

#Bengaluru
moving



building gender-sensitive interventions in NMT

POLICY BRIEF

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abstract

"Make cities and human settlements inclusive, safe, resilient and sustainable"¹ is the eleventh goal in the 2030 Agenda for Sustainable Development².

It targets an increase in adoption and implementation of policies for inclusion, resource efficiency, mitigation and adaptation to climate change. The goal puts emphasis on the central role of sustainable transport to achieve the Paris Agreement, improve social equity, health, accessibility and economy of cities. It is in this context that we study non-motorised transport (NMT), and specifically its uptake by women.

In India, only 4% of women in the lower income groups, and 9% in the middle income groups prefer NMT as their means of transport³. To increase the share of NMT users in India and specifically in Bengaluru, and achieve inclusion we have to bring in positive interventions that would encourage women, and other gender groups to choose NMT as a preferred mode of transport. There are many factors which contribute towards NMT being a less preferred choice among women in India, but most of them can be classified into the overarching

issues of safety, infrastructure and socio-economic constraints.

Through this research brief we attempt to dive into these issues and highlight the challenges that affect the choice of transport made by women in Bengaluru. The brief highlights differences in perceptions behind women's choices compared to men and analyzes best practices around the globe for development and promotion of NMT. Our analysis suggests that safe and secure NMT infrastructure such as paved footpaths and dedicated cycling lanes, with proper lighting, and more surveillance will significantly improve the chances of women choosing NMT. With improvements in infrastructure along with dedicated awareness programs about the benefits of NMT, and schemes for making cycling affordable, NMT can become the preferred choice of transport for women in Bengaluru.

CHAPTER 1

what is NMT and gender-inclusivity?

Non-motorised transport is a sustainable mobility option that includes walking, cycling, and other human-effort powered vehicles. It also includes use of skateboards, cycle-rickshaws, vending carts, etc. NMT helps in serving short trips and better last-mile connectivity, serving both utilitarian and recreational users. NMT has a holistic range of benefits to both the individual and the city. Use of NMT has a positive effect on health and air quality, its adoption results in poverty alleviation and helps create livable cities. NMT is not only environmentally cleaner, but also affordable.

In a country like India, affordable ways of mobility are a need of the hour. Such affordable means not only serve as modes of transport, but also as financial elevators for many. Given the added benefits to the environment, sustainable modes of transport such as NMT should be promoted by policy makers for mass scale adoption. The recent pandemic has further highlighted its importance and there is now a growing recognition of the need to adopt a gender-sensitive approach towards NMT design to make sure all sections of society benefit from its implementation.⁴

Gender is defined as the range of characteristics that are pertaining to and differentiating between masculinity and femininity. These are contextual, in that, these characteristics may include biological sex, gender roles defined by social structures, or even through gender identities.⁵ Though the world is moving towards accepting gender as a spectrum, most cultures identify gender as a binary (defined by men and women), and those who are outside this group as genderqueer or non-binary.

Gender sensitivity therein entails the process in which people are made aware of the role played by “gender” in their treatment of others, and manifests in recognizing one’s privileges and gender-based discrimination. Improving sensitivity with regard to gender is meant to improve consideration of social and cultural factors that influence gender-based exclusions in diverse spheres of private and public life.

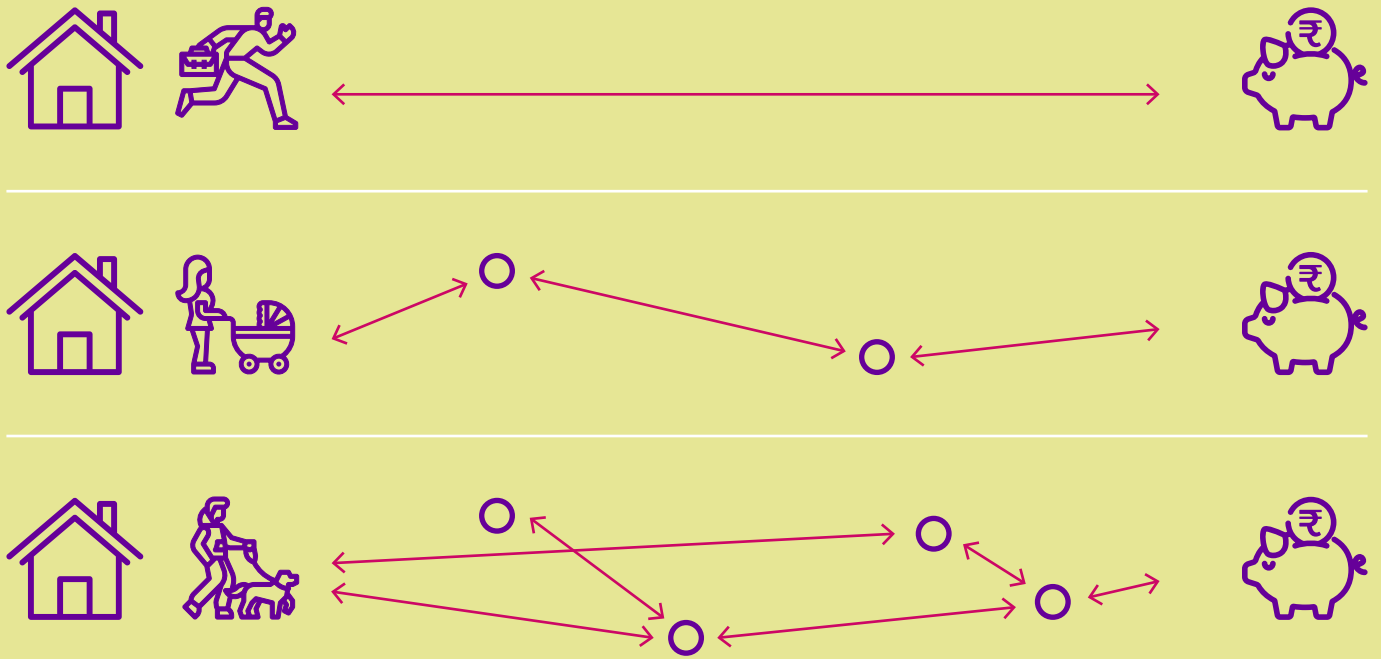


Figure 1 Trip chaining⁶

With respect to mobility, gender differences affect patterns of movement, distance travelled, mobility use cases, wallet share and safety perceptions. This makes it imperative to design mobility solutions that are tailor made for such differences. For example, movement around the city is different for women compared to men in terms of time and reasons for travel. Women normally undertake most of the family responsibilities and hence have a more complicated travel route, and as shown in the image above, this choice of travel forms a ‘trip chain’.⁸

Though publicly available research on gender inclusivity in NMT is limited, the #CycleToWork campaign conducted in the United Kingdom indicated that women riders were a mere ~8.4% among 377 participants⁷. A study conducted in India also showed that 14% of all the cycles owned by women were hardly used⁴. With limited usage of NMT modes like cycling by women, it becomes important to dive deep into the reasons for the same and look for solutions that promote gender-inclusivity in NMT.

CHAPTER 2

current status

NMT design and policies are guided by various factors such as built and natural environment, usage patterns, socio-economic factors, and psychological perceptions.

One also needs to consider influences such as infrastructure and facilities, average work distances, cultural setup, income levels and attitude towards NMT while considering design interventions.

Safety and infrastructure

Similar to any other means of transport, NMT too requires basic infrastructure facilities for ease of use and widespread adoption. For walking, these facilities include paved footpaths, zebra crossings, crossover bridges, subways, proper street lighting and surveillance. For cycling, along with proper lighting and surveillance, the infrastructure components include bike lanes, paved shoulders, bike paths, connected routes, storage, bike racks and showers etc.

Studies have shown evidence of gender differences that arise with respect to desired amenities and facilities among cyclists and perceptions of safety for cycling⁸. One study from Minnesota in the US showed that women and men rated cycling facilities as “very important” differently. Facilities like

paved shoulders and lighting were rated to be more important to women than to men, and conversely, men rated commute information and bike racks and showers more important than women.



Figure 2 Rating bicycle infrastructure as 'important' by men and women of Minnesota¹¹ | Year of study: 2019

Stark differences could also be seen in the perceptions of safety between genders, where themes like lack of bicycle paths, unsafe road conditions, improper motorised driver and cyclist behaviours were identified.⁹ Given heightened concerns around women's safety in the Indian context, this finding becomes even more important.

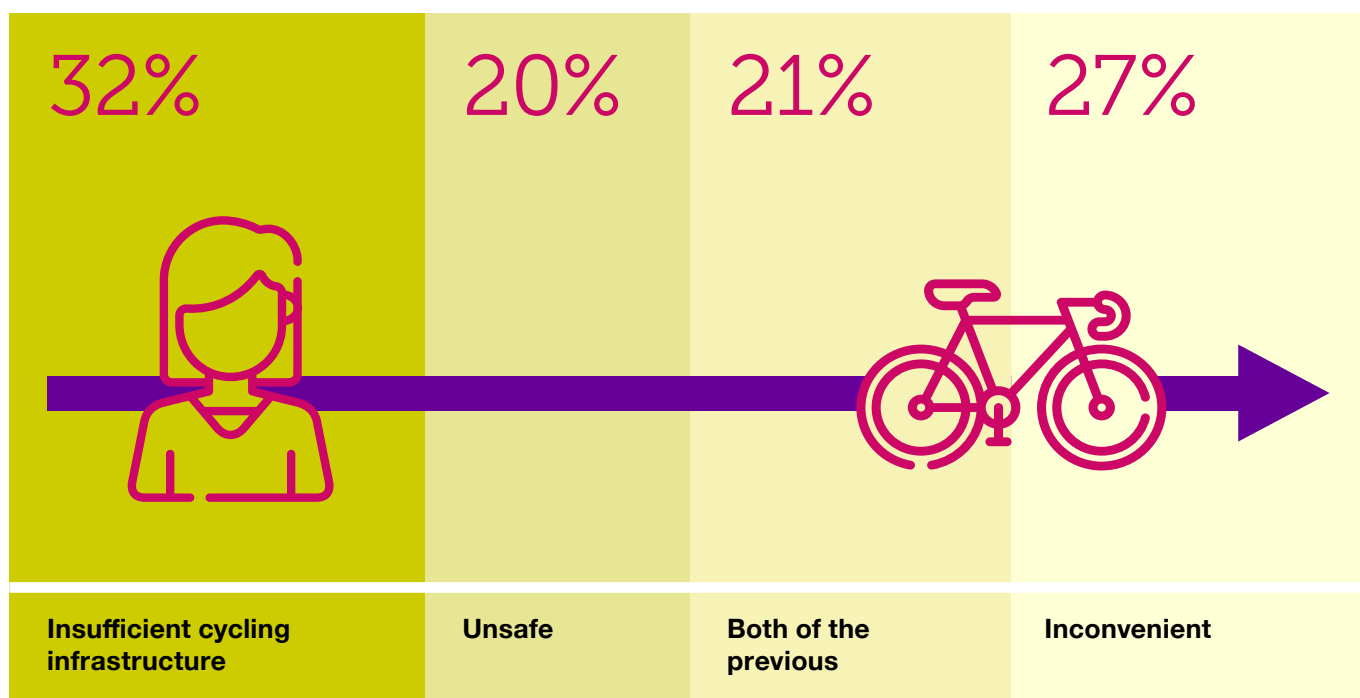


Figure 3 Women's reasons for not bicycling: study by Ola Mobility Institute¹⁰ | Year of study: 2020

As shown in the image above, in a survey to identify reasons why women in India did not cycle, 32% of women participants responded that there was insufficient cycling infrastructure, 20% felt it was not safe, and 21% mentioned both the above reasons for not cycling. There was also an overwhelming demand for safer cycling networks with more than two-thirds of women (68%) and three-fourths of men wanting cycle tracks in their cities.¹⁴

In a safety audit for the city of Bengaluru performed by Safetipin depicted in the image below, it was found that the city rated poorly on security, gender usage, and visibility. Even though lighting and walk path rating was above average, it was identified that lighting was insufficient for pedestrian mobility with multiple dark spots and many walk paths were discontinuous or had open potholes.¹¹

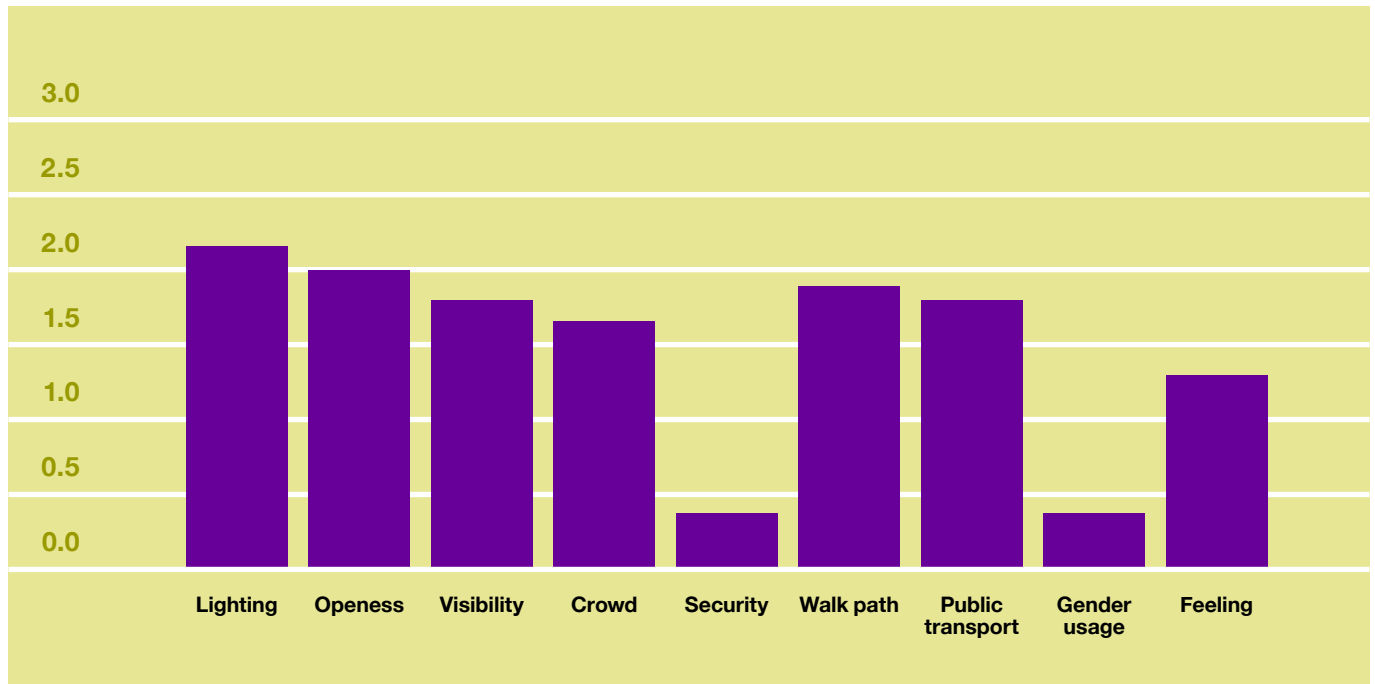


Figure 4 Ratings from Bangalore's safety audit¹⁵ | Year of study: 2021

In India, a meagre 3% of women cycle to their place of work; over 2 million of them walk 2–5 km to their workplace.¹²

In countries like Amsterdam and Germany with well-built infrastructure for cycling, a significant percentage of the population cycles, with more proportion of women cyclists than men. Of course climate-wise these countries are not as hot as India, but Bengaluru has pleasant weather and hence the difference is worth mentioning. In the Nordic and European countries, women make up more than 40% of bike trips, and in Netherlands alone, the share of women cyclists is 55%.¹³

Safety of pedestrians and cyclists is a pressing issue in India, with about 40% of the total road related injuries being accounted

for by NMT users.¹⁴ Disproportionate focus on motor vehicle infrastructure development and poor space management are some of the primary causes for the same. Lack of clearly marked footpaths for walking, as well as separate tracks or lanes for cycling, make it unsafe for people using NMT for commute. These issues appear to have far more impact on women, possibly because they prefer off-road paths over on-road lanes or roads with no bicycle facilities.¹⁵ This was also evident in a household survey, conducted by Sensing Local Foundation in the Doddanekundi area of Bengaluru, where even daily bicycle riders found it unsafe to ride alongside other motor vehicles. When asked if a dedicated lanes for cycling would help overcome the concern, they replied in the affirmative. Although the Department of Urban Land Transport (DULT), in the government of Karnataka, has been

supporting projects such as ‘slow street’, ‘pedestrian only street’ and ‘clean air street’¹⁶ to boost adoption of NMT, widespread implementation still poses a challenge.

Harassment and threats in public areas are an unpleasant reality and the fear of crime is a major deterrent that affects the adoption of cycling and walking for short trips.¹⁷ For women especially, the opportunity cost of not having secure, safe and comfortable

mobility options is too high. Today, there is a serious need to realign planning priorities, and to pay special attention to NMT while applying a gender lens to all interventions. If concerns around hostile street environment, road safety, lack of dedicated, shaded and continuous cycling tracks along arterial and non-arterial roads can be addressed, then cycling has the potential to facilitate economic empowerment of women.

Socio-cultural norms and values relating to gender, coupled with a woman’s mobility needs, highly influence her travel patterns. The age-old belief in our culture that a woman is bound to one’s domestic realm, is one of the biggest deterrents that curb women’s mobility.

Mobility constraints for mode, place, and time can lead to involuntary and voluntary social and physical exclusion, limiting freedom and access not just to social opportunities, but also economic ones.¹⁸ “Cycling is a means for me to achieve my independence through movement”, said Jaya Singh, who works as a househelp in Bengaluru and uses her cycle for daily commute to her workplace. In her interactions with us, she highlighted the importance of accessibility and freedom for women, that can be accelerated through affordable mobility.

Not surprisingly, many gender-based inhibitions impose larger constraints on women belonging to the lower economic strata, and they often indicate a higher space-time limitation owing to stronger domestic responsibilities. Studies from South Asia show that such constraints impact ownership of cycles



Socio-cultural and economic factors

among women from lower income groups, as it is customary for the patriarch to own vehicles. Affordability of cycles is another reason for lower ownership. Currently the cheapest bicycle in India costs INR 2,500–5,000 which is about 15% of the average annual per capita income in rural areas.^{19,20}

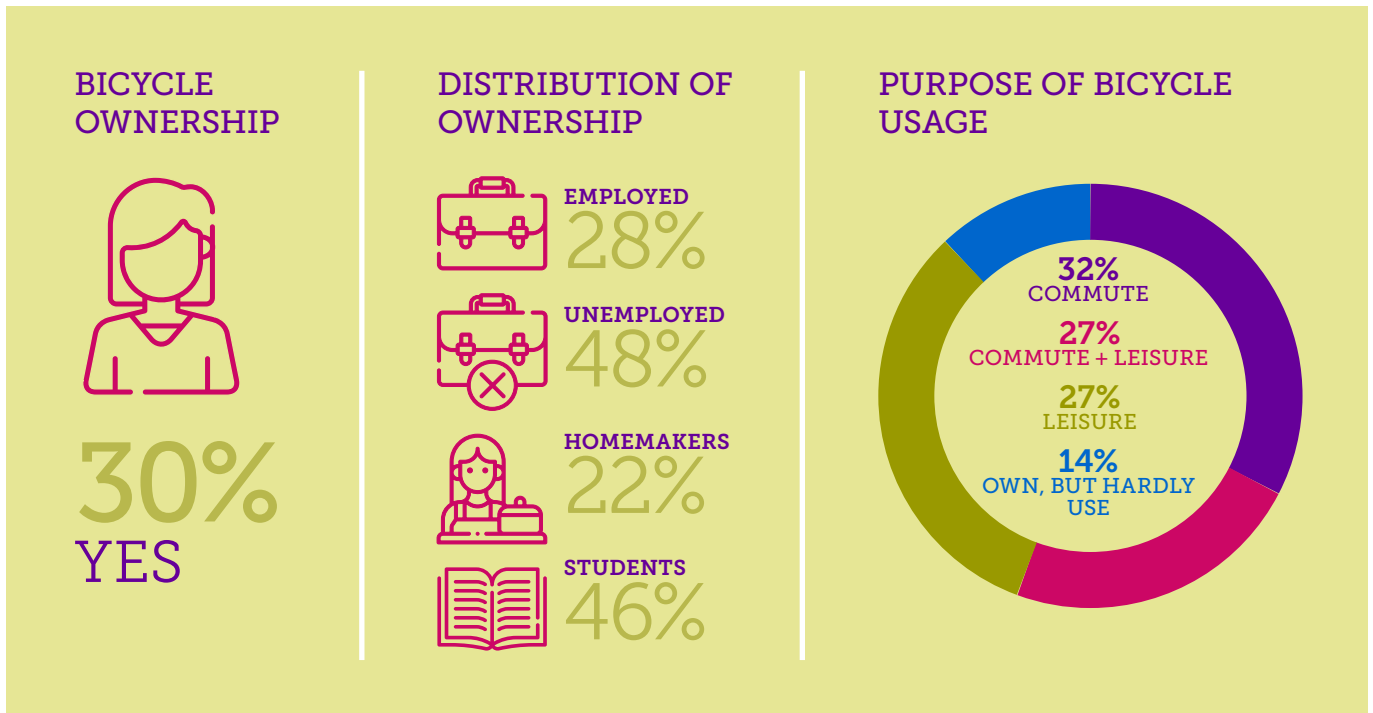


Figure 5 Ownership, distribution and use of bicycle by women²¹

There have been some initiatives by governments in India to make cycling accessible and affordable for women in particular. The Bihar Government's Mukhyamantri Balak/Balika Bicycle Scheme led to a mammoth 32% increase in secondary school enrollment among new women cyclists and reduced the corresponding gender gap by 40%. Both these schemes helped school/college going girls with access to cycles. If we look at this from an economic perspective, mobility interventions that are made accessible and affordable can significantly improve women's access to economic opportunity.²² Therefore, it makes sense for policymakers and urban planners to focus their energies on making NMT more inclusive.

CHAPTER 3

challenges

Existing infrastructural challenges and bottlenecks largely prevent urban residents, especially those belonging to the lower economic strata, from using NMT efficiently.

Safety and security

1. NMT users are physically vulnerable as they share the common right of way with motorised vehicles, which ultimately leads to accidents and fatalities.²³ For instance, in Bengaluru, three pedestrians are killed every two days on roads and about 10,000 are hospitalised every year.²⁴
 2. Due to the negative impact of sexual harassment, catcalling, inappropriate behaviour in public spaces by men, Indian women fear choosing NMT easily. Such problems can only be solved with widespread vigilance and security, accompanied with a change in mindset which is only going to be possible through long term sustained action.
 3. Inadequate secure parking and storage facilities and fear of theft of cycles are other concerns that urban cyclists face. Lack of space in households especially for the urban poor add to storage issues, even at one's home.²⁵
1. Given high traffic densities, it becomes a challenge to introduce new cycling lanes or footpaths for NMT users. This needs to be addressed with traffic calming mechanisms in streets where no separation is possible.²⁶ Such interventions need to be properly planned with support from various departments.

Design, implementation + maintenance

2. Bengaluru's public transport share is at 48%, but still the last mile connectivity to such transit points is currently neglected, both in funding plans as well while budgeting for maintenance. This reduces uptake.²⁷
3. Public streets and footpaths made for the benefit of citizens for walking are often encroached by street vendors, taken over by motorbike riders and misused as a parking space for countless vehicles. Data shows that the number of "official" footpath riding and parking offences grew by nearly 40% and 17%, respectively, in just 1 year between 2017 and 2018.²⁸
4. Lack of footpath continuity, unscheduled digging up of roads for utility repairs and conditions like sewage water running onto roads leads to reduction in share of NMT users.²⁹

Legislative and administrative support

1. The institutional framework for handling urban transport is fragmented leading to diffusion of responsibilities. Involvement of multiple government agencies in planning, execution, regulation, licensing and permits leads to chaos and reduced responsibility in case of failures.
2. Development projects seldom account for NMT. They also lack budgets and directions for maintenance and servicing of footpaths and streetlights. Most of the focus goes on developing infrastructure for motorised traffic.³⁰ With a lack of budget and legislative support, it becomes challenging to implement any interventions for promoting NMT.
3. The current traffic rules and laws in India apply to motor vehicles with not much recognition for safety of pedestrians or sharing roads with cyclists. Policy interventions need to be done to existing legislations formalizing the rules and laws benefiting cyclists and pedestrians.

CHAPTER 4

way forward & policy recommendations

Based on our analysis of problems in NMT in Bengaluru, challenges faced by women, and best practices around the world, a few gender-specific interventions that can be implemented by decision makers to increase modal share of NMT include:

Infrastructure

Infrastructure for NMT can be improved and efforts be taken to create and maintain well-lit and uniform cycling paths.

1. Design specifications should include paved shoulders or bike lanes in plans for any new developments or major reconstruction repairs planned for roads. For areas with dense populations and utility centers such lanes should be mandatory.
2. Design for urban centers should be highly influenced by NMT—and should include separate roads, preferential signal systems, availability of repair shops, etc.
3. More funding should be provided for infrastructure projects to factor in NMT related interventions. Even though there are existing schemes for improvement of NMT facilities like AMRUT, most cities have utilised AMRUT funds for other urban projects; NMTs have seen only 2% of total AMRUT outlays.³¹ Policy makers should look at available funding schemes and budget appropriately for positive interventions. They could also look at funding such schemes with revenue collected from carbon taxes.

4. Street-lighting for pedestrians should be prioritised and mandated for all roads. Policy makers should also make sure proper rules and timelines are present in plans, for regular maintenance checks for these streetlights. Solar powered street lights can be considered for widespread adoption to further reach sustainable development goals.
5. To ensure that enforcement of such interventions is effective and accountable, quarterly audits for NMT infrastructure should be planned and executed by the department of urban transport and other stakeholders, with fines and proper punishments imposed for any lapses.
6. Equal representation for women and urban transport experts should be ensured in any planning committee for NMT/urban mobility projects to inform and address various challenges.
7. All public transport hubs like bus stops, metro stations etc. and major junctions with bike lane connectivity, should provide parking decks with proper bicycle storage and locking facilities. Such parking spaces can be minimally charged to make up for budget allocations and maintenance.³²
8. Tree planting drives along footpaths can be conducted to increase shade on the roads for comfortable NMT experience. Local municipalities can be incentivised for planting more trees. This can also help in reducing the carbon footprint.

Safety and security

Safety and security of NMT users is of utmost importance and is a deciding factor for women to choose NMT as a mode of transport.

1. The traffic department should put proper checks in place to control speeding in roads used frequently by cyclists. A special demarcation for cycling lanes should be provided and violators should be penalised.
2. Proper surveillance should be ensured by installing CCTV cameras at appropriate intervals. Policy makers and plan approvers should ensure the presence of design principles that optimise natural surveillance with strategies such as adequate street lighting, street vendors, and active frontages, making it even safer for women to transit.
3. Frequent patrolling of cycling paths should be undertaken by law enforcement agencies. Community activists and leaders should be involved for local surveillance to ensure higher safety.
4. Public grievance and redressal portals should be audited and budgeted for proper and smooth functioning with special citizen helpline numbers and twitter complaint handles to report infrastructure issues or misuse. These should have proper redressal frameworks with operational costs budgeted for during the planning stage of these projects.
5. Once the pedestrian and cycling infrastructure is built, policymakers should revisit rules and regulations concerning motor vehicles to include pedestrians and pedalers.³³ Details like specifications for warning tiles indicating “only cycles allowed” or rules for mandatory helmet and blinkers on cycles need to be implemented effectively.

Accessibility

The use of NMT accessibility aids, which can lead to higher adoption.

1. Instructions, route info, and other information should be made easily available in common and local languages and in transit hubs, for people to effectively use such facilities.
2. Footpaths should be continuous in nature with less disruptions. Public infrastructure should have ramps in place for being more inclusive.
3. New buses owned by the state transport departments should provision for bicycle racks to make it easier for people to transport cycles to their destinations.

Awareness of the benefits of cycling and walking, along with plans for community riding can help promote faster adoption of NMT.

Awareness

1. Leaflets, and infomercials in local languages on benefits of cycling and walking can be created.
2. Programs like “Woman on bikes” and “Safe routes to school”³⁴ should be conceptualised for local context and implemented.

Financial

Financial challenges can reduce bike ownership and must be addressed.

1. The government should look at either subsidizing bicycles or reducing/ removing the tax component for cycles. The current GST rate of 12% may be removed or slashed to 5% for making cycles more affordable.³⁵
2. Free bicycle distribution schemes like Mukhyamantri Balak/Balika Bicycle Scheme (Bihar), Sabooj Sathi (West Bengal) should be implemented by other state governments for widespread adoption of cycles. Moreover, widows and women from lower economic groups should also be given free bicycles.

CHAPTER 5

conclusion

With Bengaluru being a densely populated city, NMT could serve as an ideal solution for the travel woes of its residents.

With Bengaluru being a densely populated city, NMT could serve as an ideal solution for the travel woes of its residents, while simultaneously improving access to economic opportunity for many and reducing the city's carbon footprint. But, for NMT to be accessible and readily available in the city, a collaborative effort is needed between the residents, the government and the city's urban planners.

The need of the hour is to address infrastructural shortcomings, revisit existing standards and incorporate gender sensitive urban design. Through conscious inclusion of women in the mobility discourse, we can make Bengaluru's transport infrastructure work for its women.

endnotes

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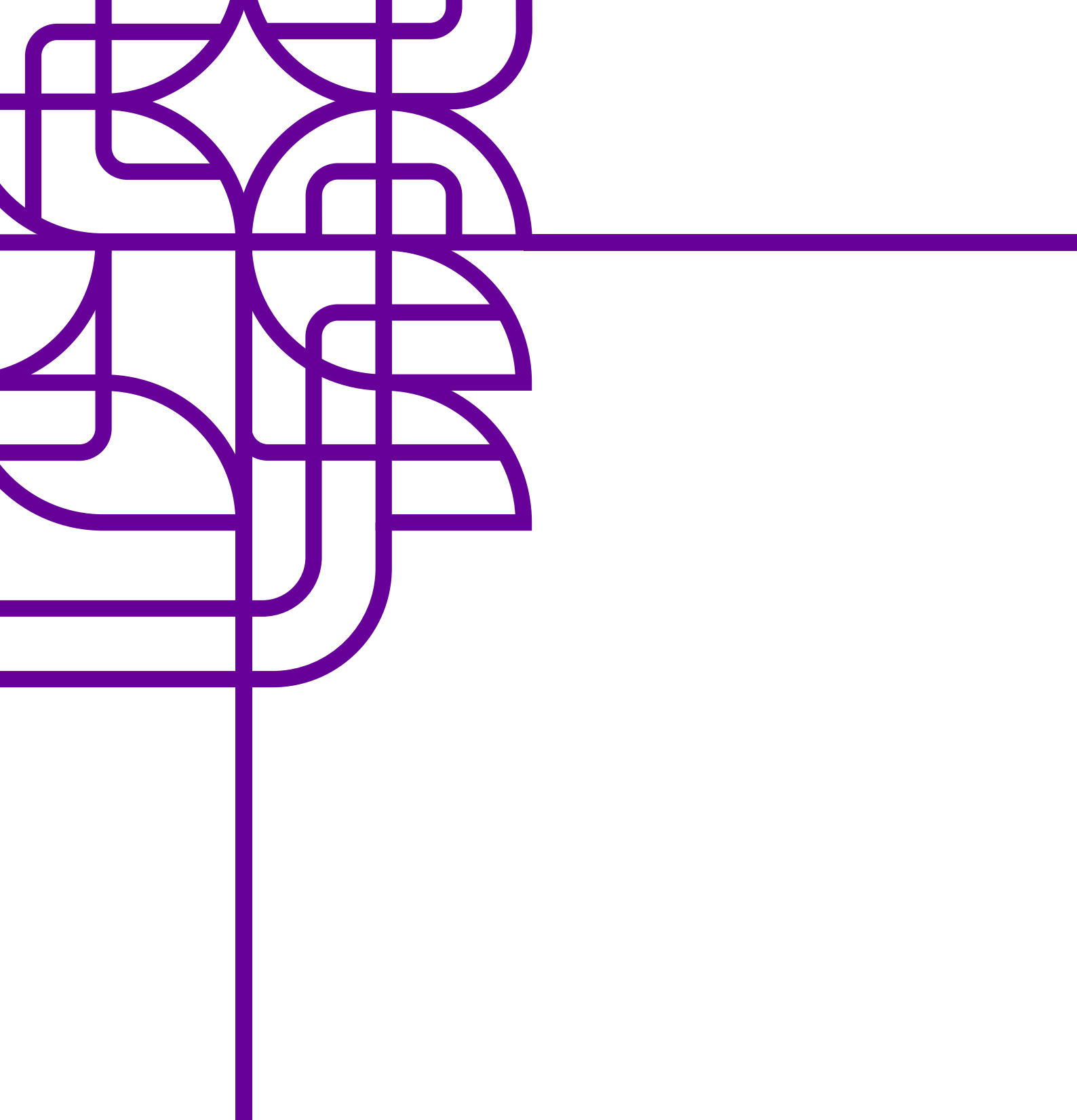
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