

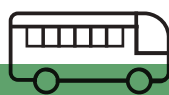
A Compendium

of Low Carbon Mobility Solutions for
Pune City

MOBILISING COMMUNITY SUPPORT FOR LOW
CARBON MOBILITY IN MAHARASHTRA'S CITIES



परिसर 



Prepared under the project:

MOBILISING COMMUNITY SUPPORT FOR LOW
CARBON MOBILITY IN MAHARASHTRA'S CITIES

Compiled By:

Shivani
shivani@parisar.org

Tanzeel Allapur
tanzeel@parisar.org

Layout Design:

Anuja Walimbe

Photos via Unsplash by:

Raja V
Prasad Bhalerao
Prayag Tejwani
Onkar Gotale
Atharva Tulsi

Supported by:



international-climate-initiative.com/en
@iki_germany



Ganeshkhind Road,
Yamuna, ICS Colony,
Pune, Maharashtra, 411007 India

🌐 www.parisar.org
📘 <https://www.facebook.com/ParisarPune/>
📷 www.instagram.com/parisarpune
🐦 twitter.com/parisarpune

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We would like to extend our heartfelt gratitude and appreciation to all the participants for their active involvement in the workshop, which has now been compiled into a compendium. The contributions from each participant have played an instrumental role in shaping the outcome of the workshop, and this compendium stands as a testament to everyone's collective efforts and commitment to the project.

We are proud to say that this compendium is a result of our collective ownership of the goal of making Low Carbon Mobility a reality. And we would like to express our gratitude to each and every participant for their collaborative effort in the development of this resource. The dedication, insights, and feedback provided by the participants have been invaluable in creating a comprehensive and informative compendium that we can all take pride in.

The level of understanding and insight gained through this process would not have been possible without a sincere dedication to the cause. This compendium is a reflection of our shared commitment to the project and the collective effort we have put forth to achieve our goal of working towards solutions for Low Carbon Mobility in Pune. And we believe that this compendium will serve as a valuable resource for all stakeholders and will contribute significantly to the advancement of our project.

Team Parisar



MOBILISING COMMUNITY SUPPORT FOR LOW CARBON MOBILITY IN MAHARASHTRA'S CITIES

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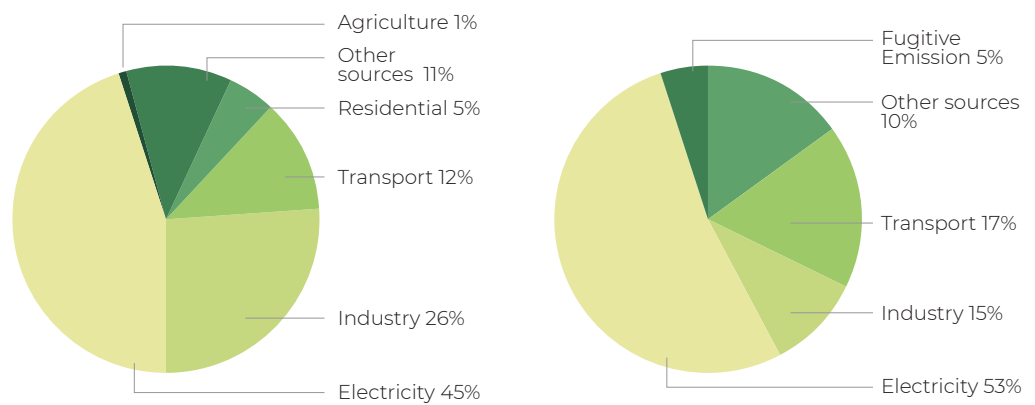
1.

INTRODUCTION

Decarbonisation of the transport sector plays a crucial role in advancing India's climate action goals, taking significant strides toward reducing air pollution and its associated health impacts while also mitigating well-being losses

The carbon emissions caused by Road transport contributes to approximately 90% of the total CO₂ emissions¹ in transportation in India. The decarbonisation of the transport sector plays a crucial role in advancing India's climate action goals, taking significant strides toward reducing air pollution and its associated health impacts while also mitigating well-being losses². India has witnessed a 300% increase in passenger vehicle ownership since 2000. Per capita transport emissions, while still low, have increased by 184%. If economic growth continues without sustainable transport alternatives, India's car ownership and emissions will be equivalent to those of high-income countries. The Prime Minister of India during the 2018 Global Mobility Summit³ outlined the 7Cs of India's mobility pathways: Common, Connected, Convenient, Congestion-free, Charged, Clean, and Cutting-edge mobility espousing ease of living, developing an affordable, accessible and inclusive network of transportation systems.

Climate change caused by burning fossil fuels such as coal, gas and oil, deforestation and various agricultural practices has resulted in a drastic shift in global temperatures and changes in weather patterns. Major sources of carbon emissions are transport, energy, industry, buildings and agriculture, forestry and other land use (AFOLU). In 2018, India's total CO₂ emissions³ were estimated to be 2455.25 mtCO₂e, with electricity holding 45% of the total share, industries 26% and the transport sector constituting 13% of the total CO₂ emissions (**figure 1**). In the same year, Maharashtra contributed 238.44 mtCO₂e emissions, with the highest electricity generation followed by transportation.



Carbon Emission - India 2455 Mt CO₂e (2018)

Carbon Emission - Mah 238Mt CO₂e (2018)

Figure 1: Carbon emissions in India (Left) and Maharashtra (Right)
(Source: GHG Platform India, 2018)

- 1 Decarbonizing India's Road Transport: A Meta-Analysis of Road Transport Emissions Models, 2022
- 2 Decarbonising the Indian transport sector pathways and policies, 2020
- 3 MOVE: Global Mobility Summit, 2018
- 4 Energy Sector, GHG Platform India, 2018

In 2014, TERI published a report⁴ on Assessing Climate Change Vulnerability and Adaptation Strategies for Maharashtra, which “shows that temperature and rainfall are projected to increase all over the state” and that the heat index “may increase human discomfort due to heat stress and also increase the number of days that are conducive to malaria parasite development and transmission. It may also increase the energy demand for cooling in urban areas already experiencing the urban heat island effect.” Maharashtra⁵ is a highly urbanised State, with almost 50% of the state’s 120 million population living in urban areas. It has 27 cities (population >300,000) and ten cities with a population of more than one million residents. Fast forward a decade later, and the highlighted concerns are true. Today, the state is witnessing an extremely high energy demand and consumption rate, increased temperature and annual heat waves⁶. Not only this, but the projections for the change in climatic events signal greater damage to natural and human habitats.

The **state is witnessing** an extremely **high energy demand and consumption rate**, increased temperature and **annual heat waves**.

This project by Parisar is conceived with the belief that a shift to low-carbon mobility in cities requires greater engagement and a demand for it from a wide section of civil society. India has seen national-level policies and initiatives such as promoting low-carbon mobility⁷ and the climate-smart cities assessment framework⁸ to mitigate and assess climate change. But at the city level, climate concerns are not the drivers of solutions. Since urban transport is a state subject, projects and budget allocations are formulated by local demands. So, unless there is vocal and demonstrable support from the grassroots for low-carbon mobility initiatives, the political economy will likely pursue vehicle-centric solutions, rapidly increasing urban transport emissions. In order to play a catalytic role in this movement to bring about a greater demand, the project seeks to mobilise support for low-carbon mobility by conducting city-specific discussions, widening engagement with civil society, and supporting local advocacy efforts.

1.1. Carbon emissions in Pune city

Pune is the second largest city in Maharashtra, India, located at the confluence of the Mula- Mutha River. It is spread over an area⁹ of 248.84 sq. km. with an estimated population of 3 million residents¹⁰ (Census of India, 2011). Pune has expanded exponentially due to establishment of various industrial areas like Pimpri, Chinchwad, Hadapsar, Bhosari and Parvati. Since the 1950s,

The transport sector also generated **51%** of the overall emissions from the use of **petroleum products**.

5 Assessing Climate Change Vulnerability and Adaptation Strategies for Maharashtra: Maharashtra State Adaptation Action Plan on Climate Change (MSAAPC), 2014

6 Urban India 2011: Evidence (IIHS, 2011)

7 Explained: Why Maharashtra is experiencing a heatwave again (Indian Express, 2023)

8 India Roadmap on Low Carbon and Sustainable Mobility (Decarbonisation of Indian Transport Sector, 2020)

9 Climate Smart Cities Assessment Framework 2.0: Cities Readiness Report, 2021

10 Currently the PMC limit is expanded to 11+23 villages covering a total area of ~519 sq.km. Source: PMC - Ward Office as per added New 34 Villages Boundaries, 2021

11 As of present, Pune’s population is estimated at ~7 million. Source: World Population Review, 2022

According to the Environment Status Report (ESR, 2017-18) by Pune Municipal Corporation, the city emitted 1.62 tonnes of CO₂e per person in 2017, a worrying ~11% increase in per person carbon footprint in five years.

industrialisation has boosted the economy in Pune, and the city has grown in all directions resulting in an urban sprawl with an increased demand for housing, energy consumption, transportation services and systems, etc. Thus, increasing the overall ecological footprint of the city. TERI study on the carbon inventory of Pune (2012)¹¹ estimated the city generated 4.66 million tonnes of CO₂ equivalents in 2010-11 and 1.46 tonnes of CO₂e per capita emissions where the transport sector contributed ~18.7% of the total CO₂ emissions (figure 2). The transport sector also generated 51% of the overall emissions from the use of petroleum products. According to the Environment Status Report¹² (ESR, 2017-18) by Pune Municipal Corporation, the city emitted 1.62 tonnes of CO₂e per person in 2017, a worrying ~11% increase in per person carbon footprint in five years. It is alarming to know that the city has more vehicular than human populations. The traffic survey conducted by PMC (2018) shows 52 lakh vehicle registrations in the city, with a growth rate of 8% per annum. Studies have confirmed that the transport sector contributes significantly to the overall level of air pollution, with 66.3% of carbon monoxide (CO), 73.3% of NO_x, 15.8% of SO₂ and other pollutants in Pune¹³.

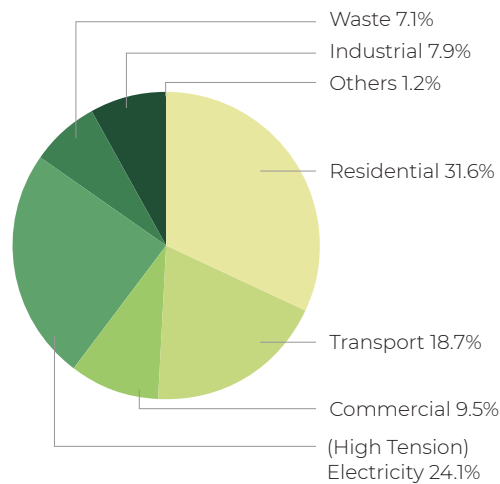


Figure 2: Carbon emissions of Pune City
(Source: Draft City Development Plan, 2012 [TERI, 2011-12])

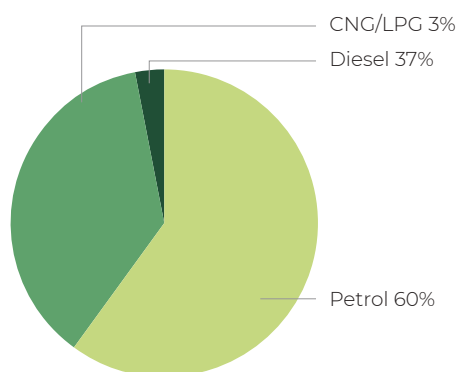


Figure 3: Contribution of fuel type to transport CO₂ emissions
(Source: TERI, 2012)

12 Carbon Inventory of Pune City, 2012
 13 Environment status report: Pune's carbon footprint per person high due to large number of private vehicles (Hindustan times, 2018)
 14 Low Carbon Sustainable Mobility roadmap for Pune and its linkages to Air Quality (2012)



According to NCAP, Pune is one of India's 132 non-attainment or the most polluted cities. Petrol, Diesel, Auto LPG, and CNG are the principal forms of energy used for city mobility. The increasing number of two and four-wheelers on the roads has resulted in a high-growth trajectory for fuel demand in Pune. The fuel sales of petrol are proportional to the total number of registered petrol vehicles in the city. Similarly, it is proportional to diesel and diesel vehicles (buses, taxis, heavy and light commercial vehicles).

2.

CONSULTATIVE WORKSHOP

Decarbonising the transport sector and moving towards low carbon-sustainable mobility is one of the ways to mitigate climate change. This workshop aimed to develop a City-specific compendium (listing) of low-carbon mobility solutions. Since Parisar is committed to participatory and deliberative consultation methods, the compendium was drawn up with the help of a participatory and consultative workshop involving CSOs, organisations, independent people and consultants, union representatives, and other sectors.

Workshop was conducted to **create a list of low-carbon mobility solutions for the city of Pune**, which civil society organisations would then take forward and amplify.

2.1. Methodology: ideate-connect-discuss

The workshop was conducted to create a list of low-carbon mobility solutions for the city of Pune, which civil society organisations would then take forward and amplify. For this engagement, we followed the concept design:

Ideate - Connect - Discuss.

- **Ideate:**
 - to come up with a set of ideas for low-carbon mobility initiatives to be adopted by the city.
- **Connect:**
 - i) to deepen our understanding of the existing incentives to promote low-carbon and sustainable mobility solutions.
 - ii) to address the gaps between what has already been done,
 - iii) to think about where we stand in adopting low-carbon mobility.
- **Discuss:**
 - i) to develop a list of possible CSO-centric solutions/initiatives for a more action-oriented stand.
 - ii) to make a list of solutions that can be taken up by the CSOs and solutions to be implemented as government policy and
 - iii) to discern our role as a civil society to promote low carbon mobility in Pune City.

2.2. Various transport issues

The relevant literature on low-carbon mobility emphasises the transition from fossil fuels and coal-based energy to cleaner energy sources and electric mobility. Parisar aims to create a comprehensive archive that focuses on achieving low-carbon mobility within the existing transport infrastructure by promoting lifestyle changes, particularly in terms of enhancing walking, cycling, and public transport infrastructure. The goal is to facilitate a shift towards sustainable transportation practices. Electric mobility is promised as the one-stop solution to all transport-related issues. Of course, it is a low carbon and contributes immensely to reducing GHG emissions. Still, it won't solve the

issues related to traffic congestion and the rapid increase in vehicle ownership. With more people able to afford vehicles, it is evident that roads would witness a heavy influx of private vehicles. Thus, the road infrastructure would always be inadequate to carry the load. If we reduce the number of vehicles in the city, the same road infrastructure may be adequate. Hence, emphasis on public transport and active and shared modes of travel must be prioritised.

In line with the Avoid-Shift-Improve (A-S-I)¹⁴ approach, which represents the three pillars of sustainable transport, our workshop focused on the following topics to identify underlying and root causes and gain a comprehensive understanding of issues associated with modes of transport that encourage private vehicle usage on the road:

- A) Walking and cycling in the city,
- B) Using public transport in the city,
- C) Shared mobility in the city and
- D) Reduced usage of private vehicles in the city.

Subsequently, solutions were formulated by analyzing the underlying causes and root issues of the problem statement, while also referencing pre-existing policies, documents, conversations, initiatives, and other relevant sources.

2.3. Fishbone Activity 1: an approach to finding causes and root causes

Fishbone activity was taken as one of the participatory tool methods for the workshop is attached in **Appendix 1**. One of the approaches to causes and root causes was dividing the participants into four groups to discuss the problem statements. Enriching insights were documented on a chart paper and later opened for discussion.

2.3.1. Causes for (not)-walking/(not)-cycling in the city

- Lack of/poor walking and cycling infrastructure.
- Speeding motorised vehicles on the road has been identified as a concern, further exacerbated by the lack of adequately protected bicycle lanes that form a complete end-to-end path network.
- Walking and cycling for long distances is time-consuming.
- There is societal pressure as the ownership and the desire to have personal vehicles for commuting have become the norm and social reality.
- The lack of awareness and apathy exhibited by civic bodies and the public towards walking and cycling practices.

Solutions were formulated by analyzing the underlying causes and root issues of the problem statement, while also referencing pre-existing policies.



Walking and cycling for long distances is time-consuming.



The **rise in people's purchasing power**, enabling them **to afford private vehicles**, has presented a **challenge for walking and cycling** as modes of transportation.

- The safety concerns surrounding active modes of transportation, such as walking and cycling, have been on the rise in people's daily lives. Issues such as road accidents, encroachments, an inconsistent network of pathways, lack of comfort, and more, have made it challenging to rely solely on foot or bicycle for commuting within the city. Additionally, there is a legitimate concern regarding the safety of women, children, and elderly individuals on the road.
- The rise in people's purchasing power, enabling them to afford private vehicles, has presented a challenge for walking and cycling as modes of transportation.
- Blending designated pedestrian and cycle lanes has created difficulties for both pedestrians and cyclists, blurring the distinction between the two. This has resulted in commuters, such as pedestrians, encroaching upon cycle tracks, vendors occupying footpaths, and obstructions like dustbins impeding smooth mobility practices within these designated lanes.
- Inadequate provision of safe parking spaces for bicycles remains a challenge. Additionally, the lack of or limited storage options on bicycles hinders the ability to carry personal belongings or goods.

Enriching insights were documented on a chart paper and later opened for discussion.



Identified underlying root causes:

- Uneven distribution of available facilities across the city.
- Inaccessible and inconvenient infrastructure for pedestrians and cyclists.
- Urban sprawl and land use planning prioritising motorised vehicles over active modes of transport.
- Stigma and negative attitudes towards walking and cycling.
- Hesitation to use walking and cycling due to social perceptions.
- Lack of enforcement and awareness regarding pedestrian and cyclist rights.
- Limited recognition of walking as a legitimate transport mode hinders the demand for better walking infrastructure.

2.3.2. Using public transport in the city

The root causes of reluctance to use public transport infrastructure mainly focused on the PMPML buses since buses are the most preferred mode for commuting by the people; some of these are as follows:

- Lack of convenience and safety concerns for women, children, and the elderly due to overcrowding and pushing on buses during everyday commutes.

- The size disparity between buses and road sizes leading to apprehension of accidents due to reckless driving by private motorised vehicles.
- Affordability of public transport but lack of convenience in terms of compatibility and comfort of PMPML bus services and seating systems.
- Implementation of seating plans like the one in Bengaluru, where front-row seats are reserved for women, can help address women's safety concerns.
- There is a lack of information on buses, their connectivity, and the monolingual signs (Marathi) on bus boards makes it inaccessible to people from different regions of the country. There is a lack of accessibility in buses for persons with disabilities too. One participant mentioned, *"I feel that PMPML buses do not connect every point across the city, and availability of buses is less on some routes"*.
- Other causes found were: bad schedule, bus routes that don't cover all the areas, irregular bus frequency, and a lack of adequate buses only in the city. There is also a lack of bus terminals in the city.
- Lack of point-to-point connectivity in the city's metro services, as highlighted by a participant's experience of the absence of a direct bus for commuting between Karve Nagar/Kothrud road and their workplace/home, *"commuting between Karve Nagar/Kothrud road - to go to my workplace and back home there is no direct bus"*.
- Heavy traffic congestion during peak hours, causing delays and inconvenience.
- Influence of a two-wheeler culture in Pune, where peer pressure, social pressure, socio-economic status, and social behaviour significantly impact the decision to use public transportation. As one participant stated, *"there is nothing public about public transportation."*
- Instances of bus breakdowns leading to disruptions in the middle of the road.
- High levels of overcrowding in public transport.
- Availability of private services like OLA, Uber, Rapido, etc., which offer more convenience compared to public transport.
- Limited coverage of first and last-mile connectivity by public transport, making it impractical for individuals carrying heavy baggage.
- Public transport often involves multiple bus transfers, leading to time-consuming commutes and driving people towards private vehicle usage.



Lack of convenience and safety concerns for women, children, and the elderly **due to overcrowding** and pushing on buses.



Root causes of reluctance to use public transport infrastructure mainly focused on the PMPML buses.



The **importance of shared rickshaws** in all parts of Pune for enhanced safety **was highlighted.**

Reasons for (not)-using public transportation:

- Inadequate budget allocation for public transport.
- Lack of political will to prioritise and support public transport initiatives.
- Insufficient data and information on the daily usage of public transport.
- Public transport is not perceived as a public right, leading to inadequate implementation of transport acts and policies.
- Infrastructural flaws and barriers to accessing quality public transport.
- Social and cultural transformations influencing public transport usage patterns.

2.3.3. Shared mobility in the city

Participants identified the following causes and root causes concerning shared mobility, why people are using it and not using it and various stumbling blocks to this type of mobility:

- Timeliness and affordability of shared mobility services were acknowledged by participants, but recurring issues related to safety, general discomfort, and class identity were raised.
- Lack of proper integration of the city's shared mobility system with its routes and other multimodal services.
- The absence of door-to-door connectivity in shared mobility options leads people to prefer prepaid rickshaws for safety reasons.
- Limited availability of rickshaw stands, particularly near metro stations, and concerns about safety during nighttime travel.
- Shared mobility options can be time-consuming due to numerous stops and traffic congestion that affects rickshaws and six-seaters.
- Heavy dependence on private vehicles in Pune leaves no alternative shared mobility options. Auto rickshaw charges are deemed exorbitant, and achieving last-mile connectivity is challenging as rickshaws may not stop at the desired drop location.
- Participants expressed concerns about shared mobility services' unknown and unstructured nature, including uncertainties regarding vehicle records and documentation. The importance of shared rickshaws in all parts of Pune for enhanced safety was highlighted.

Participants expressed concerns about shared mobility services' unknown and unstructured nature.



Root causes:

- The absence of an institutionalised framework for shared mobility serves as a major root cause of the problem statement.
- Lack of comprehensive policies addressing various aspects such as expanding options, rationalising routes, pricing, and network hampers improvements in shared mobility.

2.3.4. Reducing vehicles in the city

The focus on reducing the usage of private motorised vehicles in the city led us to explore this problem statement. The causes and root causes behind the growing number of private vehicles on the road can be attributed to the absence or insufficient advancements in sustainable alternatives for low-carbon mobility. These causes include:

- Limitations imposed by the city's geography, temperature, weather, and seasons can affect walking and cycling mobility. For instance, high temperatures during summer make walking challenging. While natural limitations cannot be changed, the city lacks basic facilities for walking and cycling.
- The availability of alternatives to these mobility practices is also limited, primarily due to the inconvenience and lack of comfort in the existing public transport system. Despite having the metro and BRT in the city, the public transport infrastructure has gaps that fail to meet the people's demands.
- Poor planning integration and the absence of conscious mixed-use compact planning mechanisms contribute to reduced mobility by promoting long-distance travel. People seek comfort for long trips, leading to an increased reliance on private vehicles. This also leads to congestion, leaving little space for walking or cycling.
- Participants noted that individuals, communities, or groups aspire to own cars, bikes, or other vehicles as symbols of status and ownership. One participant highlighted the aspirations of the young population for personal vehicle ownership by mentioning, "*Young population with aspirations for possessing a personal vehicle*". Reluctance to use public transport unless necessary (due to financial constraints) was also observed among certain population groups.
- Public transport can facilitate long-distance travel, but it often lacks last-mile connectivity, requiring walking as the final leg of the journey.
- One participant emphasised that the increase in population necessitates more public transport infrastructure. Still, people's reliance on private vehicles remains high, and they said "*Increase in population demands more public transport infrastructure thus people's reliance on private vehicles*". The convenience and availability of private vehicles, along with the extensive road infrastructure, contribute to their widespread use in the city.
- Private vehicles offer the advantage of being a one-time purchase and being available 24/7. Motorised two-wheelers are particularly popular due to their effectiveness, efficiency, point-to-point connectivity, ease of obtaining loans, affordability, and widespread availability.



Despite having the metro and BRT in the city, the public transport infrastructure has gaps that fail to meet the people's demands.

Participants noted that individuals, communities, or groups aspire to own cars, bikes, or other vehicles as symbols of status and ownership.



- No restrictions, easy purchasing process, and increased road infrastructure promoted by the auto industry and supported by government policies.
- Poor planning decisions driven by appeasing builders and a lack of diverse representation in decision-making processes, including the absence of mixed-background individuals.
- The political economy of the city prioritises infrastructure development and favours vehicles over active modes of transportation.
- Leadership changes, varying priorities, lack of knowledge and capacity among leaders and bureaucrats, misguided planning, and value systems influencing decision-making based on a global north (west) paradigm.
- Insufficient funding for public transport and a lack of political will to address the situation.
- Limited coordination between civil society organisations working on transportation issues.
- Societal perception of vehicle ownership as a symbol of success, influenced by social media and Western interests, impacts planning mechanisms.
- The pursuit of economic growth and the availability of finance contribute to promoting private vehicle use.
- Personal perception of ease of travel and the absence of accessible, convenient public transport further incentivise private vehicle usage.
- These causes and root causes influence existing transport networks and services.



Insufficient funding for public transport and a lack of political will to address the situation.

2.4. Existing transportation networks within the system

- Buses and local trains are the active public transport in Pune; the metro system is partially operated and still under construction, with trials running in different parts of the city. PMPML is a service provider for buses in Pune. It has about 2,000 bus fleets: operational with regular, rainbow BRT, night, airport, and ladies' buses spread across a 20 km radius. PMPML is the first provider in India that runs on green fuel CNG and electric buses. Under JnNURM guidelines, provisions for 40 buses per lakh population are required. Still, Pune has a fleet of only 22 buses per lakh population, with PMPML ferrying around 9,00,000 passengers daily.
- Local trains in Pune are operated by Central Railways on two routes: Pune Junction-Lonavala and Pune Junction-Talegaon, carrying 1.1 lakh users every day. However, the present railway line and station capacity does not accommodate the forecasted trips by the people.

- Auto-rickshaws are the predominant and one of the cheapest modes of intermediate public transport, providing convenient mobility within the city. Currently, there are over 70,000 registered auto-rickshaws in Pune city. According to the Comprehensive Mobility Plan (2008), auto-rickshaws serve places with poor bus connectivity and tend to be a relatively cheaper source of mobility. Other intermediate modes are Cabs/Taxis, Ola, Uber, and Rapido: ride-hailing applications providing on-demand services to their customers.
- Walking and cycling are the most common non-motorised transportation and leading low-carbon mobility options. Pune was once known as the cycle city of India, but with the popularity of two-wheelers among the city's households, cycles from the roads slowly diminished. From the census data 2011, bicycles make up only 5% of the total modal share of people in contrast with the 20% share of two-wheelers. Pune city has been prioritising NMT for sustainable mobility options. It has introduced many initiatives like raising pedestrian zebra crossings with signals and rumble strips, prioritising pedestrians while developing a mobility plan, and adopting a comprehensive bicycle plan for the city. In addition, street lighting for night mobility is also considered in the area around 500 km under the PMR region.

Pune was once known as the cycle city of India, but with the popularity of two-wheelers among the city's households, cycles from the roads slowly diminished.

2.4.1. Existing policies in Pune's mobility and transport system

PMC and other agencies developed a comprehensive mobility plan for Pune under NUTP to make transportation safe, efficient and convenient. The plan focuses on the mobility of the city's people rather than vehicles, and in accordance, it prioritises pedestrians, non-motorised transport, all modes of public transport, and intermediate public transport. The comprehensive mobility plan was first developed in 2008; later, in partnership with PCMC, the development authorities incorporated a more comprehensive plan for PMR in 2018.



- Policy for Pedestrian Facilities and Safety in Pune City¹⁶, 2016
- Urban Street Design Guidelines¹⁷, 2016
- Bombay High Court Order¹⁸ (Suo moto PIL for Pedestrians Rights), 2022
- The Street Vendors¹⁹ (Protection of Livelihood and Regulation of Street Vending) Act, 2014



- The Rights of Persons with Disabilities Act²⁰, 2016
- IRC:103 - Guidelines for Pedestrian Facilities (Draft Revision)²¹, 2020
- PMC Comprehensive Bicycle Plan for Pune²², 2017
- Policy on Public Bicycle Sharing System for Pune²³, 2017

¹⁶ Walk Smart: Policy for Pedestrian Facilities and Safety in Pune City, 2016

¹⁷ PMC Comprehensive Bicycle Plan for Pune, 2017

¹⁸ Bombay HC turns petition into suo Moto PIL to bat for pedestrians rights

¹⁹ The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014

²⁰ The Rights of Persons with Disabilities Act, 2016

²¹ IRC:103 - Guidelines for Pedestrian Facilities (Draft Revision), 2020

²² PMC Comprehensive Bicycle Plan for Pune, 2017

²³ Policy on Public Bicycle Sharing System for Pune, 2017



- Urban Street Design Guidelines, 2016
- No policy exists for shared mobility under PMC
- Six-seater is banned in the old city of Pune
- All the auto-rickshaws run on CNG
- RTO: rules and regulations governing the city permits for auto rickshaws in Pune²⁴



- Business Plan for Pune Mahanagar Parivahan Mahamandal Limited, 2021²⁵ (50-60 buses per lakh population)
- Bus Rapid Transit (BRT) under JnNURM/ Development Plan²⁶ (100 km corridor in Pune City)



- Detailed Project Report for Pune Metro Rail Project²⁷, 2015 (58.58 km corridor)
- Proposed High Capacity Mass Transit Route (HCMTR) Project²⁸ (neo-metro)



- Pune Parking Policy²⁹, 2016
- Pedestrian Day in the Core City (11-December)³⁰
- Public Outreach & Communication Campaign for Mobility (Pune Resilient Strategy) and other projects led by Parisar, ITDP, CEE and Save Pune Traffic Movement³¹

Modal share for the transport vehicles (passenger carriers) running on the city roads is as follows: Private (two-wheelers; moped/scooters/ motorcycles and four-wheelers; cars/jeeps/vans), Public (autos/cabs/taxis, buses, trains). From the Census Data 2011³², the modal share for Pune (urban) is summarised in **Figure 4**. The current modal share estimated by PMC-PCMC Comprehensive Mobility Plan, 2018³³ (**figure 5**) also shows similarities in the trends between the two datasets. On thorough reading, both the figures represent a decent percentage share for non-motorised transport and public transport (walking [on foot], bicycle, bus and train) as 58% and 40% respectively constituting almost half of the modal share. The numbers also indicate that the everyday mobility of the city's people has a good reliance on public and non-motorised transport.

Therefore, these figures should be considered when developing a transport network for the city that meets the infrastructural needs of its people while simultaneously creating a more sustainable, safer, accessible and affordable transport system. An enormous shift in modal percentage from 20% in 2011 to 35% in 2018 for two-wheelers is a concern for the city administration to consider

The **increasing number of private vehicles** on the roads **leads to space congestion, increased waiting time, and traffic-related problems.**

24 RTO: rules and regulations governing the city permits for auto rickshaw in Pune
 25 Detailed Project Report for Financial Assistance under MoUD Scheme for Purchase of Buses
 26 Pune News: Bus Rapid Transit is essential for public transport improvement and city's development
 27 Final Detailed Project Report for Pune Metro Rail Project, 2015
 28 High Capacity Mass Transit Route Project, Pune (PMC)
 29 Public Parking Policy Pune, 2016
 30 Pedestrian Day in the Core City (11-December)
 31 Public Outreach & Communication Campaign for Mobility (Pune Resilient Strategy)
 32 The modal share includes work trips from residence to place of work and mode of travel to place of work. Total percentage does not include no travel data from the Census, 2011
 33 The modal share includes all the trips taken

for total vehicular emissions. As mentioned earlier, the increasing number of private vehicles on the roads leads to space congestion, increased waiting time, and traffic-related problems. On the other hand, it causes stress on land use, air and noise pollution and ill-health effects on people and other animals too.

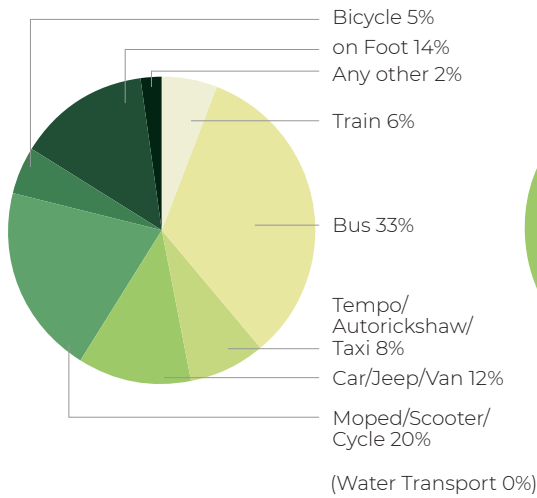


Figure 4: Total Modal Share of Pune (urban), Census of India (2011)

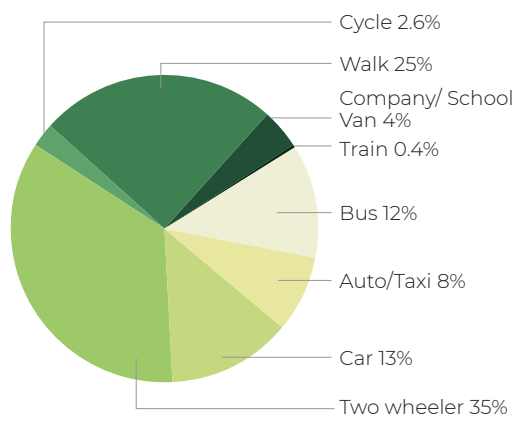
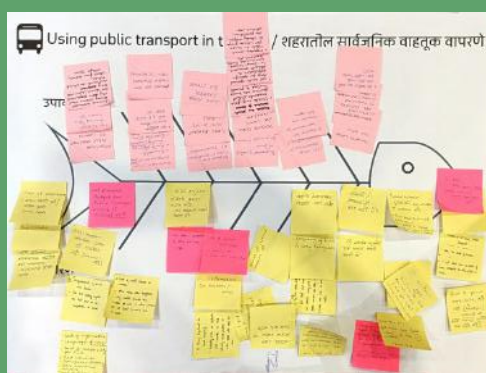


Figure 5: Current Modal Share, Source: CMP-PMR (2018)

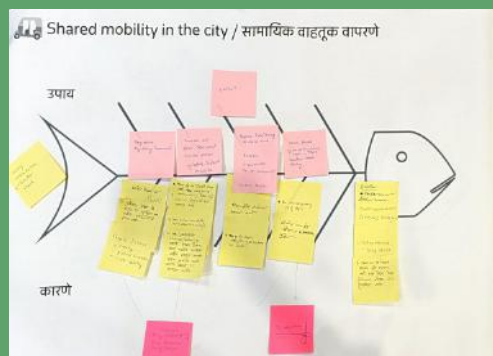
2.5. Fishbone Activity 2: finding potential actionable solutions



Cycling in the city



Using public transport in the city



Shared mobility in the city



Reducing vehicles in the city

Fishbone Activity (comprising causes [yellow sticky notes], root causes [pink sticky notes], and solutions [baby pink sticky notes] to the problem statements

The list of initiatives for low carbon mobility in the city of Pune has been categorised into the following based on the nature of action that could be taken:



Organising local meets in buses for citizen groups to study traffic movements and practical education on why city buses are essential to use.

2.5.1. Awareness and Education

Raising awareness and providing education about the significance of public transport in the city, sustainable mobility, and the adverse environmental impacts of road transport has emerged as a promising avenue with ample potential to promote a shift from private vehicles to public transport. This approach highlights the broader scope for encouraging sustainable transportation practices.

Scope: to connect a larger picture of climate change and its relation with low carbon mobility to understand the future planetary crisis.

Feasibility: stakeholders' engagement and introducing these topics in the school/university curriculum.

Initiatives that could be taken/improved:

- Adding to the college/school curriculum on the importance of using public transport and the need for reducing use of private vehicles in the city.
- Adoption of LCM options by CSOs themselves like formation of community groups, such as creating a WhatsApp group for the ride sharing. Enable or encourage car/vehicles pooling for events organised by the CSOs.
- Designing new narratives on aspirations and society for a shift towards NMT and public transportation.
- Finding out best practices and stories for shared mobility (eg., Tuktuk, Thailand innovation).
- Highlighting the impacts of too many vehicles in the city (and benefits of less).
- Inculcating walking and cycling as a preferred mode in the younger generation.
- Mobilising groups (stakeholders³⁴) to be part of the conversation, taking a step to reaching out to groups that are not able to become part of larger conversation.
- Organising local meets in buses for citizen groups to study traffic movements and practical education on why city buses are essential to use, their contribution to climate action, etc.
- Showcasing case studies from within India and outside on the success/pilots for low carbon mobility systems.

2.5.2. Events/Programmes

Events and programs play a significant role in campaigns aimed at promoting different facets of low-carbon sustainable mobility. They serve as catalysts for inspiring individuals to adopt new mobility practices and drive the collective will for change within the city's population.

³⁴ These include street vendors, persons with disabilities, children, old age people, etc. Since urban transport involves all city residents, we categorise all urban residents as beneficiaries

Scope: to spread awareness and education aspects of low carbon mobility and to bridge communication between the city-state and the city's people.

Feasibility: communication, demands and events organised by the network of CSOs to promote, encourage, educate and adopt low-carbon sustainable mobility.

Initiatives that could be taken/improved:

- Awareness campaigns for the city's carbon footprint (making them available at marketplaces, parks, etc.)
- Community programmes on governance and policy framework involved in the transport sector.
- Connecting with politicians – engaging with leaders to provide data, information, facts, etc.) and campaign for an open manifesto bringing people and the administration closer.
- Demonstrate the benefits of good cycling-walking networks through trials and pilots. Promoting walking and cycling health benefits on social media platforms (public awareness campaigns) to encourage people to adopt these modes more preferably.
- Incentivising public transport by companies, organisations and corporations.
- Media campaigns branding public transport, walking and cycling as 'fashionable'.
- A public campaign, 'Family Planning', around the number of vehicles per family.
- Workshops/seminars to break the existing stigmas on cycling, sensitisation to address attitudes and beliefs on walking and cycling – creating a more walking-cycling-friendly culture around the city.

2.5.3. Advocacy

Advocacy actions are undertaken to drive reforms, which can take various forms such as demands, protests, and campaigns. These initiatives aim to raise awareness and educate citizens about the importance of low carbon mobility.

Scope: pushing for low carbon mobility in the city at a larger scale.

Feasibility: demand, protest and campaign around the ideas of LCM.

Initiatives that could be taken/improved:

- Demand for cycle parking on streets, making public cycles available on metro and public transport stations, and implementing them properly.
- Demand for transparency in the transport-related funds and budget allocation.
- Demanding dedicated buses for women commuters.
- Demand improvements in the last mile connectivity integration with feeder systems for public transport.
- Demanding restrictions on private vehicles in the congestion-prone areas (like Hinjewadi IT Park).
- Form pressure groups to implement existing policies which are only on paper.
- Integration of low carbon mobility in already existing advocacy projects across the city.



Promoting walking and cycling health benefits on social media platforms to encourage people to adopt these modes more preferably.

- Public demand for parking - pedestrian-safe areas - school zones, etc.
- Push for a regulatory framework for shared mobility options in the city.
- Push for a trial implementation of the parking policy.
- Push for more statutory changes/modifications than at policy level.
- Push for participatory involvement in street design (inculcating parking space/ stands for auto-rickshaws near metro stations) for shared mobility options in the city.
- Push for redrafting TOD bylaws to include parking regulations and station area planning.
- Pushing for incentives on bus and cycle users such as green cards, creating half fare weekends (for bus), setting aside special days for specific populations to encourage commuters to use buses, cycle, etc.
- Pushing for providing carbon credits to individuals to encourage more LCM options in the city.
- Pushing for shared mobility (mainly auto-rickshaws) as a feeder to public transport.

2.5.4. Research and Analysis

Research and Analysis are a skeleton to hold any structure. Gathering facts, information, and other related developments is important for accurate and reliable data.

Scope: presenting reliable, accurate and live information on the transport network in the city.

Feasibility: coordinating between civil society organisations and collecting data from various secondary sources, primary surveys, etc.

Initiatives that could be taken/improved:

- Analysing reports, news, events, and programmes to promote and encourage public and NMT transportation systems use.
- Baseline data survey to assess the need for shared mobility in the city.
- Critical appraisal of policies, acts, and schemes at city-level adoption (on LCM).
- Development of a bus app with an integrated system providing times/ schedules. Research on availability of information - timetable, bus routes, arrival time, etc. (for buses).
- Making records of routes, stakeholders involved, no. of vehicles, other modes, stands and other amenities for shared mobility options.
- Providing “carbon footprint of one’s trip” calculations makes it available for the public in ordinary ways.
- Undertake budget analysis to showcase pro-vehicle planning.

2.5.5. Decision-making and Policy

CSOs play a crucial role in identifying gaps in policy implementation and providing valuable insights on areas where policymakers and decision-makers need to prioritise for effective climate action and the promotion of green mobility in the city.



Presenting
**reliable,
accurate and
live information**
on the **transport
network** in the
city.

Scope: listing out various gaps in policy planning and implementation.

Feasibility: revising the plans, policies and schemes and having an interdisciplinary understanding of the problem statements.

Initiatives that could be taken/improved:

- At planning level, improvements in door-to-door connectivity of public transport with frequent stops and terminals would stimulate the reduction of private vehicles.
- Improvements in cycling/pedestrians infrastructure, the shorter trip will help reduce vehicles.
- Integrating street design guidelines for shared mobility options in the city.
- Prioritise planning for cyclists and pedestrians for shorter distances, dedicated bus lanes and revising BRT route design to avoid private vehicles to move on the routes.
- Undertaking capacity building of policy decision makers, planners and leaders.



Integrating street design guidelines for shared mobility options in the city.



Prioritise planning for cyclists and pedestrians for shorter distances, dedicated bus lanes and revising BRT route design to avoid private vehicles to move on the routes.

ABBREVIATIONS

CEE:	Centre for Environment Education
CFC:	Chlorofluorocarbon
CH ₄ :	Methane
CMP:	Comprehensive Mobility Plan
CNG:	Compressed Natural Gas
CO ₂ :	Carbon dioxide
CSOs:	Civil Society Organisations
GHG:	Greenhouse Gases
IRC:	Indian Roads Congress
ITDP:	Institute for Transportation and Development Policy
JnNURM:	Jawaharlal Nehru National Urban Renewal Mission
LCM:	Low Carbon Mobility
MoHUA:	Ministry of Housing and Urban Affairs
MoUD:	Ministry of Urban Development

mtCO₂e: Metric tons of carbon dioxide equivalent
NCAP: National Clean Air Programme
NMT: Non-motorised Transport
NO_x: Nitrogen Oxides
NUTP: National Urban Transport Policy
PCMC: Pimpri-Chinchwad Municipal Corporation
PIL: Public Interest Litigation
PMC: Pune Municipal Corporation
PMPML: Pune Mahanagar Parivahan Mahamandal Ltd.
PMR: Pune Metropolitan Region
RMI: Rocky Mountain Institute
SO₂: Sulphur dioxide
TERI: The Energy and Resources Institute
TOD: Transit-Oriented Development



APPENDIX 1:

FISHBONE ACTIVITY: PARTICIPATORY TOOL

The workshop took place at Deccan Gymkhana on 21 December 2022, facilitated by Dr. Avinash Madhale of Centre for Environment Education.

Indian cities are facing severe traffic problems. Everyday commute has become expensive, time consuming and stressful. The city's current approach is flawed as it only creates more problems and does not address the concerns of the majority. Most importantly, it leads to more air pollution and greenhouse gas emissions, contributing to climate change. This again affects the people. Better solutions are possible. These solutions need to be both climate-friendly and people-friendly. But we need to collectively agree on them, prioritise them and think of joint actions to push this agenda. Though some organisations are working on the issues of transport, this is a problem that we all face. Hence, it is important everyone becomes a part of the solution.

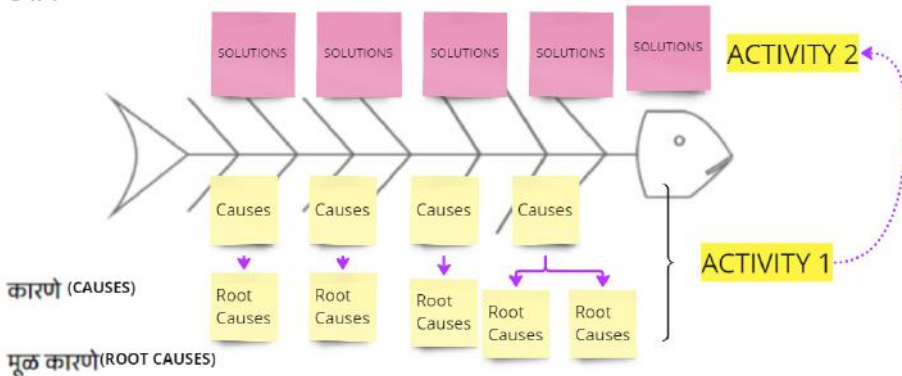
Our focus for the workshop was on creating a network of civil society organisations and mobilising support for low carbon mobility in the city. Cities selected for the purpose of this project are facing their own problems in adopting LCM options with little or no awareness among its citizens, thus considering how participation is a key to move forward with all these issues, we decided to use one of the participatory tools that is engaging as well as fun to work with for this workshop. We used fishbone activity in two phases (figure below). Fishbone is a cause enumeration diagram for desired results, it is one of the participatory tools that is a visual representation of problem-oriented cause and effect. The original exercise is used to sort the prioritisation of different categories. For our workshop we modified the methodology as per our need. Instead of causes and effects we put the bottom side of the fishbone as causes and root causes to the problem states and top side as finding solutions to promote low carbon mobility in the city. Each branch allowed us to think up on different causes and root causes that helped us to brainstorm further into finding solutions. This activity gave everyone equal opportunity to participate and put their view/thoughts on the chart paper.

Activity 1: (writing down the issues based on the problem statements)

Objective: To write the issues (causes) of the problem statements as given in the chart paper.

Procedure: The facilitator explained objectives of the activity to the participants. The participants were sorted into four groups, each group got one problem statement. All the groups were provided with table facilitators (a member of the Parisar team sat with the participant on each table). The participants got time to write their thoughts on the sticky notes that was later led by discussion on what they wrote as a cause and sticky notes were pasted on the bottom part of the fishbone on the chart paper. After everything got on the fishbone, discussions on root causes took place. After internal discussions on the table, each group presented their causes and root causes for the problem statement and got inputs from participants on the other tables.

उपाय (SOLUTIONS)



Fishbone
Activity
Sample

The groups were divided considering no two participants from the same organisation sat on the same table, making note of the diversity of impact areas of the organisations, and maintaining the gender balance on the tables. Tables were facilitated as:

1. Walking/cycling in the city: Sharmila Deo and Paornima Gabhale
2. Using Public transport: Sandeep Gaikewad
3. Shared mobility: Shweta Vernekar
4. Reducing vehicles in the city: Ranjit Gadgil and Shivani

Activity 2: (writing down the solutions of the problem statement)

Objective: To identify the solutions related to the problem statement based on the issues and root causes as discussed in Activity 1.

Procedure: Similarly followed as Activity 1. Now, the sticky notes were pasted on the top part of the fishbone.



Organisation of
tables at the
time of Fishbone
Activity

APPENDIX 2: PARTICIPATING ORGANISATIONS

S.No.	Name of the organisation	Impact areas of the organisation	Name of the participant	Gender
01	Auto-rickshaw Sanghatana (Vidyarthi Vahatuk Sanghatana)	-	Baba Bhawe	Male
02	Center For Development Studies & Activities	Urban, Rural, Regional Sustainable Development Planning in India and South Asia	Aneeta Benninger	Female
03	GiftAbleD	For people with disabilities, mainly focusing on Health, Education and Livelihood	Balaji Shinde	Male
04	Independent/Self	Pollution Climate Safety	Akash Satyarthi	Male
05	Institute for Transportation and Development Policy	Sustainable mobility	Pranjal Kulkarni	Male
			Siddharth Godbole	Male
06	Jeev Bhavana	Environment, Natural Whole Food Plant Farming	Sanjeev Naik	Male
07	Prasanna Desai Architects	Creating Healthy Hygienic Humane Neighbourhood by people participatory approach	Revati Karale	Female
			Sai Veerkar	Female
			Tejaswi H	Male
08	Prayas Energy Group	Energy, environment	Bhakti Kelkar	Female
09	Prayas Health Group	HIV, Sexual and reproductive health, Preventive oncology and Climate change and its impact on health	Trupti Darak	Female
10	Pune Knowledge Cluster	Sustainability & environment, as well as Sustainable Mobility, are focus areas for our organisation	Anita Kane	Female
11	Samuchit Enviro Tech	Climate readiness, Urban sustainability, Decentralised Renewable Energy	Dr Priyadarshini Karve	Female
12	Shunya Studio	Street design, placemaking, urban design	Abhijit Kondalkar	Male
13	Warrior Moms	Clean air, education, environment	Anuja Balik	Female



Mobilising
Community
Support for Low
Carbon Mobility in
Pune city.



Office Address:
Yamuna,
Ganeshkhind Road,
ICS Colony, Pune,
Maharashtra 411007

- <https://www.parisar.org/>
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