plots as temporary parking lots within the municipal limits in the state of Haryana. The vacant plot could be either a Government land or a private land. The policy states that the area of plot size should not be less than 500 sq. m, however clubbing of plots less than 500 sq.m is allowed. Plots under same ownership or different ownership are allowed to be clubbed to reach the minimum area of 500 sq. m. The approach to the site should be from a road of width not less than 12 m. The permission is subject to a license fee of Rs. 100/sq m/ year and the parking charges of the vehicle shall be decided by the concerned Municipality. Only surface parking is allowed, without permanent construction, except a ticket room/guard room with a size of 50 sq.ft. If the owner of the parking lot violates any rule, the Municipality can issue a notice or impose a fine upto Rs. 5,000.

3.4 Institutional Setup pertaining to Mobility Sector in Karnal

The mobility sector in Karnal is largely under Municipal Corporation of Karnal (MCK), Haryana Urban Development Agency (HUDA) and Police Department. As discussed in the previous section, Municipal Corporation of Karnal has introduced E-rickshaws in the city with assistance from District Innovation Fund. Six city buses have also been introduced by the Municipal Corporation with the help of state government which cater to three different routes, covering a distance of 84 kms.

In the past, the city has also undertaken initiatives such as Public Bike Sharing system and Raahgiri day to promote non-motorized transport and walkability. These initiatives have been taken by Municipal Corporation of Karnal, in coordination with the Police Department.

The Municipal Corporation is also responsible for maintaining roads and provides temporary parking lots in the city. Locations such as Kunjpura road is one such temporary parking, developed by the Municipal Corporation. HUDA provides parking facilities in HUDA sectors and market areas. The overall control of traffic and its management in the entire city is the responsibility of the Police Department.

Mobility Infrastructure	Planning & Design	Construction	Operational & Maintenance
Roads/ Bridges/ Flyovers/ Multilevel Parking	Public Works Department & Municipal Corporation Karnal	Public Works Department & Municipal Corporation Karnal	Public Works Department & Municipal Corporation Karnal
City Bus Service	Municipal Corporation Karnal & Haryana Roadways	-	Municipal Corporation Karnal & Haryana Roadways
NMT Initiatives	Municipal Corporation Karnal & Police Department	Municipal Corporation Karnal & Police Department	Municipal Corporation Karnal & Police Department
Parking	Municipal Corporation Karnal	Municipal Corporation Karnal	Municipal Corporation Karnal

Table 1: Institutional Responsibility Matrix

Source: Municipal Corporation Karnal

3.5 Future Plans of the City

The study of service level indicators for transport sector was conducted and it revealed that all the indicators fall in the low category when compared with the SLB standards of Ministry of Urban Development and Housing Affairs.

The indicators studied included the following.

Indicator	Sub-Indicator
Cafab. 9 Cagurity	Traffic safety
Safety & Security	Availability of traffic surveillance system
	Geographical coverage of public transport
Public Transport	Per capita availability of public transport
	Mode share of public transport
	Percentage of interchanges with bicycle parking in the city
	Modal share of NMT
Non-Motorised Transport	Percentage coverage of footpaths- wider than 1.2 m
NOT-Wotonsed Transport	Percentage of traffic intersections with pedestrian crossing facilities
	Percentage of road network with dedicated bicycle tracks
	Pedestrian Infrastructure Facilities
Intermediate Public Transport	Presence of IPT vehicles/ 1000 population
Intermediate Public Iransport	Average Travel Speed of IPT
Intelligent Transport Custom	Availability of Passenger Information System
Intelligent Transport System	Extent of Signal synchronization
Parking	Availability of paid parking spaces
Environment	Pollution Levels

After analyzing the status of indicators, extensive discussions were following key parameters. held with the members of core group to understand the indicator wise existing scenario of the city, where the city perceives to see itself after next five years and what initiatives the city plan to take up to achieve goals in next five years. The responses received from the group members have been mapped and presented to identify the

- · Priority sectors for the city
- · Existing situation of the city with regard to the indicator
- · Where the city perceives to reach after 5 years with regard to the indicator
- · Initiatives the city has planned to achieve its goals









Existing Situation 2018

Women, young girls, elderly feel insecure while commuting/travelling in the city during late night

By 2023

All residents feel safe while commuting travelling within the city

Initiatives Planned

- · Self defence training for school and college going girls
- · Installation of CCTV cameras for surveillance
- . App for Real time crime monitoring & emergency calling

Existing Situation 2018

Older areas of the city see a mix of pedestrians, cyclists and vehicles but newer areas are focused mainly on the automobile.

By 2023

The city will be highly walkable. Pavements will exist on every street and will be maintained. Trees line and many sidewalks will provide shade for pedestrians. Buildings in most areas of the city will be easily accessible from the sidewalk.

Initiatives Planned

- Removal of encroachment from all roads to make the city pedestrian friendly.
- · Promote tree plantation
- Dedicated cycle tracks and cycle stands around major recreational places

Existing Situation 2018

The city tacks organised parking spaces. The 2 & 4 wheelers are generally packed haphazardly on the roads leading to encroachment and narrowing of effective road width and on street parking is available only in commercial areas of the city. The parking is unpaid at most of the places. The city tacks parking policy and parking action plan.

By 2023

The city will be well organised by paid parking spaces. The condition of parking spaces will also be good and will be well maintained by the Municipal Corporation.

Initiatives Planned

- Parking policy and parking action plan
- Multilevel parking will be in all congested area
- · Available parking area/lots will be managed effectively

Existing Situation 2018

Public transport covers less areas of the city. However last mile connectivity remains incomplete and affects transport options for various locations in the city.

By 2023

Public transportation network covers the entire city and intensity of connection relates with the demand. Plenty of options of public transport are available and affordable for all sections of the society.

Initiatives Planned

- Increase the routes covering entire city, increase the frequency of services
- PIS for the routes, timings of PT & IPT
- · Provision of common mobility card
- · Online applications for IPTs









Existing Situation 2018

A very small percentage of the city population is using PBS as it available at few locations only.

By 2023

The city will be well organised with public bike sharing system which will be operational across the city.

Initiatives Planned

- Increase the docking stations
- · Provide and maintain good quality bikes
- Encourage the usage of NMT among the users
- Develop cycle tracks

Existing Situation 2018

The city has adopted ITS only for few sub sectors, whiles it is in a process for adoption ITS in other sectors as well

By 2023

The city will be well developed with ITS facilities which will be operational in future and the citizens will be fully satisfied by its service.

Initiatives Planned

This is being done through smart city mission

Existing Situation 2018

intermodals in the city are located at few locations. The city is planning to develop more intermodals in order to facilitate people and provide last mile connectivity.

By 2023

The city will be well developed by intermodal system in the entire city while providing last mile connectivity.

Initiatives Planned

- Introduce cycle stands at bus stops
- Develop parking spaces for E Rickshaws near bus stops
- · Introduce common mobility card system in the city

Existing Situation 2018

Vehicles cause high air pollution levels in the city. Vehicles dominate public spaces and effect their effecting functioning.

By 2023

The city will have a clear policy and vision for combating pollution issues. There will be adequate number of trees and green cover in the city to combat air pollution from vehicles.

Initiatives Planned

- Issuing of challans
- Promoting NMT instead of fuel based transport.
- Introduction of electric vehicles and replacement of old vehicles with CNG vehicles

4 Outreach Initiatives

Moving ahead with the project activities in the city, the project team after making an overall assessment of the mobility sector narrowed down the scope of work to ward number 11- the study area selected for pilot interventions. The total population of ward 11 is 18,134 which is only 5% of the total population of city. The ward has 3,627 households and it lies in the northern part of the city bounded by ward 20 to its west, ward 19, 12 to its south, ward 1 and ward 3 towards east. Infrastructure related to mobility in the study areaward 11 is discussed below.

City bus service: The city bus passes through various locations in ward no 11. The previous city bus service had only 5 stops at the locations- Committee chowk, Bus stand, Gandhi chowk, Agrasain chowk and Hospital chowk.

- Parking: There are few designated on street parking lots in ward 11 namely Kunipura road.
- Intermediate Public Transport: Auto rickshaws and
 E- Rickshaws are readily available from morning till night in ward
- Public Bike Sharing: Though this scheme is not very popular in the city, but from the total 17 docking stations, eight docking stations are located within ward 11. The locations are Mughal canal market subzi mandi bridge, Mughal canal market opposite Vodafone store, NDRI chowk, hospital chowk, civil line police station, bus stand, sabzi mandi new police chowki and sabzi mandi near public toilet.

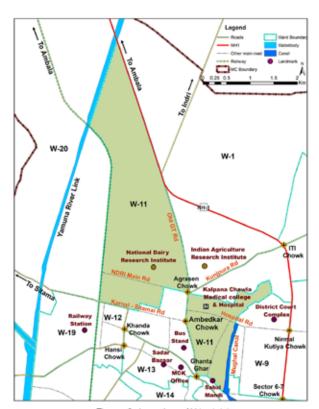


Figure 8: Location of Ward 11

4.1 Citizen Engagement

In order to engage with the citizens and understand the situation of ground level issues, the project team analyzed the presence of various stakeholders in the study area in consultation with the core group committee members. This was followed by bifurcation of

stakeholders into different categories and initiation of one to one meetings, primary sample surveys in the study area. The outreach initiatives undertaken are discussed below

4.1.1 Primary Surveys

Primary surveys in ward no 11 were carried out in order to understand the priorities of the citizens relating to mobility sector from different stakeholder groups irrespective of their caste, gender and age. With a purpose to have an inclusive and heterogeneous sample, following set of stakeholders were consulted during the primary surveys

Stakeholders from Ward 11 Total stakeholders survey		Reasons for selecting the stakeholders
Shopkeepers	103	Shopkeepers represent a significant portion of the commercial area of the ward as well as the city.
Female Residents	Out of total 65 females surveyed, 30 female residents belonged to economically weaker section.	To understand the needs of female residents w.r.t mobility sector
Senior Citizens	Out of total 65 females surveyed, 30 senior residents belonged to economically weaker section.	To understand their preferences, limitations due to inefficient services, issues faced (if any)
Students(Female Students) (in the age group of 14- 20 years) 352		Students are the daily users of transport sector and the study area caters to lot of students due to the presence of schools and colleges
Total: 585 Total population in ward 11: 18134 Total households in ward 11: 3627 Sample size: 16%		The categories selected represent users from all age groups, gender, special needs etc.

Table 2: Stakeholders consulted for primary sample surveys

Source: Sample selected by ICLEI SA in consultation with MCK

The primary surveys were conducted with an objective of identifying the most preferred modes of travel by various stakeholders. It helped in classifying the requirements of the stakeholders based upon their needs and desires concerning their daily travel such as availability of public transport and intermediate public transport, availability of designated parking areas in market areas and willingness of the stakeholders to pay parking charges. The results of the primary surveys indicated that on an average people travel a distance of 1-2 kms for their daily travel needs. The shopkeepers prefer to use their own vehicles, while the senior citizens prefer oth-

er modes of travel such as IPT rather than personal vehicles even for shorter distances. It was also observed that though there is an inclination towards IPTs such as E Rickshaws in the city but there is a need to strengthen IPT as well as PT sector with a focus on users with special needs, elderly etc. Willingness to adopt online applications was a welcome idea by all the stakeholders consulted during the surveys. 100% of the respondents showed their willingness to link IPT modes such as e rickshaws, autos with online applications which could be accessed through smart phones.





Figure 9: Project Team conducting Primary surveys

NMT as a preferred mode- As per the survey, maximum percentage of the stakeholders preferred to walk including the serior citizens and female residents; though few of the female residents feel there is lack of footpaths and pedestrian infrastructure which hinders walking. The survey suggests that the existing public bike sharing facility in the city is not optimally utilized as about 74% stakeholders do not use PBS facility because they prefer to use their own vehicles. About 38% of the students feel that the charges

for using PBS are not nominal and hence the students are not able to afford it. During the survey, it was observed that 41% of the female residents feel that there are inadequate parking areas and the existing parking areas are not very safe for the females. The shopkeepers in the commercial area also felt the need for having an adequate facility only for shopkeepers to park their two wheelers and four wheelers.









Figure 10: Primary Surveys being conducted in ward 11

Problematic areas identified from primary surveys

Indicator	Safety & Security		
Stakeholder	Unsafe commercials streets for pedestrians	Traffic Congestion	Insufficient footpaths for walking
Shopkeepers			
Senior citizens			
Female residents			
Students			

Indicator	Public transport & Intermediate public transport		
Stakeholder	Unpleasent experience at the waiting area	High charges for public transport	
Shopkeepers			
Senior citizens			
Female residents			
Students			

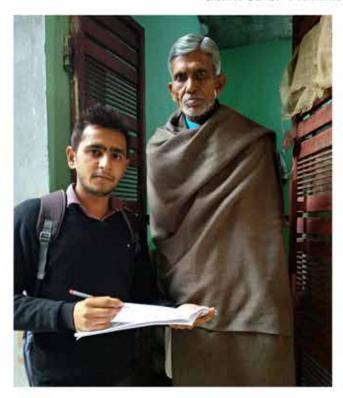
Indicator	Parking	
Stakeholder	Lack of safety parked vehicles	
Shopkeepers		
Senior citizens		
Female residents		
Students		

Indicator Stakeholder	Non- Motorised transport		
	Lack of furniture		
Shopkeepers			
Senior citizens			
Female residents			
Students			

Indicator Stakeholder	Environment		
	Face health issues due to bad air quality		
Shopkeepers			
Senior citizens			
Female residents			
Students			

POSITIVE INDICATOR

GLIMPSE OF PRIMARY SURVEY IN WARD 11









4.1.2 Focussed Group Discussions

After compilation of survey results, the project team discussed the results with various active groups in the ward which included association of senior citizens, medical associations from commercial stretch of the ward, members of EWS society falling in BPL category and members of core group from Municipal Corporation Karnal. The map below shows the location where these focused group discussions were conducted.

During the group discussions the participants highlighted that ward no 11 comprises majorly of residential and commercial land uses, followed by institutional area. Currently, due to the absence of adequate parking spaces, the commercial area in the ward remains congested for maximum duration of time during the day. Subletting of area outside the shops has led to encroachment of road and reduction in the effective road width. It is observed that the senior citizens and female residents in the study area are comfortable using IPT especially E-Rickshaws as a preferred mode of transport. It was learnt that though the city has introduced new buses to be used as a mode of public transport but most of the people in the city prefer their own vehicles or E-Rickshaws for their travel needs. The student population and working women are also interested to walk up to their school/ coilege and work place but are not able to walk due to lack of infrastructure for pedestrians in the city. The major points of discussion concluded after discussion with each group are briefly mentioned below.













Focussed Group Discussions- Indicator wise responses from Stakeholders

PROBLEM

- Lack of designated parking spaces for 2W and 4W and IPT vehicles in the commercial areas at old GT road, Hospital road, Kunjpura road, Sabzi Mandi, Karan Gate market and Muchai canal market.
- Parking done in front of schools and colleges causes creates chaos in the surrounding areas.
- · Footpaths encroached for goods displayed by shopkeepers or street vendors
- Encroachment on Kunipura road near Sanatan Mandir leads to traffic jams and delays.
- · Lack of enforcement of traffic rules by the government
- Overcharging by IPT drivers due to lack of parking charges information in public domain.
- . Misbehaviour faced by anti-social elements due to tack of street lights on roads
- · Females and senior citizens prefer E rickshaws as compared to auto rickshaws.
- Lot of congestion and air pollution in the market area happens due to unorganized operations of auto rickshaws.
- A link road of about 400 meters connecting to Kunjoura road becomes extremely
 congested during evening hours due to improper management of traffic

SUGGESTIONS

- Designated parking areas should be provided in the markets areas
- Rules should be enforced and penalty imposed on schools and colleges for mismanaged parking.
- Encroachment outside the shops and on the footpaths, roads should be removed and the defaulters should be penalized.
- Security staff along with proper street lights should be made available on the streets for ensuring security of the users.
- Proper monitoring of IPT should be ensured with designated routes.

Indicator wise response from various stakeholders

Indicators Stakeholder	Safety & Security	NMT	Parking	IP	IPT	PBS	Intermodal	ITS	Env.
Senior Deputy Mayor (4 Members)									
Female Residents (15 Members)									
EWS (12 Members)									
Market & Medical Association (12 Members)									
Senior Citizens (8 Members)									
	Indicators of least Importance to the city			Indicators of high Importance to the city					





Figure 11: Gimpses of Focussed Group Discussions

Discussions held with the core group members from Municipal Corporation of Karnal, focussed on various concerns related to mobility sector in the city. The committee members highlighted the existing scenario of the city with respect to the indicators such as intermodal, intelligent transportation system, public bike sharing, parking, environment, public transport and intermediate public transport etc. Based upon the future plans of the Municipal Corporation, the committee indicated the following priorities and its future plans for various mobility indicators.

Priorities & Future Plans for Mobility Sector

Priority	Indicator	Where the city wants to be in next 5 years	Initiatives that will move the city in line with its vision		
1	Safety & Security	All citizens will feel safe while commuting/ travelling within the city.	To get confidence from all the females for security purpose the city has envisaged the following initiatives 1. Mandatory self-defence training for all girls in school and colleges 2. Installation of CCTV cameras for continuous surveillance 3. Launch an App for real time crime monitoring 4. App for emergency call		
2	Non-Motorised Transport	The city will be highly walkable. Pavements will exist on every street and will be maintained. Trees line and many sidewalks will provide shade for pedestrians. Buildings in most areas of the city will be easily accessible from the sidewalk.	Plant more trees for pedestrians Develop dedicated cycle tracks on major recreational places and		
3	Parking	The city will be well organised by paid parking spaces. The condition of parking spaces will also be good and will be well maintained by the Municipal Corporation.	To mitigate parking related issues in the city, the following initiatives are to be taken: 1. Parking policy and Parking action plan will be developed as a guiding document for the city to initiate parking 2. Parking spaces will be developed in congested commercial areas 3. Existing parking area/lots will be managed effectively		
4	Public Transport & Intermediate Public Transport	Public transportation network covers the entire city and intensity of connection relates with the demand. Plenty of options of public	To make Public Transport and Intermediate Public Transport more efficient, the following initiatives are to be taken: 1. Plan more routes to cover the entire city. 2. Increase frequency of services 3. Provision of common mobility card, information on routes and timings for PT & IPT service. 4. Online app for E-rickshaw app to enhance last mile connectivity.		

Priority Indicator		Where the city wants to be in next 5 years	Initiatives that will move the city in line with its vision	
5	Public Bike Sharing	The city will be well organised with public bike sharing system which will be operational across the city.	To promote PBS scheme in the city, the following initiatives are to be taken: 1. Increase docking station to cover entire city, 2. Provide and maintain good quality of bikes, 3 Develop good quality of dedicated cycle track 4. Encourage citizen to adopt NMT 5. Plant more native trees	
6	Intermodal	The city will be well developed intermodal system in the entire city while providing lass mile connectivity	To make intermodal more efficient and effective in the city, the following initiatives are to be taken: 1. All bus stops will have cycle/bike stands as well as e-rickshaw stands 2. provision of common mobility card system	
7	Intelligent Transportation System	The city will be well developed with ITS facilities which will be operational in future and the citizens will be fully satisfied by its service.	The city plans to incorporate ITS through Smart City Mission in next five years	
8	Environment	The city will have a clear policy and vision for combatting pollution issues. There will be adequate number of trees and green cover in the city to combat air pollution from vehicles.	1.Provision of effective system of	

During the discussions with various groups, it was observed that the citizens focus more on basic indicators such as parking, public transport, IPT etc, while there is no focus of the citizens towards enhancement of public bike sharing, protecting environment from pollution and promoting intelligent transport system in the city.

5 Additional Assistance to the City on Mobility Sector

5.1 Route Rationalization of the city bus service

Before the introduction of city buses in Jan 2018 by Municipal Corporation Kamal, the city bus service run by Haryana Roadways catered to the travel needs of only few areas in the city. It covered a distance of only 14 kms with a frequency of 10 trips per days which included 5 up trips and 5 down trips. This service majorly catered to the central and western part of the city, while the remaining

areas remained un-served. The served areas included Shiv Colony, Prem Nagar, Ram Nagar, Rest House, Hansi Chowk at Railway road, Govt. Girls School, fish market, Committee chowk, bus stand, Gandhi chowk, Aggarsain chowk, Hospital chowk, Singla chowk, sector 12, sector 8, sector 7, Amar Hospital, Shiv Mandir sector 6, Karan Vihar, Sector 5 and Sector 4.

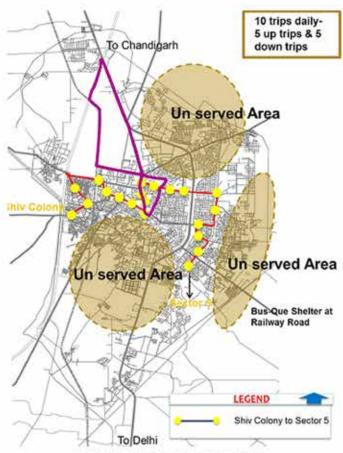


Figure 12: Route plan of the previous city bus service

The project team carried out a desktop study and prepared a revised route plan for the city bus service with an aim to cater the major nodes of the city. The team assisted the Municipal Corporation in measuring the turning radius at various locations, verifying the carriage way, identifying the space for bus que shelter at all three routes. It also identified the overlaps between the primary locations and secondary locations on the route and connected the bus service to medical, commercial, institutional areas of the city. The proposed bus stops were located at a distance of 50 m away from the junction. The team also proposed the following suggestions to the city.

 Municipal Corporation of Karnal should strengthen the interchange stations to facilitate the users. The city should also initiate

the linking of interchange the stations with PBS.

- The Municipal Corporation should develop a strategy for attracting the passengers to use city bus service.
- The city should also meet the shortage of various infrastructural components such as bus que shelters, Passenger Information System etc.
- An effective monitoring of the routes would be required for the smooth and successful functioning of the city buses.

5.2 Parking design at Kunjpura road

In order to tackle the traffic congestion in the commercial stretch of Kunjpura road, Municipal Corporation of Karnal developed and implemented a parking design on both sides of the road. The design provides for parking bays for two wheelers and four wheelers.











Figure 14: Vehicles parked outside the parking bay at Kunipura road

The above pictures show that the parking design does not caters to the needs of E- Rickshaws and auto-rickshaws. Moreover, from the pictures it is evident that due to lack of enforcement, two wheelers at many places are parked outside the designated parking space.

The project team appraised the parking design with following propositions:

- Onstreet parking should be located at a distance of 50 m from the junctions and feeder streets. The parking area has been created at Hospital chowk and Sabzi Mandi chowk which make them both more critical junctions.
- Maximum length of the parking stretch should be restricted to 22 m only but the parking design at Kunipura road has a continuous

stretch with yellow markings. After every 22 m eateries/ sitting areas may be developed as per the requirement.

- There is no parking space delineated for intermediate public transport but a parking stand for IPT vehicles should be created with a maximum capacity of 7 bays in one stretch.
- It is important to segregate parking areas for two wheelers and four wheelers but as of now, there is no segregation of parking lots of two wheelers and four wheelers.

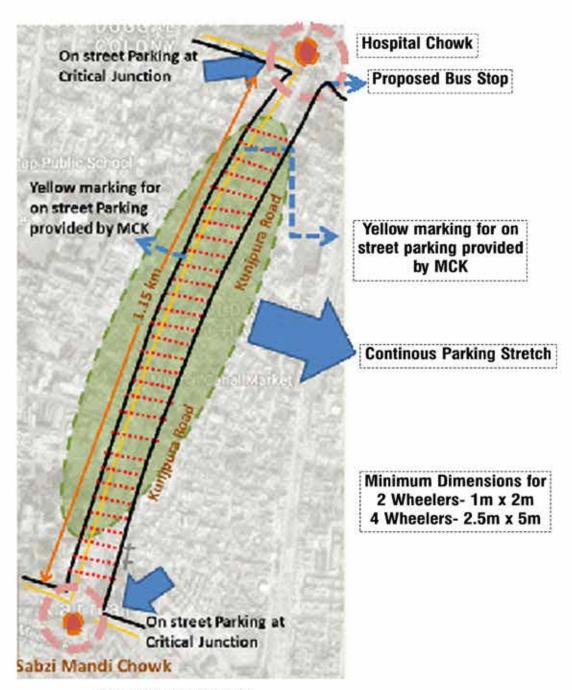


Figure 15: Parking Design at Kunjpura Roed

5.3 Perception of Stakeholders on pedestrianization of Karan Gate Market

The project team conducted a primary survey of all the shopkeepers in Karan Gate market with an objective to understand their ideas and willingness for pedestrianization of the commercial street during day time. In order to control the motorized traffic in Karan Gate market, which is a commercial hub of the city, the Municipal Corporation desired to pedestrianize this area. Moreover, pedestrianization of this stretch was also proposed under the Smart City Proposal, hence the Municipal Corporation was keen to develop it and requested the project team to conduct a primary survey. The commercial street at Karan gate comprises of variety of shops ranging from electronics, hardware, cosmetics, crockery, clinics, chemists, garments, shops in this stretch also offers an attractive street for family outings as it meets the needs of all age groups.

Primary survey was carried out for 267 shops and the results of the survey highlighted that the clientage in the shops is more during weekends as compared to weekdays, indicating high congestion during weekends. About 73% of the stakeholders believed that the street is safe for the users, while the remaining 27% were of the view that the area is unsafe due to traffic congestion, lack of pedestrian infrastructure and is prone to accidents. Most of the shopkeepers use two wheelers for commuting to their shops, while 13% walk to their shops and only 6% use cars for commuting their shops. A significant percent (88%) of shopkeepers agreed to park their vehicles in the parking lot if Municipal Corporation provides such a facility near to the commercial area with negligible parking charges. A substantial percent (89%) of stakeholders agreed to develop Karan gate market as a pedestrian street. The survey also concluded that this area faces lot of issues major being lack of parking space, encroachment outside the shops, mesh of wires hanging between electric poles, non-availability of public conveniences, traffic congestion caused by two wheelers, four wheelers and three wheelers, comprising of auto rickshaws and E-rickshaws.

After the survey, the results were presented to the Municipal Corporation and members of market association (Karan market) in a joint meeting at the office of Municipal Commissioner of Karnal. It was decided that the members of market association will discuss the proposal of developing a pedestrianization project for Karan gate market commercial stretch and revert back to Municipal Corporation of Karnal.

6 Recommendations

The sections above discusses the status of mobility sector in the city with a focus on ward 11. Based upon the priorities indicated by the members of the core group and stakeholders from ward 11, Safety and Security, parking, public transport and intermediate public transport have been identified as sectors which need immediate interventions. As of now the city lacks baseline as well as detailed information on mobility sector; hence there is a need for the city to compile detailed information about the sector. Municipal Corporation of Karnal can leverage the resources from the Project Management Corporation Smart City for developing and strengthening its data base.

The strategic location of Karnal has been an advantage for the overall development of city. It is located on NH1, at a distance of 123 kms from Delhi (national capital) and 130 km from Chandigarh the state capital. Its nearness to Delhi NCR provides it with ample opportunities for development. It has been selected by Government of India to be developed as a Smart City under the Smart City Mission. Municipal Corporation of Karnal has allocated funds amounting to 2337.8 million (Rs. 233.78 crores) for mobility sector, constituting 18% of the total cost of the Smart City Proposal. The mobility components considered in the proposal include city bus service and bus terminals, junction redesign and pedestrian walkways, cycle tracks, public bike sharing, smart parking, emergency road repair vehicles, traffic violation detection and city surveillance. After interacting with the citizens through primary surveys and focus group discussions and analyzing the future strategies of Municipal Corporation of Karnal under its on-going missions/ programs, the project team suggested the following approaches which may be adopted by the Municipal Corporation for improving and strengthening its mobility sector.

6.1 Safety and Security

During the surveys and group discussions it was revealed that a significant percent of the residents, especially women and elderly feel insecure while walking on the roads due to congestion, lack of pedestrian infrastructure. Therefore it is important for Municipal Corporation of Karnal to ensure safety and provide security to its citizens, which can be undertaken through its on-going Smart City Mission. 55.1 million (Rs. 5.51 crores) has been allocated by the Municipal Corporation for introducing city surveillance in its Pan city initiative under the Smart City Proposal. The major components in the proposal include installation of CCTV cameras for

improved surveillance through entire city, intelligent poles with SOS and Panic button in public transport, barrier free spaces for elderly and differently abled, children friendly streets. The city also has proposals of Intelligent Traffic Management System providing adaptive traffic signal to control traffic, video surveillance through CCTV, traffic monitoring and analysis while installing CCTV cameras for traffic surveillance, intelligent traffic lights & E-challan system in major junctions, improvement in traffic management and input to ITS component across city.



Few areas in the city have been identified with the help of an NGO Safetipin for safety issues such as lighting (maintenance issues, requirement of additional streetlights), walkpaths, security, visibility and public transport as mentioned below. It is suggested that the city should take up these critical areas on priority.

Lighting- 31.3 km of streets in the city need street lights that
are operational. These are the points which have streetlights but
are not working. 1.2 km of street has working streetlights but are
covered with tress leaves, 0.3 km of the street has too clim lights
which impact the entire road. 15 km of streets in the city need
new lights; these are residential areas and have poor lighting, about
14.3 km of roads need lights on both sides of road and one side
of the road remain dark.

- Walkpaths About 2.4 km of road has broken footpaths
 which requires repairing. 29.7 km of stretch requires widening of
 footpaths to accommodate tree plantation because trees obstruct
 pedestrian movement and 78.6 km stretch requires a separate
 paved footpath because pedestrian movement is obstructed by
 vendors and car parking on the footpaths or extended houses and
 about 6.7 km of road stretch needs footpath.
- Security- About 7.3 km of routes in the city need patrolling because these areas have no security and no visibility, while regular patrolling is done on 47.8 km of road stretch.
- Visibility- 25.6 km stretch in residential area needs a hawker zone who currently operate on temporary stalls on road side.

6.2 Parking

Through the primary surveys and group discussions it is observed that cars and two wheelers occupy most of the street space in the city causing congestion on the streets especially in the commercial areas. These streets spaces are occupied for almost 90% of the time, thus consuming precious street space that could be put to more efficient and judicious use. The current practice of free parking across the city contributes more to congestion. Therefore in order to address this issue, the city should delineate parking zones/ areas with a pricing strategy. It should be followed by enforcing parking rules and proper management of parking lots for smooth functioning.

An appropriate pricing strategy and well monitored parking areas will also help in promoting non-motorized transport such as walking, adopting the existing public bike sharing facility. The revenue collected from operating parking can be used for developing and maintaining footpaths, which will help in promoting and strengthening non-motorized transport in Karnal. As identified through our discussions with the citizens, the commercial areas in the city face

parking crunch and at the same time the Municipal Corporation in its Smart City Proposal has a budget of 463.1 million (Rs. 47.31 crores) for Smart Parking in ABD area, while another 69.8 million (Rs. 6.98 crores) has been demarcated for developing smart parking for Pan city. It is recommended that the city should develop a parking policy and parking management plan with a focus on the following:

- Existing situation of parking in the city
- Parking pricing- on street & off street parking, variable parking, parking cash out
- No parking zone
- · Shared parking spaces, park & ride facilities
- · Integration of ITS
- . Designing of streets, identification of NMT areas & infrastructure
- Allocation of parking spaces to public transport, IPT and NMT vehicles in order to promote their usage.
- Strategies for parking- planning stage, operational stage and institutional stage

6.3 Non-motorized transport

Public Bike Sharing- Cycling allows the convenience of door to door travel while using less space and fewer resources than motor vehicles. It is healthy, more efficient and cost saving practice as compared to personal vehicles, Public Transport and Intermediate Public Transport. As per the discussions during the primary surveys, the average travel distance in Karnal is between 1-1.5 km, so most of the female residents and students prefer to walk to reach their work places/ colleges but as of now they are not able to walk due to lack of road infrastructure. So, it may be useful for the city to strengthen its non-motorized initiatives by developing walking tracks, expanding and promoting the existing public bike sharing scheme, ensure safety of the users and provide adequate road infrastructure.

The existing public bike sharing scheme in Karnal does not cater to the larger parts of the city. It is limited to few areas in the city and hence has not been able to attract the users. The absence of related infrastructure such as cycle tracks, poor quality cycles have also led to non-usage of the facility. The city should initiate appropriate steps to strengthen the scheme; few of the steps/ measures are listed below:

- Procure better quality cycles
- Extend the network to other parts of the city based on demand and need analysis
- Introduce student and female friendly schemes to have adequate clientele
- · Develop sufficient cycle tracks for the users
- Carry out drives for tree plantation along the major routes of the users to facilitate the users and make cycling a pleasant experience.
 Strengthening the existing public bike sharing system seems to

be on the list of Municipal Corporation as well. In the Smart City Proposal, Municipal Corporation of Karnal has allocated a budget of 106 million (Rs. 10.62 crores) for developing cycle tracks and 26.5 million (Rs. 2.65 crores) separately for docking stations for PRS

Non-Motorized Corridors- The average distance of trips in Karnal is below 2 km (Source: Primary surveys, discussions with core group members), all public transport passengers, private vehicle users start and end their trips as pedestrian on public streets. Enhanced walking experience usually protects pedestrians from motor vehicles. Hence, Karnal should have pedestrian zones with a continuous clear space for walking/ footpaths with a minimum width of 2 m. The width of these walking areas varies as per the adjacent land use and can be extended. To supplement walking and cycling improvements on the existing streets, open spaces in the city should be developed as NMT corridors that support long as well as short distance community as well as recreational uses.

Given the limitation in the extension of street network in the city, strategic development of greenways will help to augment citywide cycle network in locations where on street cycle tracks are not feasible. To enhance walking and cycling in the city, existing greenways/ open spaces in the city may be developed as NMT corridors that will help the people in commuting and may also be used as recreational spaces. During the primary surveys conducted, a significant percent of female residents in Karnal from the study area expressed their desire to walk upto their office places. In addition to this, Municipal Corporation of Karnal has already allocated 99.3 million (Rs. 9.93 crores) for junction redesigning and pedestrian walkways in ABD area in its Smart City proposal.

Walk prefered by workers 36% Workers prefer to walk



Prefered Modes 2 Wheelers, Autos and E-Rikshaw 69% Shopkeeper, 26% Senior citizens prefer 2 wheeler



6.4 Intermediate Public Transport

E-Rickshaws have been largely observed as a preferred mode by a major chunk of stakeholders specially the senior citizens who travel a distance of 1-2 km on an average. E-Rickshaws are the first preference for the users due to their easy availability and comfortable rides. Therefore, the city should aim at organizing the IPT sector with a focus on E-Rickshaws. Currently there is no policy framework developed for IPT sector in Karnal, therefore the Municipal Corporation should take initiatives to develop a policy for IPT sector, emphasizing on the following:

 Provision of adequate infrastructure with a focus on reviving the existing charging infrastructure points and developing the new ones

- Route design for IPT vehicles to provide last mile
- · Comprehensive institutional structure
- Rationalized tariff structure
- Vehicle inspection & maintenance for controlling emissions- A check on IPT vehicles especially Auto rickshaws will help to control health issues due to air pollution
- Issuing of permits
- Imparting training to operators and drivers to ensure safety & comfort of users
- Sustainable financial plan to ensure revenue enhancement
- . Integration of IPT sector with online applications will be a welcome

6.5 Public Transport

As of now, the city bluses in Karnal, with very limited coverage and frequency are the only modes of public transport in the city. The city should develop an efficient public transport system in order to reduce the reliability of the people on private modes. This will also help in reducing the parking demand in the city. The city should focus on developing ideas for promoting its existing service in order to improve the ridership.

- Improve the first and last mile connectivity of pedestrians and NMT users with public transport in order to improve the ridership of public transport and reduce fossil fuel consumption and carbon emissions.
- Offer joyrides, incentives through schemes/ passes for women, students, and elderly to improve the ridership.
- Increase the geographical coverage of the existing public transport service in the city with an improved routing covering the major institutional areas, health facilities, commercial areas, bus stand, and railway

station in the city.

- Develop a detailed Public Transport policy for the city integrating it with ITS, along with a rationalized tariff structure which should be revised at regular intervals.
- Develop a financial operating plan for the city indicating the sources of revenue generation for the city bus service.
- Regular pollution checks and training to drivers and operators for safety and comfort of the passengers.

Under its Smart City Proposal, Municipal Corporation Karnal has allocated a budget of 558.8 million (Rs. 55.88 crores) for improving its city buses and bus terminal. The funds allocated under the SOP for city buses should be leveraged by the Municipal Corporation to strengthen its public transport service.

6.6 Users with special needs

The city needs adequate infrastructure in order to cater to the users with special needs. During the group discussions and primary surveys, it was found that as of now there are no infrastructural provisions for the residents with limited mobility or special needs which hampers and restricts the free movement of people with special needs in the city. There is an opportunity for the city to provide infrastructure to people with special needs by linking it with the smart city proposal which pro-

vides for pedestrian friendly pathways with specially-abled design for all major roads in ABD. These would include pedestrian friendly barrier free pathways with equitable space for pedestrians, 18 km of footpath, with tactile flooring and ramps for differently abled. Under this proposal, the city should ensure equitable allocation of street space, demarcated areas for dedicated vending zones, no-parking zones, NMT zone, barrier free design features, tactile flooring in pedestrian walkways etc.

6.7 Integrated Command and Control Centre

The citizens of Kamal also face problems due to lack of enforcement of traffic rules which further leads to chaos in the city. In order to address this issue, the city is planning to implement its proposal identified under smart city mission to develop an integrated command and control centre which will provide a digital platform for integrating multiple subsystems of safety, traffic management police, fire, traffic control, ambulance services under single roof. The centre will hence result in a safe city, seamless mobility and responsive operation and management

in the city. The city also has plans for strengthening various mobility components such as intelligent poles, smart bus stops, smart parking systems, real time tracking and monitoring of city bus through GPS with panic button, automated signaling system and E-challan system at major junctions, emergency road repair services for time bound resolution, Integrated rescue services, crowd sourcing citizen safety data through upgraded SafetiPin App.

6.8 Institutional Framework

For carrying out all the projects efficiently, Municipal Corporation of Karnal should identify nodal officers under each sub sector of mobility sector in the city. Municipal Corporation of Karnal, should also formalize an action plan allocating detailed activities to be carried out under each sub sector along with timelines. Regular monitoring and supervision of all the activities during implementation would play a significant role in successful completion of each project.



Local Governments For Sustainability, South Asia