



Greener Urban Mobility in India

The potential for behaviour change and cycling

March, 2024

Acknowledgements:

This publication was authored by: Dr. Vikrom Mathur, Ashali Bhandari, Pooja Haldea, and Hema Vaishnavi Ale

Special thanks to the John D. and Catherine T. MacArthur Foundation for their generous support. We would like to extend our gratitude to Dr. Pavan Mamidi and Dr. Sharon Barnhardt for their invaluable intellectual contributions, guiding the analysis of research findings and facilitating the ideation that have shaped the interventions highlighted in this publication. Finally, thanks to the entire Centre for Social and Behaviour Change team for their contributions. We would like to extend our appreciation to Ms. Rimli Boorah for their assistance in copy editing this publication.

© 2024 The Centre for Social and Behaviour Change. All rights reserved.

All information, ideas, views, opinions, estimates, advice, suggestions, and recommendations (hereinafter 'content') in this publication should neither be understood as professional advice in any manner nor interpreted as policies, objectives, opinions or suggestions of the Centre for Social and Behaviour Change (CSBC), Ashoka University. Readers are advised to use their discretion and seek professional advice before taking any action or decision, based on the contents of this publication. The content in this publication has been obtained or derived from sources believed by CSBC to be reliable but CSBC does not represent this information to be accurate or complete. CSBC does not assume any responsibility and disclaims any liability for any loss or damages caused due to any reason whatsoever, towards any person (natural or legal) who uses this publication.

Table of Contents

Executive Summary	3
Section 01: The Project	4
Cycling – The Indian Context	5
Cycling: A Personal Choice	7
Project Methodology	8
Section 02: Insights from Fieldwork	10
Demand-Side Barriers	10
Supply-Side Barriers	10
Demand-Side Facilitators	11
Section 03: Recommendations and Interventions	12
Enable	12
Encourage	13
Exemplify	13
Engage	13
Towards Greener Urban Mobility Through Better Uptake Of Cycling	14
References	15

Executive Summary

In India's shifting urban landscape, the need for low carbon transit options looms large. Cycling has emerged as a viable solution, celebrated in initiatives like the Cycles4Change and Streets4People Challenge which highlight a growing commitment to upgrading of cycling infrastructure. Across India, cycling constitutes more than 15% of trips in most towns and exceeds 10% in major cities like Delhi.

This diagnostic study underscores the urgency of integrating behavioural insights into transportation policy specifically to promote cycling as a sustainable commuting mode in Indian cities. Using Panaji, Goa, as case study, it identifies persistent supply-side hurdles while highlighting demand-side facilitators like weather resilience and social connections. The recommendations set out in this study hold transformative potential, pushing cycling into a pivotal role in urban mobility, and steering urban India towards a greener, sustainable future.

Section 01: The Project

Addressing the climate crisis calls for collective societal action, with the adoption of greener behaviours and lifestyles. However, human behaviour and choice remain understudied aspects seldom considered in policy decisions. In India, where urban centres play a pivotal role in the nation's climate goals, the significance of sustainable mobility solutions cannot be overstated.

Non-Motorised Transportation (NMT) has emerged as a key player in this narrative, encompassing active travel modes like walking and cycling, along with conveyances such as manual wheelchairs, skateboards, and carts. Urban mobility initiatives increasingly prioritise the integration of walking and cycling into city transportation networks, recognising them as zero-emission modes crucial for mitigating climate change and reducing greenhouse gas emissions. Globally, many countries have embraced NMT as integral transportation modes by creating the infrastructure and fostering the culture for it. For example, countries like Denmark and the Netherlands exhibit well-established walking and cycling cultures, with approximately 16% and 27% of all trips, respectively, made by bike (Bicycle Network, 2021; VisitDenmark, 2023). India too needs concerted efforts towards integration of NMT in the urban transport system.

The Low Carbon Lifestyles Project seeks to initiate behaviour change towards sustainable lifestyle choices, including low carbon transportation, in Indian cities. It aims to design interventions to redirect individual and household choices towards sustainable behaviours and technologies. The primary goal is to ensure that policy incorporates an understanding of the context of consumer choices and of local barriers to the uptake of low-carbon consumption, essential to devise levers for higher adoption.

In the domain of urban mobility, the project promotes the uptake of low carbon modes, including NMT, electric vehicles, and public transportation. This brief investigates the barriers to and enablers of cycling in Indian cities, and proposes measures to increase uptake. It focuses on Panaji, Goa, for a concentrated study on cycling behaviour.

Project Objective:

A key objective of the Low Carbon Lifestyles Project is to advocate the adoption of non-motorised mobility modes, like cycling. To promote the uptake of cycling as part of the NMT mobility solution in Indian cities, this project aims to encourage users to switch to cycling either as a primary mode or for local and short-distance trips within an acceptable distance.

- Target Behaviour: Switch to cycling for short/local trips (including last-mile connectivity) for a distance less than 7.5 km, which is short enough to cycle (Jeroen et al., 2010)
- Target Population: Cyclists who use private motorised vehicles of transportation for their daily commute and short trips like running local errands

Cycling – The Indian Context

In India, walking and cycling have been integral modes of commuting; however, with the increased popularity of motorised vehicles, the usage of walking and cycling declined over the years. This is cause for concern at a time when emissions from the transport sector are on the rise in the country. Several studies indicate that NMT can significantly reduce carbon dioxide (CO₂) emissions and improve public health. Cycling as a mode of transport can reduce CO₂ emissions as well as particulate matter emissions from private vehicles (Jeroen et al., 2010). A study by the Institute for Transportation and Development Policy (ITDP) highlighted that shifting 14% of urban travel (in km) from private passenger vehicles to cycling by 2050 could reduce CO₂ emissions by 11% and air pollution-related deaths by 10% globally (ITDP & the University of California, 2015). Bicycles are a sustainable and cost-efficient mode of transport capable of serving a radius double in size to walking (Bassett et al., 2010; Jeroen et al., 2010) and with zero dependence on energy sources or any pollution contribution.

Though implementing cycling infrastructure requires only 2% of the necessary resources for building infrastructure for motorised vehicles (Neun & Haubold, 2016), the growth of cyclists in Indian cities has been constrained by the unfriendly cycling environment and inadequate infrastructure. Factors such as gender disparities, lack of safe cycling infrastructure, economic barriers (the cost of owning or renting a bicycle), etc., have restricted the larger adoption of cycling as a mode of transportation. Further, behavioural challenges such as lack of motivation, habits, cultural norms, etc., also affect the uptake of cycling.

The landscape of stakeholders actively supporting cycling in Indian cities is diverse. The central government sets national-level policies and programmes. The National Urban Transport Policy (NUTP) of 2006 recognised the increased reliance on motorised vehicles due to inadequate NMT infrastructure and the consequent rise in

transportation costs for daily commuting (MoUD, 2006). The updated 2014 policy lists the same suggestions, such as dedicated cycling lanes/bicycle corridors, and provision of drinking water and resting stations, as in the 2006 policy with little to no change (MoUD, 2014). While it acknowledges the potential of promoting cycling as part of Comprehensive Mobility Plans (CMPs), Transit-Oriented Development (TOD), and integrated transportation planning, it acts as a guidance document and provides specific standards for NMT only concerning first- and last-mile connectivity.

The Government of India's 2015 Smart Cities Mission supports sustainable urban development and provisions for cycling infrastructure aligning with the NUTP priorities in selected cities. Similarly, the Sustainable Urban Transport Project of 2019 targets the integration of NMT with public transportation projects (Bus Rapid Transit or BRT, Light Rail Transit or LRT, etc.) and TOD (World Bank, 2019). Further, the National Public Bicycle Scheme promotes cycling through a public bicycle-sharing scheme to increase bicycle access and ensure higher cycling adoption in cities (ITDP, 2012). The central government's Fit India Movement, where people are encouraged to track their fitness core, number of steps, calories burned, etc. to make fitness an integral part of daily life through behavioural changes, also promotes cycling (MoYAS, 2019).

Policy support and financial incentives come from entities such as the Ministry of Road Transport and Highways, responsible for formulating road transport policies; NITI Aayog's Managing Urbanisation Division, offering policy inputs on urban planning and transport; and the Ministry of Housing and Urban Affairs (MoHUA), overseeing schemes and missions like Smart Cities and AMRUT. MoHUA has also established the Climate Smart Cities Assessment Framework under the Smart Cities Mission to help cities benchmark their progress in implementing NMT infrastructure. Some states, such as Tamil Nadu, Maharashtra, and Kerala, incorporate the need for cycling infrastructure (such as dedicated cycle tracks, parking facilities, and improved signage) in their urban development plans. State transportation authorities, public works departments, and urban local bodies play crucial roles in infrastructure provision, maintenance, and direct investments.

Non-governmental organisations (NGOs) and private organisations contribute significantly as well. India Is Us, an NGO, supports Corporate Social Responsibility initiatives such as employee engagement drives and crowd-funding campaigns by organising Ride/Walk/Run-For-a-Cause campaigns. The non-profit Institute for Transportation and Development Policy (ITDP) actively promotes cycling in Indian cities. Various urban planning-focused organisations, including the World Resource Institute and IL&FS Group, support non-motorised infrastructure projects. City-specific cycling associations and clubs, along with individual cyclists, also play essential roles in promoting cycling.

Cycling is experiencing a notable resurgence in Indian cities, with 67% of urban Indians cycling weekly, marking the highest global rate (Ipsos, 2022). Traffic surveys reveal cycling constituting more than 15% of trips in most towns, exceeding 10% in major cities like Delhi (TERI, 2018). With 60% of trip lengths under 5 km and 80% under 10 km, cycling emerges as a practical and sustainable choice for short commutes, aligning with a global shift towards eco-friendly transportation (TERI, 2019). Over 100 cities actively participate in initiatives like the Cycles4Change Challenge and Streets4People that emphasise cycling-friendly infrastructure (MoHUA 2020a; MoHUA 2020b; PIB, 2022). Through the Cycles4ChangeChallenge, under the Smart Cities Mission, cities such as Pune, Bengaluru, Kohima, etc. have significantly improved cycling infrastructure (ITDP, 2020).

However, the investment in NMT remains inadequate: hardly 2% of the total transportation budget during 2012–16 was invested in non-motorised infrastructure in Indian metro cities, including Ahmedabad, Pune, Bengaluru, and Chennai; more and more cities are instead focusing on mass rapid transit, and light rail and monorail, irrespective of the differences in population density and socio-economic conditions of the city (Sustainable Urban Mobility Network, 2017). And, despite a growing interest in cycling for urban commuting, deeply rooted social and cultural barriers have limited its widespread adoption. Overcoming these ingrained challenges is essential to fully unlock the potential of cycling as a mainstream and sustainable mode of transportation in Indian cities.

Cycling: A Personal Choice

Global literature reveals persistent barriers that impede the widespread adoption of cycling including demand-side barriers stemming from cultural perceptions and entrenched habits. Cultural biases perpetuate the belief that cycling is solely for the economically disadvantaged, creating a social stigma that dissuades potential riders (TERI, 2014). Concurrently, ingrained habits, particularly the reliance on private vehicles, pose formidable hurdles in a shift towards this sustainable commuting option (Adam, 2023).

Age-related concerns and misconceptions about fitness amplify resistance to cycling. The perception of being 'too old' or apprehensions about physical exertion and injury contribute to the reluctance of potential riders, demanding targeted efforts to dispel these myths (Biernat et al., 2018). Additionally, the perception that cycling consumes more time than other modes of transportation creates a motivational barrier, dissuading individuals from embracing this eco-friendly alternative (Biswas et al., 2019). For low-income households, the cost of purchasing and maintaining a cycle remains a substantial hurdle, limiting its accessibility as a viable commuting option (Biswas et al., 2019). These challenges intertwine, creating a complex web of barriers that impedes the global adoption of cycling.

On the supply side, inadequate cycling infrastructure exacerbates difficulties faced by potential cyclists. The absence of safe cycling routes, including dedicated lanes and proper lighting, renders cycling on roads perilous and unattractive (Fowler et al., 2017). For women, concerns about storage space and the ability to accommodate dependents while cycling further diminish the appeal of this eco-friendly mode of transport (Garrard et al., 2008). Distance to the workplace, lack of secure parking facilities, absence of workplace amenities, and adverse weather conditions are additional barriers that collectively contribute to hesitancy in embracing cycling for daily commuting (Pearson et al., 2022).

Against these myriad challenges, literature highlights enablers for cycling adoption. Particularly on the supply side, promoting cycling as a social activity for children and parents has proven effective. Initiatives such as 'bike buses to school' implemented in cities like Barcelona, Amsterdam, Glasgow, Rouen, and Portland have successfully encouraged children to cycle to school (Gordon, 2023). By creating dedicated cycling lanes, integrating cycling infrastructure into transportation planning, and ensuring children's safety, these initiatives not only foster a cycling culture among the youth but also influence parents to adopt cycling as a family activity (Janzer, 2022).

Another impactful facilitator is promoting cycling as a mode of commuting for work trips. The UK government's Cycle to Work scheme, introduced in 1999, exemplifies this approach (Cycle to Work Alliance, 2022). By offering tax exemptions on bicycles and safety equipment, the initiative encourages employers to support their employees in adopting cycling for their daily commutes (Cyclescheme Limited, 2023). Similarly, STRAVA's efforts in Indian cities like Mumbai, Pune, and Bengaluru, combining exercise with individual challenges, aim to make cycling a part of daily routines (STRAVA, 2023).

Project Methodology

In India, behavioural research on the adoption of cycling has been meagre so far. This study identifies and explores behavioural and systemic factors in the country that steer individuals' choices towards or away from cycling for various purposes, devising a detailed methodology for the purpose.

- The project team began with an extensive literature review, analysing scholarly articles, reports, and global studies that delve into the multifaceted aspects of cycling adoption. This provided a comprehensive understanding of the current landscape, policies, and potential interventions related to cycling in urban areas.
- Stakeholder mapping formed a crucial component of the study. The project explored the varied landscape of players actively involved in promoting and

facilitating cycling in Indian cities, identifying the key influencers shaping the move towards more sustainable urban mobility.

- This was followed by diagnostic fieldwork, involving semi-structured interviews with both regular and recreational cyclists in Panaji, a city chosen for its minimal supply-side barrier, its compact size, road network, and a suitable target population.
- Moving forward, the synthesis phase involved qualitative decoding of interview transcripts to pinpoint key behavioural barriers and facilitators.
- Subsequent ideation workshops brainstormed potential interventions, ranging from in-field pilots to policy debriefs. The overarching objective was to contribute actionable insights that can catalyse the adoption of cycling in Indian cities and promote sustainable urban mobility.

Section 02: Insights from Fieldwork

Whether or not an individual consumer adopts a given sustainable behaviour depends on two sets of factors: (1) Demand side factors -- The preferences, needs, and beliefs of the individual can make her/him more likely to adopt that behaviour (such factors are demand-side facilitators of sustainable behaviour), or less likely to adopt the behaviour (demand-side barriers) and (2). Supply-side factors: The availability and accessibility of infrastructure and/or services at the systemic level make an individual more likely (supply-side facilitators) or less likely (supply-side barriers) to adopt the behaviour.

Our diagnostic fieldwork revealed three demand-side and supply-side barriers that impede the adoption of cycling by urban Indian households; two demand-side facilitators were also identified.

Demand-Side Barriers

1. *Perceived solely as a recreational activity:* Our research revealed that the majority of cyclists from middle- and higher-income groups are recreational cyclists; they do not cycle for their daily commute, for which they are accustomed to using motorised vehicles. While they do not mind the distance or the weather, using proper gear for longer distances (up to 10–15 km) and continuing to cycle in heavy rains, they associate cycling with being fit and healthy or as a fun activity they can enjoy with friends and family or by themselves, and not as a mode of commuting.

Supply-Side Barriers

2. *Limited infrastructural facilities:* We uncovered that when considering cycling as a mode of commute, people are overwhelmed by the associated requirements (comfortable/athletic clothes and shoes, need for storage space when trip-chaining, requiring a shower facility at work as they get sweaty while cycling, etc.); therefore, they treat cycling only as a sport/leisure activity that is pre-decided and easy to navigate. They are also wary of cycle theft in the absence of proper parking facilities and/or the extra effort that may be required to find a proper parking spot in circumstances where cycle parking is relatively uncommon. Hence, infrastructural and design limitations are strong barriers in the adoption of cycling as a mode of transportation.
3. *Uncomfortable rides due to poor road conditions including lack of safety:* Our research found that cyclists must share the road space with motorised vehicles in the face of inadequate cycling lanes across the city. However, the disparity in speed and the road space needed by vehicles affect the safety of cyclists. People are even more uncomfortable cycling on poorly lit streets at

night for fear of accidents and/or damage because of the road conditions. We also found that cycling through potholes can result in lower back injuries, while garbage and debris on the road can damage tires. Additionally, people feel they need to put in more physical effort when riding on sloping roads. Since these factors often act in tandem on the roads, motorised vehicles seem more convenient and comfortable.

Demand-Side Facilitators

1. *Less affected by the weather:* One finding is that people choose to cycle in bad weather conditions, especially for recreation, because they enjoy it. Recreational cyclists spoke of being quick to use adaptive measures (such as wearing raincoats, etc.) in case of heavy rains and continued to cycle instead of skipping cycling for the day. Statements such as 'Cycling is not dependent on weather or distance. I am happy to cycle for up to 10 km. I like to cycle for fitness and in my spare time' were common across all users. This holds promise for the habit creation of cycling for other uses, including as a mode of commute.
2. *Perceived as a social bonding activity:* We found that people view cycling as a social bonding activity, a way of spending time with loved ones and doing something fun together. Cycling with friends and family is common for adults, and children often cycle with their friends in groups or with their parents. Our research also found that several mothers have a routine of cycling with their kids for leisure. They have a predefined route and time and look forward to it. This too has the potential to lead to the habit creation of cycling.

Section 03: Recommendations and Interventions

This study has unearthed critical behavioural and structural barriers hindering the widespread adoption of cycling, along with some enablers for cycling, in Indian cities. Capitalising on these insights is crucial for policy formulation, enabling urban planners, cycling advocacy groups, and other stakeholders to employ effective strategies to promote the adoption of the sustainable commuting choice of cycling.

To activate the behavioural bridge to policy, this study employs the 4Es Model of the UK government's Department for Environment, Food and Rural Affairs (DEFRA), which aspires to enable, encourage, exemplify, and engage in moving individuals towards sustainable practices (Institute for Government, 2015). This model offers an approach to addressing behavioural and structural gaps in policy:

1. Enable focuses on providing the necessary infrastructure to make sustainable choices accessible and attractive.
2. Encourage delves into the realm of information dissemination and public awareness to motivate individuals.
3. Exemplify emphasises the importance of leading by example.
4. Engage encourages active participation and collaboration amongst stakeholders to influence policy.

With the goal of guiding policymaking and practical strategies by identifying key intervention areas, we conducted an extensive brainstorming session to generate seven interventions, organised below using the 4Es framework:

Enable

To enable sustainable modes of transportation like cycling, it is crucial for policymakers to recognise that the physical environment significantly influences people's mobility decisions. To address the contextual and structural barriers to cycling adoption identified by the study, we suggest the following interventions to enhance the environment around cycling, making it more accessible and attractive:

1. *Increase cycling lanes and other infrastructure:* To promote cycling as a viable mode of transport, create dedicated infrastructure by constructing separate lanes or designated pathways exclusively for cyclists, which can ensure their safety and convenience. City development plans must integrate such infrastructural changes.
2. *Expand the second-hand market for cycles:* To reduce upfront ownership costs, the second-hand market for quality bicycles can be expanded. This strategy addresses the barrier of limited infrastructural facilities for cycling, making it an important step in fostering a cycling-friendly culture.

Encourage

Encouraging cycling requires a comprehensive approach that goes beyond infrastructure improvements. This study suggests bringing insights from behavioural research to sharpen traditional policy tools such as information provision, regulations, incentives, and communication campaigns to motivate individuals to choose cycling over other modes of transportation.

3. *Introduce the 'cycle-to-work' concept with tax benefits:* Targeting early adopters and providing tax incentives to employers and employees can help promote a cycle-to-work culture. For example, an employer can purchase cycles and employees can repay the cost in instalments from their gross salary; the employee only pays taxes on the balance of their salary, enabling potential savings and encouraging cycle use. This approach helps in overcoming challenges such as limited infrastructural facilities for cycling, poor road conditions, and safety concerns.
4. *Link cycling to time savings:* Awareness campaigns that link time-saving benefits to cycling through avoidance of traffic can encourage individuals to choose cycling over private vehicles as a viable and efficient transportation option.

Exemplify

Exemplification by influential figures, ranging from community leaders to celebrities, can improve the status perception of cycling and spur widespread adoption.

5. *Leverage high-profile figures:* By portraying cycling as a socially desirable and aspirational activity, these influential figures can shape societal perceptions, fostering a broader acceptance and uptake of cycling.

Engage

Promoting cycling as a preferred mode of transportation requires collaboration from diverse stakeholders, extending beyond government and cycling operators. Given below are multi-stakeholder recommendations, engaging various actors, that aim to create a conducive environment for increased cycling adoption:

6. *Provide incentives/rewards for peak hour cycling:* Offices and workplaces can facilitate cycling as a mode of commute by offering incentives and creating friendly competitions with rewards. They can also connect employees to address perceptions of lack of safety by creating large cycling groups who can ride together. This approach not only encourages increased cycling but also fosters a cooperative effort to overcome existing challenges, contributing to the development of a more cycling-friendly environment.

7. *Conduct creative challenges involving cycling experiences:* To foster a culture of cycling in cities, organise events and challenges that emphasise its social bonding aspect. By highlighting the shared aspects of cycling, this approach seeks to build a sense of community and camaraderie, contributing to the acceptance of cycling despite existing infrastructural limitations. To implement such events successfully, collaboration among key stakeholders, such as the city government, local businesses, community organisations, cycling enthusiast groups, educational institutions, urban planners, and transportation authorities, is crucial.

Towards Greener Urban Mobility Through Better Uptake Of Cycling

This diagnostic brief underscores the crucial need to integrate behavioural insights into transportation policy and urban planning, specifically focusing on promoting cycling as a sustainable mode of commuting. The examination of behavioural dynamics related to cycling adoption in Indian cities reveals a complex landscape marked by demand-side reluctance and supply-side limitations, encompassing infrastructure concerns to ingrained behavioural patterns. While some of the behavioural barriers explored here may exhibit context specificity, calling for targeted interventions for local users, most of them are challenges common to urban landscapes across the country. With its array of practical recommendations and interventions, this brief shows the way to a greener urban India through enhanced cycling uptake.

References

- Adam, C. (2023). *Simulating the impact of cognitive biases on the mobility transition*. Grenoble-Alpes University. <https://doi.org/10.48550/arXiv.2302.03554>
- Bassett, D. R. J., Wyatt, H. R., Thompson, H., Peters, J. C., & Hill, J. O. (2010). Pedometer-measured physical activity and health behaviors in U.S. adults. *Medicine & Science in Sports & Exercise*, 42(10), 1819–1825. https://journals.lww.com/acsm-msse/Fulltext/2010/10000/Pedometer_Measured_Physical_Activity_and_Health.4.aspx
- Bicycle Network. (2021). *The Netherlands by numbers*. <https://bicyclenetwork.com.au/newsroom/2021/03/11/the-netherlands-by-numbers/>
- Biernat, E., Buchholtz, S., & Bartkiewicz, P. (2018). Motivations and barriers to bicycle commuting: Lessons from Poland. *Transportation Research Part F: Traffic Psychology and Behaviour*, 55. <https://doi.org/10.1016/j.trf.2018.03.024>
- Biswas, A., Mittal, S., & Padmakar, S. (2019). Why people refrain from cycling in Indian Cities: A comparative investigation. *International Review for Spatial Planning and Sustainable Development*, 7, 111–130. https://doi.org/10.14246/irspsda.7.3_111
- Cycle to Work Alliance. (2022). *Cycle to Work Alliance*. <https://cycletoworkalliance.org.uk/about-us/the-alliance/>
- Cyclescheme Limited. (2023). *Cyclescheme, UK*. <https://www.cyclescheme.co.uk/>
- Fowler, S. L., Berrigan, D., & Pollack, K. M. (2017). Perceived barriers to bicycling in an urban U.S. environment. *Journal of Transport & Health*, 6, 474–480. <https://doi.org/10.1016/j.jth.2017.04.003>
- Garrard, J., Rose, G., & Lo, S. K. (2008). Promoting transportation cycling for women: The role of bicycle infrastructure. *Preventive Medicine*, 46(1), 55–59. <https://doi.org/10.1016/j.ypmed.2007.07.010>
- Gordon, W. (2023). *Are bike buses the future of school transportation?* <https://nextcity.org/urbanist-news/are-bike-buses-the-future-of-school-transportation>
- Hadid, D., & Sattar, A. (2019). *Women who bicycle in Pakistan face a lot of pushback*. Goats and Soda. NPR. <https://www.npr.org/sections/goatsandsoda/2019/02/03/684438571/women-who-dare-to-bicycle-in-pakistan>
- Institute for Government. (2015). *Mindspace: Influencing behaviour through public policy*. <https://www.bi.team/wp-content/uploads/2015/07/MINDSPACE.pdf>
- Institute for Transportation and Development Policy (ITDP). (2012). *Public cycle sharing systems: a planning toolkit for Indian cities*. <https://www.itdp.in/wp-content/uploads/2014/04/06.-Public-Cycle-Sharing-Toolkit.pdf>

Institute for Transportation and Development Policy (ITDP). (2020). *India Cycles4Change Challenge*. <https://www.itdp.in/green-recovery/india-cycles4change-challenge/>

Institute for Transportation and Development Policy (ITDP) and the University of California. (2015). *A global high shift cycling scenario: The potential for dramatically increasing bicycle and e-bike use in cities around the world, with estimated energy, CO2, and cost impacts*. https://itdpdotorg.wpengine.com/wp-content/uploads/2015/11/A-Global-High-Shift-Cycling-Scenario_Nov-2015.pdf

Ipsos. (2022). *Cycling across the world: A 30-country Global Advisor Survey*. <https://www.ipsos.com/sites/default/files/ct/news/documents/2022-05/Ipsos%20-%20Cycling%20Across%20the%20World-2022.pdf>

Janzer, C. (2022). *In Barcelona, kids bike to school in large, choreographed herds*. Reasons to Be Cheerful. <https://reasonstobecheerful.world/students-ditch-school-buses-for-bicycles-in-barcelona/>

Jeroen, J. de H., Boogaard, H., Nijland, H., & Hoek, G. (2010). Do the health benefits of cycling outweigh the risks? *Environmental Health Perspectives*, 118(8), 1109–1116. <https://doi.org/10.1289/ehp.0901747>

Limb, L., & Garcia, H. (2022). What are bike buses and why are kids 'jumping out of bed' to join them? Euronews. <https://www.euronews.com/green/2022/11/29/what-are-bike-buses-and-why-are-kids-jumping-out-of-bed-to-join-them>

Ministry of Housing and Urban Affairs (MoHUA). (2020a). *IndiaCycle4Change Challenge*. Government of India. <https://smartnet.niua.org/indiacyclechallenge/>

Ministry of Housing and Urban Affairs (MoHUA). (2020b). *Streets for People Challenge*. Government of India. <https://smartnet.niua.org/indiastreetchallenge/>

Ministry of Urban Development (MoUD). (2006). *National Urban Transport Policy*. Government of India. <https://mohua.gov.in/upload/uploadfiles/files/TransportPolicy.pdf>

Ministry of Urban Development (MoUD). (2014). *National Urban Transport Policy 2014*. Government of India. https://www.changing-transport.org/wp-content/uploads/E_K_NUMP_India_2014_EN.pdf

Ministry of Youth Affairs and Sports (MoYAS). (2019). *Fit India Movement*. Government of India. <https://fitindia.gov.in/>

Neun, M., & Haubold, H. (2016). *The EU cycling economy: Arguments for an integrated EU cycling policy*. European Cyclists' Federation. https://ecf.com/system/files/THE_EU_CYCLING_ECONOMY.pdf

Pearson, L., Berkovic, D., Reeder, S., Gabbe, B., & Beck, B. (2022). Adults' self-reported barriers and enablers to riding a bike for transport: A systematic review. *Transport Reviews*, 43(3), 356–384. <https://doi.org/10.1080/01441647.2022.2113570>

Press Information Bureau (PIB). (2022). *MoHUA announces winners of Freedom2Walk & Cycle Challenge awards*.

<https://pib.gov.in/PressReleaseDetailm.aspx?PRID=1799100#:~:text=Aurangabad%2C%20Jaipur%2C%20Davanagere%2C%20Sagar,Pune%20are%20in%20the%20process.&text=In%202020%2C%20the%20Government%20of,towards%20creating%20cycling%20friendly%20cities.>

STRAVA. (2023). *Cycle to Work India*. <https://cycletowork.in/>

Sustainable Urban Mobility Network (2017). *Transport budget analysis in 5 Indian cities*. <https://shaktifoundation.in/wp-content/uploads/2017/11/Transport-Budget-Analysis-in-5-Indian-cities.pdf>

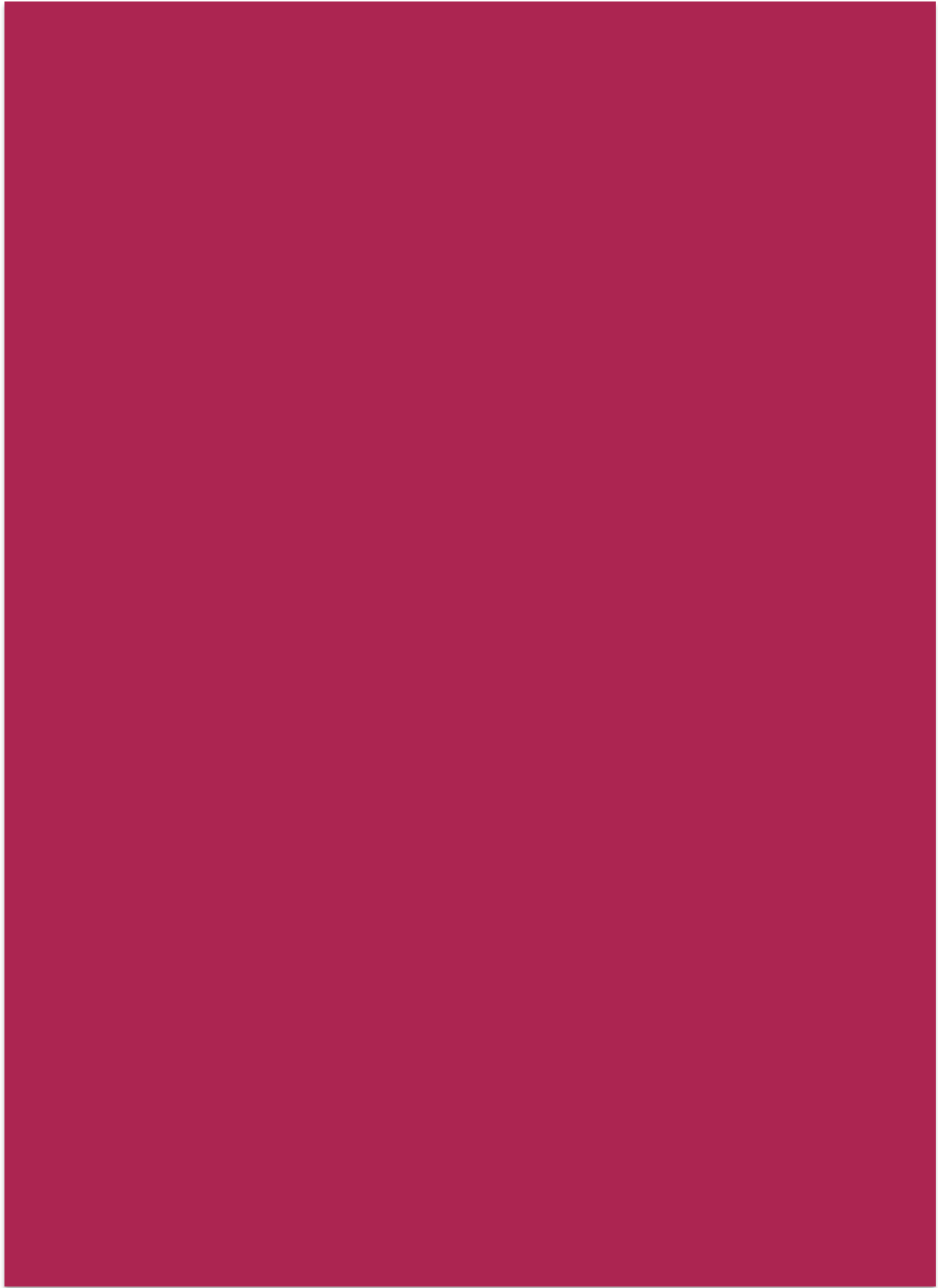
The Energy and Resources Institute (TERI) (2014). *Pedalling towards a greener India*. https://www.teriin.org/eventdocs/files/Cycling_Report_LR.pdf

The Energy and Resources Institute (TERI). (2018). *Benefits of cycling in India: An economic, environmental, and social assessment*. <https://www.teriin.org/sites/default/files/2020-06/benefits-cycling-report.pdf>

The Energy and Resources Institute (TERI). (2019). *Comprehensive city-specific mobility plan need of the hour; blanket shift to private electric vehicles may not be feasible*. <https://www.teriin.org/press-release/comprehensive-city-specific-mobility-plan-need-hour-blanket-shift-private-electric>

VisitDenmark. (2023). *Facts and figures on cycling in Denmark*. <https://www.visitdenmark.com/press/latest-news/facts-and-figures-cycling-denmark>

World Bank. (2019). *Implementation completion and results report for the Sustainable Urban Transport Project (SUTP)*. <https://documents1.worldbank.org/curated/pt/965391553890850902/pdf/India-Sustainable-Urban-Transport-Project.pdf>



Contact us

W: www.csbc.org.in

E: csbc@ashoka.edu.in



@Centre for Social and Behaviour Change



@CSBC_AshokaUniv