

# Sustainable Transport Magazine

No. 36  
December 2024



Better streets.  
Better cities.  
Better lives.

From the transition to electric buses to the movement for parking reform, this issue highlights trends and achievements in sustainable, equitable transport worldwide.



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December 2024



— Images (Top, Bottom) and Cover: ITDP Global  
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## Letter from Heather Thompson, CEO: Now More Than Ever, We Need to Invest in Sustainable Transit for All

**2024 has been a critical year** for governments all around the world, with over 60 countries holding national elections. From the U.S. and Mexico to India and Indonesia, ITDP is working in regions where political changes will have big impacts on the future of our transport and our cities. With the climate crisis on the agenda, it is crucial that decision-makers at all levels work towards policies to drastically reduce greenhouse gas emissions and shift our economies away from fossil fuels. It may be an uphill battle but, now more than ever, it is one we must commit to fighting.

We at ITDP know that investing in urban public transit systems that are cleaner, more affordable, and more reliable is essential to achieving our climate goals. For this to happen, we urgently need to address the underinvestment in public transit that is preventing us from realizing its climate, economic, and social benefits. The World Bank estimates that governments worldwide face a financing gap for transport infrastructure of up to USD \$944 billion annually through 2030, with public transit being one of the greatest areas of need.

This gap is especially tangible in low- and mid-income countries (LMICs) where declining support for transit is visible in aging vehicles, poor infrastructure, unreliable service, and limited coverage that negatively impacts hundreds of millions of people. In fact, according to the World Bank, public transit is often less than 10% of total infrastructure spending in many LMICs. This is supported by data from regional institutions like the African Development Bank, which placed the continent's transport infrastructure financing gap at over USD \$25 billion per year. Similarly, the Inter-American Development Bank

estimated that Latin American countries need to invest at least USD \$222 billion in public transport between 2020 and 2030 just to keep pace with the region's sustainable development targets.

Governments and public sector actors are the primary sources for financing and maintaining our transit systems, far beyond what fare revenue or private investment alone provides. As such, this burden of underinvestment is on the shoulders of policymakers and public institutions to address, and not doing so fundamentally threatens our chance of keeping global temperatures under the critical 1.5°C threshold. Populations living in LMICs will continue bearing the brunt of the climate crisis if those in power do not change how they support and plan a more sustainable transport sector. We need governments, financial institutions, and development banks to commit to more collaborative financing mechanisms that make public transit a priority everywhere.

An essential component of this transformation requires us to pivot away from an over-reliance on private vehicles and sprawling urban development. The unfortunate fact is that, in most countries, public transit budgets remain a fraction of overall transport funding that is mostly earmarked for highways, parking construction, and fuel infrastructure. In ITDP and UC Davis' *Compact Cities Electrified* research, we found that the cost of car-centric development requires nearly 50% more spending from governments and individuals than mobility systems based around public transit.

To break this pattern, the public sector needs to shift the way it allocates existing funds and explore new financing



— Transmilenio has become one of the world's largest bus rapid transit (BRT) systems, serving millions of people daily. Image: ITDP Global

channels from a variety of sources. In the *Compact Cities Electrified*, we found that sustained investment in electric vehicles, coupled with dense transit-oriented development, is the most cost-effective way to significantly reduce transport emissions while supporting economic growth. In fact, such a scenario could reduce direct costs and save the world nearly USD \$5 trillion each year through 2050. Our series of country-specific reports dive even deeper, using regional data to offer targeted recommendations for achieving this scenario at national levels.

While there is no silver bullet for the resource challenges facing transit systems, this period of political transition is a crucial moment to double down on financing and support for sustainable mobility as a cornerstone of climate and infrastructure agendas. Developing more cross-national funds, innovative financing instruments, and public-private partnerships are just some ways that decision-makers can leverage the diverse resources available.

We already have models in the Global South where such partnerships have led to substantial change. Bogotá, Colombia's Transmilenio BRT system is one well-cited example, where a combination of tax revenue, government subsidies, and development bank loans helped the system expand into one of the world's largest over just two decades. The system now serves more

than two million daily riders and has reduced the city's transport emissions by an estimated 40 percent. Since 2012, continued investment in Transmilenio has produced significant results — more than 1,600 tonnes of CO<sub>2</sub>e emissions reduced per million USD invested, according to ITDP research.

For comparison, every million USD spent on highway expansions in Bogotá would, hypothetically, produce 4,600 tonnes of emissions from increased road transport. From cities in Latin America to East Africa, the evidence is mounting — investing in public transit yields better returns for the climate and economy. Now, we just need to encourage our leaders to recognize and leverage these benefits on a much larger scale.

The future of our cities depends on the extent to which we make public transit, walking, and cycling a priority. Otherwise, the world will continue to widen resource gaps that further endanger our planet and communities. As you will read in this issue of *Sustainable Transport*, in this time of uncertainty, ITDP is committed to work that ensures that sustainable, equitable mobility remains high on government agendas. I hope you will join us in fighting for a vision for transit systems that are well-funded, well-managed, and accessible to everyone.

Sincerely,  
Heather

# E-Buses Are the Solution for Clean, Equitable Public Transport Everywhere

By Beatriz Rodrigues and Aimee Gauthier (ITDP Global)



— Government support is helping subsidize the e-bus transition in cities like Pune, India. Image: ITDP India

**All over the world**, electric buses (e-buses) are becoming a cornerstone of sustainable, efficient public transport. As cities grapple with rising pollution, greenhouse gas emissions, and congestion, e-buses offer a powerful solution for the future of our transit systems. When coupled with infrastructure improvements and transit-oriented planning, e-buses pave the way for cities where more people can choose public transport over private vehicles. They are not merely a technological change; they also represent a shift towards cleaner and more reliable mobility that benefits all communities, especially those living in the Global South.

With buses accounting for more than 50% of public transport trips worldwide, electrifying urban buses at scale is a crucial move to lower emissions, boost economies, and make cities more livable. In many of the regions where ITDP works, we are seeing cities test new technologies with e-bus pilots and begin to scale their fleets with the support of new national programs that boost procurement and bring down costs. Now, public transport stakeholders must act where the rubber meets the road to ensure broader adoption from the bottom on up.

### City Pilots Are The First Step

Worldwide, an estimated 635,000 e-buses are already operational as of 2023 and that number is growing. The process of deploying e-buses and charging infrastructure is one that requires strategic trial, iteration, and feedback. Pilot programs are essential for identifying challenges early on so cities can minimize the risks and adjust operational strategies to local contexts. The teams at ITDP see this transformation first-hand, having worked closely with partners in many first-mover cities on their pilots. This includes assessing the barriers — from complex geographies to inequities in access — alongside the opportunities to help inform comprehensive roadmaps for scale up. Promising evidence has emerged from pilots in cities large and small that are encouraging more national level commitments to electrification.

Latin America, for instance, is expected to have 25,000 e-buses on the road by 2030 and thus would become the largest market outside of China. ITDP is working with cities and institutions in the region to gather learnings from pilots to develop more replicable frameworks. In the city of **Mérida, Mexico**, e-buses were piloted on high-traffic bus routes starting in 2022. To support further expansion, the city invested in charging depots and the construction of a photovoltaic power plant to bolster energy capacity. Following the initial pilot, the city debuted an all-electric IE-Tram bus rapid transit (BRT) system in late 2023, a first-of-its-kind BRT in Mexico that is expected to serve over 25,000 users daily. In planning the system, ITDP worked with Mérida to evaluate possible corridors and identify routes for maximizing energy efficiency as the city aims to cut overall emissions by 25% by 2030.

**São Paulo, Brazil** launched its first e-bus pilot in 2019 following regulations that set a target for net-zero emissions from road transport over two decades. E-buses were introduced on the city's SPTTrans routes in high-traffic central and southern districts,

offering vital data on charging, accessibility, and viability. The city reinforced its commitment to electrification in 2021 with a goal to deliver at least 2,600 e-buses by 2025, coinciding with a citywide wind-down on the procurement of diesel-fueled buses. While the city is currently behind on its goal due to charging and grid challenges, it is continuing to allocate substantial investments from the federal government and development banks to support more purchasing and improve infrastructure.

Across the world in South Asia, similar momentum has picked up in recent years. ITDP worked with officials in **Pune, India** on the city's first e-bus pilot which launched with 150 vehicles in 2019. Primarily serving high-demand BRT corridors, the pilot allowed transport authorities to gather important insights into fleet range, depot positioning, and technical capacities. Pune's case, along with other pilots at the time, helped the national government refine its *Faster Adoption and Manufacturing of Hybrid and Electric Vehicles* (FAME) incentive scheme. Following the end of its second phase, FAME's lessons led to the announcement of more targeted e-bus incentive programs from the Indian government over the past year.

In Southeast Asia, the world's largest BRT system (Transjakarta) in **Jakarta, Indonesia** reached a milestone of serving more than one million daily riders in 2020. With a surge in transit ridership, Jakarta was the first city in the country to pilot e-buses in 2019. In 2022, Transjakarta scaled its tests with 30 buses on select routes. ITDP and partners provided technical support to the city, helping analyze vehicle performance, operations, and emissions impacts in tandem with strategies for expansion. While transitioning all of Transjakarta's buses by 2030 is a lofty target, it is also one that city and national stakeholders acknowledge is a climate imperative. This year, ITDP debuted an electrification roadmap with the Indonesian Ministry of Transportation to advance commitments for e-bus deployment across ten major provincial capitals.

### Electrification Can Drive Economies

As city pilots provide insights into the technical challenges and opportunities, national-level policymakers are beginning to embrace the economic and investment benefits offered by e-buses. When transport networks are well-planned and efficient, they foster more transit-oriented development that spurs commercial growth, job opportunities, and green industries. Electrification demands more than just the replacement of traditional buses — it requires significant investments in shoring up infrastructure, manufacturing, operations, and energy management. Research indicates that, on average, each e-bus saves around USD \$400,000 in fuel expenses and USD \$125,000 in averted maintenance costs over its lifetime when compared to diesel-fueled buses.

Large-scale procurement that pools e-bus purchases across multiple cities with support from national governments can further reduce the costs to individual cities. When these savings are scaled to entire fleets, it can be to the benefit of both governments and the public alike. As more countries embrace the economic pathways for electrification, some are also committing



— E-buses on the road in São Paulo, Brazil, where the country is investing more into electric mobility. Image: ITDP Brazil

to new financial incentives and regulatory frameworks that demonstrate top-down support. Last year in Brazil, for example, Rio de Janeiro's mayor, governor, and the country's President collectively announced an investment package for the city of over USD \$300 million to boost the quality of the local BRT system and help procure 700 new buses. The President's recognition of the climate and economic potential of Rio's bus system indicates a boost for e-bus adoption across all of Brazil.

In fact, the country's Ministry of Cities announced an investment just this year of USD \$1.8 billion into fleet renewal projects in 98 municipalities that includes subsidies for over 5,300 electric and hybrid buses. In neighboring Colombia, where the capital of Bogotá is home to the region's largest BRT, the country committed to co-financing the acquisition of 8,500 e-buses through an impressive USD \$7.5 billion national fund. This fund draws on a mix of national bonds, international investments, and private financing, demonstrating a diverse approach to supporting e-bus deployment in regions where bus systems are the most essential.

Across the world, India's PM E-Bus Sewa program is building and improving on the previous commitments of the FAME scheme. Debuted in 2023, PM E-Bus Sewa is allocating nearly USD \$2.4 billion to help procure 10,000 e-buses across 169 Indian cities through a mix of public-private partnerships. This commitment is part of a national push in India to increase the share of electric vehicles on the road by focusing on public transit. And, in

Indonesia this year, an analysis by ITDP presented to the Ministry of Transportation found that the implementation of 6,600 electric buses in 11 priority cities will require an investment of USD \$2.5 billion by 2030. To achieve this, the Ministry is preparing an e-mobility implementation plan and a directive to advance transport electrification countrywide.

### **A Better Vision for Public Transport**

As more governments take steps to embrace e-buses, new investment channels are also growing for multi-national funds, climate financiers, development banks, and many other actors to join in the movement. In tandem with the creation of new industries and jobs, the long-term direct and indirect cost savings of e-buses make them a clear solution for the future of urban transport. To successfully move from city pilots to national commitments, however, decision-makers need to prioritize strengthening policy frameworks, building financial incentives, and integrating e-buses into their larger mobility strategies.

A future built around e-buses not only helps redefine the public transport experience, but is also the foundation for healthier communities, economies, and environments everywhere. As we approach the critical climate deadlines of the Paris Agreement, stakeholders at all levels must align their goals and prioritize emissions reductions within the transport sector. As ITDP continues to build on the momentum for electrification, we know that a vision for well-managed, well-funded, and sustainable public transport is possible — and it is on the horizon.



# As E-Bike Surge, We Need to Address the Opportunities and the Challenges

By Dana Yanocha (ITDP Global), Lorena Freitas (ITDP Brazil) and Qiuyang Lu (ITDP China)



— Across China's cities, pedal-assist and motorized e-bikes are fast-becoming a primary mode of transport. Image: ITDP China

**If you live in any city**, you have likely noticed an upswing in people riding electric bikes, whether for delivering goods, as a shared bike, or for everyday travel. E-bikes, or electrically powered two- and three-wheeled cycles, have gained popularity in recent years since they can cover longer distances than traditional pedal bikes and require less effort. E-bikes are slower and lighter than other two-wheelers like mopeds and motorcycles and can be used in most cycle lanes. E-bikes can replace vehicle trips in many cases, significantly reducing carbon emissions and traffic congestion while contributing to more livable, accessible cities.

The growing popularity of e-bikes also presents manufacturing and economic development opportunities in an emerging sector. E-bikes make up about 15% of the market for all-electric vehicles globally, and this is poised to grow. Despite their potential, many city and national governments have yet to define e-bikes clearly, require quality standards, or state where and how riders should safely use them. This lack of clarity has confused riders and retailers alike, particularly amidst questions about the safety of low-quality lithium-ion batteries and chargers. This year, ITDP released a report as part of its global Cycling Cities campaign focused specifically on e-bikes. The publication

offers key recommendations for national-level action that will allow governments to fully harness the economic, climate, and mobility benefits of e-bikes.

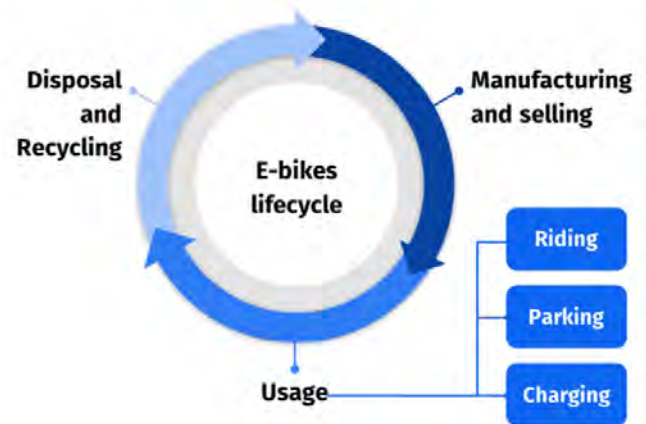
One primary recommendation is for governments to start to view e-bikes — and cycling more broadly — as an essential element of a holistic urban transport network. In regions like China and Brazil where e-bike usage is rapidly growing, we can gain important insights into challenges and opportunities for their uptake. China already has hundreds of millions of e-bikes on its streets, primarily deployed across bikeshare, delivery fleets, and individual owners. This has required local governments to set clear quality standards, safety regulations, and mobility plans. Meanwhile, in Brazil, the regional e-bike market demonstrates a burgeoning sector where more governance will certainly be needed. From the examples of both countries, we can see significant potential in the future of well-managed, well-funded urban e-bike policies.

### Taking Action on China's 400 Million E-Bikes

Since the 2000s, China has been the largest market for e-bikes, representing over 90% of annual global production and sales. E-bike ownership has increased from 110 million in 2011 to nearly 400 million in 2023, meaning that, on average, one in every four people in the country owns one. It is important to note that China's e-bikes commonly feature a throttle, allowing motors to provide power without riders needing to pedal. Therefore, these fleets of e-bikes are more like scooters or light mopeds, rather than traditional electric-assist pedal bikes, but are still required by national regulations to only have a maximum speed of 25 km/h along with other maximums for weight, engine power, and battery voltage. Collectively, these forms of e-bikes represent a major mode of micromobility for millions of Chinese.

While these forms of e-bikes are booming in popularity, fire and road safety concerns are rising nationwide, often due to bad batteries, poor charging behaviors, and a lack of traffic regulations. Battery and electrical failures also often correspond with road accidents and crashes. In response to these urgent issues, China initiated a nationwide campaign in 2024 to address safety management practices for the full life cycle of an e-bike vehicle, from the initial production to the recycling of old parts. As a starting point, a series of mandatory standards covering the safety and quality of vehicles, batteries, chargers, and helmets have been introduced at a national level.

Many city governments are also taking action to provide more reliable e-bike parking and charging infrastructure to accommodate users. Some are also engaging in proactive outreach campaigns to prevent risky charging and riding behaviors. Nanning, a city in southern China with over three million e-bike owners, implemented a series of educational programs to promote safe e-bike usage and reduce traffic violations. As part of the registration process, e-bike owners are required to participate in safety courses and successfully pass exams to obtain a plate number. If riders are caught violating regulations, they are mandated to undergo other safety interventions. These types of hands-on and phased approaches



— Governments should consider the full life cycle of an e-bike when developing regulations and standards. Graphic by ITDP

to e-bike management and safety provide owners and riders with a deeper understanding of their roles and responsibilities on the road.

By working together, government agencies, manufacturers, and policymakers across China can continue to craft cohesive policies and incentives that improve the e-bike and road experience for everyone. By taking a full life cycle approach to e-bike governance, public and private stakeholders in China can help ensure the quality and sustainability of e-bikes from initial manufacturing to daily usage to end-of-life disposal.

### An Emissions Opportunity with E-Bikes in Brazil

On the other side of the world, the usage of e-bikes in Brazil's cities is experiencing a similar, albeit more gradual, growth pattern. Notably, there was nearly a 10% rise in e-bike sales between 2021 and 2022 in the country. Projections for 2023 indicate a further increase of 19% to 27% in new e-bike sales. Despite a decline in the average price of e-bikes, these vehicles remain unaffordable for a substantial segment of the Brazilian population, which may point to their slower market growth. At the same time, the inclusion of electric assist bikes across many bikeshare systems is facilitating more access than ever before in major cities like Rio de Janeiro, Belo Horizonte, São Paulo, and Salvador.

As efforts to promote low emission zones (LEZs) grows across Brazil, there is a crucial opportunity to embrace more e-bike forward policies and cycling infrastructure investments. LEZs are designated areas where promoting less polluting travel and goods delivery modes allows cities to assess sustainable mobility strategies. By promoting e-bikes and three-wheelers as viable alternatives to cars, they can play a significant part in reducing emissions in busy urban areas. Utilizing lightweight e-bikes for goods and service delivery is particularly important by minimizing congestion, improving road safety, and minimizing



— In Brazilian cities like Rio de Janeiro, e-bikes have great potential for goods and services delivery in place of cars and trucks. Image: ITDP Brazil

the need for parking storage in dense commercial and residential neighborhoods.

Considering this context, ITDP Brazil has worked closely with the government in Rio de Janeiro to assess the potential impacts of e-bikes and three-wheelers within the city's pilot LEZ area. The city already has a significant number of delivery services operated by e-bikes, particularly within the city's bikeshare system. According to data from the bikeshare operator, between 2021 and 2023, the system recorded more than 3.4 million trips, with 15% of these trips designated for delivery and 36% of those carried out on e-bikes. Within Rio de Janeiro's LEZ, the share of trips for delivery activities is particularly noteworthy as the area accounts for over 11% of the city's total number of bike-based pick-ups and returns. Although these delivery numbers represent only a portion of the city's overall e-bike usage, it does highlight the mode's growing demand, environmental benefits, and economic potential.

The city's LEZ also identified several challenges to e-bike usage that can be applicable to other Brazilian cities. These include assessments of inadequate cycling infrastructure, poor road safety regulations, public security concerns, high ownership costs, and a lack of proactive sustainable mobility policies. To leverage the potential of the e-bike sector, city and national

governments can take note of some of the progress underway in China to get ahead of a surge in ridership. Investments in better public cycling and charging infrastructure, coupled with safety and ownership-focused regulations, are important for improving the state of mobility more broadly. Furthermore, cities can provide more incentives for companies to leverage e-bikes as a last-mile delivery method, helping create jobs while reducing emissions and congestion. If planners and decision-makers in Brazil take a proactive approach to e-bike management in the near-term, they may be on the cusp of a transformation nationwide.

From China to Brazil, we can see that there exists both barriers and immense potential in embracing e-bikes. If local and national stakeholders start by addressing issues of access, safety, affordability, and integration, e-bikes can serve as a major engine of economic growth and emissions reductions. One method for cities to start testing the viability of e-bikes is to offer them as part of bikeshare and rental programs, allowing people to experience them with a low barrier to entry. This, of course, should align with plans for cycling infrastructure that makes it easier and safer to ride in every neighborhood. As ITDP's Cycling Cities campaign continues to advocate for improvements to cycling access worldwide, a fundamental component is ensuring that e-bikes are included in the transport agenda so that everyone can benefit from their growth.

# To Combat Extreme Heat, Let's Invest in Better Walking and Cycling Networks

By Madeline Liberman (ITDP Global)



— This year, extreme heatwaves swept major cities like New Delhi, India, and compounded mobility challenges. Image: ITDP Global

**Between March and June of this year**, extreme heat took its toll across India. Temperatures climbed to 50 °C (122 °F) in Eastern India during the region's longest-ever recorded heat wave. In the city of New Delhi, almost 200 unhoused people died from heat-related illness in one week in June according to Reuters. Outdoor workers in the city suffered too: "My body can't take it, but I have to keep cycling," said one bicycle rickshaw driver in a 2024 CNN report. As witnessed in New Delhi, moving around outdoors becomes increasingly unsafe as today's cities heat up from climate change. But that does not have to be the case for the cities of tomorrow. It is both possible and crucial to invest in heat-safe walking and cycling infrastructure to save lives. What's more, broader walking and cycling investments can help mitigate the deadly cycle of climate change and heat waves.

Cities around the world are now hotter than ever. In addition to global warming, urban areas tend to be warmer than nearby suburban and rural ones because they have less green space and more heat-absorbing buildings and roads. Extreme urban

temperatures can be especially dangerous for people walking and cycling, including those who use wheelchairs or other mobility aids. Heat stress combined with physical exertion can lead to dehydration, heatstroke, and cardiovascular strain.

Certain populations are more severely exposed to heat and are more vulnerable to that exposure: that includes the young and the elderly, lower-income people, marginalized racial communities, people with disabilities, unhoused people, and outdoor workers. Many people in these groups rely on walking and cycling outdoors as an affordable and accessible mode of transport. Additionally, marginalized and lower-income neighborhoods tend to have less green space, more concrete and asphalt, and fewer health and infrastructural resources. All of this means more exposure to unsafe outdoor conditions in the heat.

To combat the dangers of walking and cycling while hot, especially for heat-vulnerable communities, cities need to employ both immediate and sustainable long-term solutions in

the built environment. There are plenty of short-term strategies to upgrade existing infrastructure to be more heat resilient. A range of heat-focused, cost-effective street improvements are emerging around the world, including:

- Preserving and planting native trees and vegetation that cool and shade people walking and cycling, especially in areas that have less green space
- Coating roads and pathways with lighter-colored coatings that absorb less heat, and using heat-resilient construction materials
- Installing inexpensive shade tarps
- Using permeable pavers that allow water to filter through, reducing ground heat
- Sheltering outdoor public transport stops
- Adding misting systems, which cool down the microclimate of walking and cycling paths
- Providing free hydration supplies and heat safety education during particularly hot periods
- Ensuring public access to potable drinking water

It is worth noting that cities have existed in hot climates for centuries, primarily with narrow, shaded, and nature-integrated streets that stay cool naturally. Modern cities, however, have given way to vehicle-focused streets and infrastructure that have made heat-intensive tar, asphalt, and concrete much more dominant. As we plan for a hotter future, resilient street improvements can include the tried-and-true techniques of ancient cities with newer technologies. They should also always prioritize the populations and areas that are the most vulnerable to extreme heat.

To achieve this, cities need to broadly increase walking and cycling investments in order to make active mobility easier, safer, cooler, and more accessible in the long term. Compact city planning centered around active mobility options plays a large part in lowering urban temperatures. This is because sprawling, car-centered development eats up green space and replaces it with large swaths of heat-absorbing roads and parking lots. A 2010 study of 83 cities in the United States even found that the most sprawling cities had the greatest increases in extreme heat events over time. Additionally, pedestrians and cyclists in sprawling cities must travel further to reach healthcare, jobs, and essential destinations. In compact cities centered on green infrastructure, people can spend less time traveling in unsafe heat conditions and still access the places and services that are necessary during heat waves.

When it is safer and easier to walk and cycle, more people will get out of their cars and fewer will buy cars in the first place, helping address a main contributor to climate change. ITDP's



— Wide, shaded paths in Yichang, China, are used by pedestrians and cyclists of all ages. Image: ITDP China

own research has shown that up to 29% of pedestrians and up to 16% of cyclists on new, high-quality paths have shifted away from using high-polluting private vehicles. With the rise of e-bikes, cycling can certainly become an attractive and less strenuous travel option, even on hotter days.

This modal shift results in cleaner air, safer streets, accessible transport networks, individual cost savings, and fewer emissions. By building and improving over 100 kilometers of footpaths, for example, Chennai, India prevented between 4,200 and 12,000 tonnes of emissions per year. The extensive protected cycling networks in Guangzhou, China and Bogotá, Colombia save about 16,000 and 22,000 tonnes per year, respectively. If more cities replicate this work, they can also begin to reduce the vast amounts of planet-warming gases produced by road transport.

Some cities are already moving towards both short- and long-term improvements. Since 2013, the city of Yichang, China has built a vast network of bicycle lanes, footpaths, and green spaces in collaboration with ITDP China, including over 192 kilometers of linear parks. This infrastructure includes heat safety features, such as shaded pedestrian islands near BRT stations. Along one avenue, the city built covered walkways and planted more than 700 trees. The city's investments are helping create a safer environment for pedestrians and cyclists while encouraging more people to choose active mobility.

With global temperatures still poised to spike, our cities cannot wait any longer to address the impacts of extreme heat on pedestrians and cyclists. For people who lack other transport options, public resources like increased shade, seating, drinking water, and beyond can quite literally be lifesaving. More broadly, building bike- and pedestrian-friendly cities is critical to lowering emissions and helping governments reach their climate goals. The dire heatwaves of the last few years should be wake-up call for every city to invest in better walking and cycling infrastructure today.

# Reforming Parking Doesn't Require Cities to Reinvent the Wheel

By Jacob Mason and Dana Yanocha (ITDP Global)



— In Guadalajara, Mexico, efforts to manage parking demand offers the potential for a better use of street space. Image: ITDP Global

**In the city of Guadalajara, Mexico**, sustainable mobility is making strides. The city has been implementing more shared bikes, safer bike lanes, and improved pedestrian pathways alongside a new bus rapid transit (BRT) line. But another key component of the area's transformation is lesser known: better parking management. Our streets are critical for facilitating walking, cycling, and public transport, in addition to private vehicles. But in too many cities, parking has become the primary use of most street space. Unlike other aspects of transport, which require government infrastructure and support, parking often flourishes in the absence of public intervention. Parked cars are overtaking curb space, bike lanes, crosswalks, and footpaths, making it harder and less safe for everyone to move

around. In many cities, a lack of clear rules, education, and enforcement leads to parking behaviors that are making our streets hostile for everyone. It is time to rethink our cities' relationship with parking.

## Where Parking Policy Falls Behind

Even when parking is addressed, governments often focus on reacting to undesirable behavior, like double parking or crowding at intersections. In other circumstances, parking is treated purely as a revenue source to offset taxes. Too often, parking policies are implemented with little connection to broader policy goals, such as improving transit access or reducing air pollution, or even as part of a larger vision for urban transport. Many cities,

## PRICE ON-STREET PARKING



- ▼ Less congestion
- ▲ Increased municipal revenue
- ▲ Street space prioritized
- ▲ More parklets and outdoor dining space

## ELIMINATE OFF-STREET PARKING MINIMUMS



- ▲ More active streetscapes
- ▲ More green space
- ▲ More affordable housing

## CITIES THAT RETHINK PARKING

Create more equitable and sustainable urban environments that make room for all forms of mobility.



— Infographic by ITDP

for example, might just install parking meters in busy areas to raise revenues, but fail to consider how the funds can benefit other transit modes.

A more thoughtful approach to on-street parking policy is foundational to supporting comprehensive, equitable mobility in any city. Improvements to street-side parking and curb management can help keep sidewalks and cycle paths clear, for instance, making walking, cycling, and transit stops easier to access. Charging the market rates for on-street parking can also make the true cost of each car trip more explicit, helping make other modes more attractive by comparison. The revenue gained from better management can, in turn, fund investments into infrastructure for pedestrians, cyclists, and transit riders.

When it comes to off-street parking and garages, cities that reduce or eliminate requirements for parking enable developers to instead build more housing units per building, potentially reducing the cost of rent and housing prices. This also makes it less expensive to live in more walkable areas. It can reduce the time required to build housing, as less construction is required for parking structures, allowing for more housing development.

The 'push' of higher parking costs and the 'pull' of better walking, cycling, and public transit can lead to more people choosing alternatives to driving. With more people using sustainable modes and increased demand, city governments are compelled to improve these options, even at the expense of

parking space. And, because parking is well managed, there is no perceived shortage of it and thus less public anxiety about shifting space away from parking to other uses. This cycle can certainly be perpetuated.

### Reinventing Parking, From Mexico to Indonesia

Growing evidence from ITDP's own work as a leading advocate for parking reform has made it clear that the provision of expansive, low-cost parking is bad for both the climate and urban mobility. Our teams have seen that policies to better regulate parking can and have proven successful in diverse cities. This may be attributed to new parking policies being relatively easy to implement on a pilot scale before being expanded. Because they can be implemented in smaller areas first, they are easier to tailor to local conditions and community feedback via different rules and pricing. For example, if parking spaces on a block need to be removed, parking costs on nearby streets can be increased to manage extra demand.

In cities in Mexico and Indonesia, ITDP has been collaborating with local governments and advocates to offer expertise and capacity in order to advance parking reforms. Fortunately, many urban policymakers are starting to understand the positive impacts of change and the need to reclaim street space, generate public revenue, and reduce the overall demand for driving. Many cities are also beginning to take the view that improving pricing and management is a critical piece of long-term transport and development planning.



— In Jakarta, Indonesia, rethinking parking can make public spaces more accommodating to pedestrians. Image: ITDP Global

For example, Guadalajara's municipal government initiated a series of reforms over the last few years to prioritize walking, cycling, and transit by restructuring parking and driving policies. A major aspect of this involved the expansion of regulated parking zones in the city's busy center. These zones feature variable pricing structures where parking fees are higher at peak hours. This approach discourages long-term parking in high-demand areas, ensuring that spaces are available for short-term users and incentivizing alternative mobility options. The revenue generated from this is subsequently earmarked for reinvestment in public transit and related infrastructure projects.

This helps to create a direct link between better parking management and the city's investment in sustainable transport, allowing Guadalajara to improve its overall public services while simultaneously reducing the need for private vehicle trips. In tandem with these reforms, Guadalajara has also focused on improving the reach of its cycling and pedestrian networks to provide more integrated mobility networks. Notably, the city has expanded its Mibici bikeshare program to serve more residents and tourists alongside upgrades to cycle lanes.

Across the world, in Jakarta, Indonesia, ITDP Indonesia has been working with the local government since 2017 to reshape their parking regulations. Amidst land scarcity, high congestion, and rising property costs citywide, ITDP Indonesia research found that, as of 2021, the 30,000 parking spaces in Jakarta's main districts amount to an astounding 265,000 square meters of land. To begin reclaiming this usable space from private vehicles, the government has adopted a technologically driven approach to parking management. One key initiative includes the use of smart parking systems that leverage mobile apps to help drivers locate available parking spaces in real time. By

minimizing the time spent searching for parking, this can help reduce congestion, improve traffic flow, and assist drivers in making better decisions. These efforts also incorporate dynamic pricing, where parking fees vary based on demand.

Jakarta has also been working to reduce minimum parking requirements for new building developments as part of a low emission zone (LEZ) pilot in central areas. New provisions integrated into the city's building codes recommend that percentages of building space previously allocated to parking should be shifted to parks, affordable housing, commercial areas, or other uses. In addition, as part of the LEZ, the new provisions require the amount of bicycle parking at buildings to be at least 10% of the total vehicle capacity to encourage more people to cycle. Collectively, these actions show promising momentum in one of the world's most congested cities, helping Jakarta become a model for reform.

The changes underway in Guadalajara and Jakarta are just a few examples of how rethinking parking can help policymakers and everyday people reshape our understanding of urban space and mobility. By reducing demand and reliance on private vehicle trips, these efforts demonstrate that cities do not need to employ drastic actions to shift behaviors and make walking, cycling, and public transit more accessible. Rather, by adjusting existing systems, removing outdated regulations, and leveraging new technologies, cities can influence when and if people decide to drive. It is no longer logical to continue building low-cost or free parking that puts a physical, financial, and environmental burden on everyone, especially when so many cities face crises of housing, climate, and equity. This begins by rethinking our relationship with both our vehicles and our streets.



# Tianjin, China Shows Us the Power of Investing in Sustainable Transport

By Alphonse Tam, Iwona Alfred (ITDP Global) and Xianyuan Zhu (ITDP China)



— Upgrades to street infrastructure have helped Tianjin’s residents embrace urban cycling. Image: ITDP China

**Situated to the southeast of Beijing**, the city of Tianjin, China has a distinctive character as a port and commercial center with a population of more than 13 million people. Its connection to key waterways and trade routes established the city as a center for the movement of goods, services, and people alike. Within the city itself, like many other urban areas in China, the economic growth of the 1980s facilitated a boom in bicycle manufacturing that made cycling a primary transport mode for millions. Even as late as 2003, 51% of trips within the city were

still reportedly made by bicycle. But, as the country continued to grow and automobile production expanded, car ownership in Tianjin rose sharply in the following decades.

This trend in car ownership, coupled with rapid industrial growth, gradually turned Tianjin into one of most congested cities in the world. By 2020, the bicycle mode share is estimated to have dropped below 30 percent. Tianjin has been uniquely primed for an evolution in its transport systems, given its geographic

Visit [STAward.org](https://www.staward.org)  
for more resources  
on Tianjin.



— Integration between transit, walking, and cycling facilities has made Tianjin more accessible and sustainable. Image: ITDP China

and economic importance and potential to serve as a model for other cities. Thus, a major mobility transformation of the city's streets and infrastructure was jump-started nearly a decade ago with a project funded by the World Bank. As the project neared its end in 2023, Tianjin was honored with the **2024 Sustainable Transport Award (STA)** for its remarkable achievements to reduce congestion, lower emissions, and embrace walking, cycling, and public transport.

#### **A Milestone Investment**

Following the debut of China's *Twelfth Five-Year Plan* in 2011, cities nationwide undertook efforts to promote comprehensive, greener, and safer local transport networks. Given rising challenges with traffic and pollution in Tianjin, the government approved a key *Congestion Mitigation Plan* in 2013. It contained measures to reduce vehicle trips while encouraging more usage of public transport, cycling, and walking. At the same time, the city invested heavily in its metro system, completing a total of four lines with 135 kilometers by 2013 and planning for an

additional nine lines. But metro ridership at the onset was lower than expected, potentially because of the system's lack of accessibility and few connections to robust cycling and walking infrastructure near stations.

Enter the *Urban Transport Improvement Project* in 2015, funded by the World Bank and the national government. The project recognized policymakers' desire to boost metro ridership and expand access to bus lines and active mobility modes, while demonstrating the potential of investing heavily in integrated sustainable transport. Another goal of Tianjin's officials was to improve livability and mobility in popular neighborhoods to attract more young professionals and visitors to expand the technology, financial, and tourism industries that bridge Tianjin and Beijing. Notably, the World Bank's USD \$100 million loan for the project was at the time the largest investment of its kind in dollar value and in the quantity of non-motorized transport infrastructure implemented.



### Transit-Oriented Development for the People

Between 2015 and 2023, the work in Tianjin succeeded in advancing significant street upgrades citywide. It also helped build 126 kilometers of new and expanded cycle lanes, rehabilitate numerous parks and public squares, and redevelop the areas surrounding 96 metro stations and bus terminals. Smaller scale changes included the installation of more than 850 streetlights and traffic signals and new street drainage systems, all of which collectively improved the safety and operations of Tianjin's streetscape.

Nearly all of these changes were centered on transit-oriented development strategies that aimed to boost public transport ridership alongside walking and cycling. In 2023, metro ridership reportedly increased by over 25% compared to 2019 according to the city's data. In addition to the metro's upgrades, an estimated 200 kilometers of roads were redesigned with dedicated bus lanes, while over 180 streets were renovated to separate motorized and non-motorized traffic. The transfer areas between 96 subway stations, bus stops, and bikeshare stations were

further improved. This transit-oriented approach to integrated mobility systems formed the cornerstone of Tianjin's evolution and its 2024 STA honor.

By the end of 2022, daily metro ridership generated from these improvements in the city's central districts reached over 175,000, exceeding initial targets. Daily walking and biking trips in popular neighborhoods like Heping, Hebei, and Nankai reached over 150,000. Overall, transport-related emissions were reduced by an estimated 35,000 tonnes annually since the project began. Pedestrian and cycling accident rates also dropped by 8 percent, while resident satisfaction with the street environment increased by 27 percent. While challenges with motor vehicles and road safety certainly still remain, the impacts of Tianjin's infrastructure transformation helped achieve and even exceed expectations for what was possible for walking, cycling, and public transport usage.

### Setting a National Example

Tianjin's impressive work has gone on to influence both local and national policy across China. The findings from the city's studies and interventions since the conclusion of the project have helped inform the design of national pedestrian and cycling planning standards for other cities to employ. And Tianjin is already demonstrating that these changes can make a big impact — the mode share of walking, biking, and public transport together grew to more than 70% of the city's total transport mode share in 2022. This shift is remarkable for a city that, in just the preceding few decades, has followed a global trend of skyrocketing traffic, congestion, and air pollution.

Tianjin plans to continue enhancing its mobility integrations and modernizing systems by further refining its policy frameworks. Continued investment in electric and hybrid vehicles, the expansion of bikeshare, and additional upgrades to transport stations are just a few priorities. The city has also asserted that continued collaboration with the private sector, development banks, and organizations like ITDP will play a vital role for future growth. For the rest of China, Tianjin's current STA recognition has made it a model for what's possible when governments and institutions make sustained commitments to urban mobility.

**"We have achieved a milestone in sustainable transport, and we want to build on this momentum to continue expanding non-motorized access across the city. I believe that going forward we will be able to form world-class connections to cities like Beijing and further our cooperation with global organizations to realize a more sustainable future,"** said Lin Xuefeng, Director of Tianjin's Housing and Urban-Rural Construction Commission, when accepting the 2024 STA in Washington, DC.

# Advancing Gender Inclusion in Nairobi's Transport System

By Carlyne Mimano and Chris Kost (ITDP Africa)



— In planning new BRT corridors, Nairobi, Kenya, has an opportunity to improve access for women and beyond. Image: ITDP Global

**Accessibility in urban transport systems** is greatly influenced by design choices. These choices can either facilitate or hinder the mobility of various user groups, particularly women, persons with disabilities, older adults, and caregivers. In Nairobi, Kenya, a city with a population of over four million people, most daily trips involve walking, cycling, or public transport. However, unequal infrastructure investments have created significant challenges that limit people's access.

Inadequate maintenance and insufficient investment in public transport systems contribute to unsafe and often hazardous commuting conditions, especially for women, children, and people with disabilities. Like many cities, Nairobi's transport systems were not originally designed with inclusion or gender considerations in mind. However, Nairobi is also poised for transformation in this arena. Efforts to formalize the city's public transport through a planned bus rapid transit (BRT) system, enhanced non-motorized transport networks, and transit-oriented development are paving the way for a more inclusive, accessible Nairobi.

## Assessing Inclusion Along BRT Line 3

To ensure that the city's planned BRT systems are gender inclusive, ITDP Africa has been working with the Nairobi

Metropolitan Area Transport Authority (NaMATA) to assess the designs and operational plans for the BRT Lines 2 and 5. The team is also collaborating with the Transformative Urban Mobility Initiative (TUMI) to ensure inclusion in plans for the electric BRT Line 3, implemented by the Kenyan government with financing from European partners. The corridor will be approximately 12.5 kilometers in length, running from east to west and connecting hospitals, the Dandora rail station, and key market areas.

ITDP's team conducted key surveys as part of this work including: focus group discussions with women, children, and persons with disabilities along the corridor; interviews with *matatu* (minibus) operators; gender disaggregated counts to understand the split of public transport users; and interviews about travel patterns and preferences. Collectively, this work underscores the potential of Line 3 to incorporate considerations for women's mode choices and to address safety, operational, and accessibility concerns that would improve people's ridership and overall mobility.

In addition, assessments conducted along access routes that cater to Line 3 offer a detailed look at the current state of



— In Nairobi, the future of accessible streets and transport requires inclusive, gender-oriented planning. Image: ITDP Africa

infrastructure on adjoining streets that are critical to ensuring the corridor's accessibility via walking and cycling. Assessments of the condition of footpaths, walkways, cycle lanes, and bus and transport shelters were all key to developing a full view of mobility conditions. Gathering data on existing infrastructure challenges and opportunities is a cornerstone of the city's plans to ensure that Line 3 serves the most communities possible and can be an example for future inclusion strategies.

The survey and focus group findings highlighted notable gender and accessibility disparities among commuters along the corridor. Men are predominant amongst *matatu* and bus riders, with 53-56% male, 41% female, and 3-6% child users spread across all vehicle types. Women were more inclined towards larger vehicles and reported carrying more goods, suggesting that household responsibilities and the movement of goods often influence their travel needs.

In addition, many women and people with disabilities reported significant issues with street and station access, such as difficulties boarding vehicles due to a lack of ramps, few wheelchair areas, poor last-mile connectivity, and overcrowded terminals. In particular, women with disabilities felt compelled to travel with companions due to safety and accessibility concerns, noting an overall lack of support from both drivers and

operators. In some neighborhoods like Mathare and Dandora, women and caregivers further noted a lack of accessibility ramps at train stations, compelling them to seek alternative transport options. Taken together, these types of issues make the travel experience more challenging, unreliable, and unequal for women and other marginalized groups.

Harassment notably emerged as a key concern, with 61% of women reporting incidents of whistling, catcalling, or physical assault. Women noted that there are frequent cases of harassment by motorcycle riders, leading to the need for companions on accompanying trips to ensure safety. Rampant congestion, a lack of street lighting, and driver pressure to meet daily trip quotas further add to perceptions of stress and vulnerability on commutes. Many women also mentioned growing frustrations with a lack of standardized *matatu* service and fares, which has also led to growing cases of harassment.

The street infrastructure assessment revealed further accessibility and safety issues to note. Much of the existing infrastructure has insufficient pedestrian crossings, poorly maintained walkways, and inadequate lighting, making it unsafe for women, children, and persons with disabilities. Pedestrians often face high vehicle or motorcycle speeds and insufficient



— Equitable access in Nairobi requires broad improvements to streetscapes and facilities. Image: ITDP Africa

## Harassment is a key concern for women using public transport in Nairobi.

footpath widths, which are further restricted by encroaching street vendors.

In the area of Eastleigh, for example, people highlighted intense congestion while walking, especially during peak hours and festive holidays due to the high level of street vending activities. Other issues like poor drainage and unpaved surfaces without universal design features also make conditions unsafe. Lastly, the absence of accessible and secure amenities such as public toilets, bus shelters, and street lighting compounds all of these issues, not just for women but for multiple groups.

### Opportunities for Change

Establishing inclusive policies on transport is essential to infrastructure development that is gender-sensitive and supportive of equal protections for all. These efforts should include specific and measurable goals to achieve safe and accessible upgrades. The adoption of inclusive street design manuals and transport design frameworks can set a standard for the city's infrastructure development.

Contractual incentives for transport systems can also incentivize the participation of women in the work force across all levels. The formalization of the public transport sector offers great opportunities to improve overall service by ensuring regular operations, an adequate number of buses, and automated fare collection. In addition, sector formalization

can expand access to vehicle financing options, better working hours, and regular on-the-job training for women working in transport.

The BRT Line 3 corridor design should include physical and service integration with other corridors to ensure seamless connectivity throughout the city. Inter-corridor routes would save time for women who take chained trips or make multiple trips in a day. In addition, having appropriately sized stations with an adequate number of buses helps reduce congestion and overcrowding while reducing the likelihood of harassment. Stations and bus shelters with dedicated security, proper signage, lighting, and public toilets are also crucial to a comfortable user experience.

Prioritizing women in transport planning brings widespread benefits to everyone in the city. By creating a safer, more accessible environment that supports diverse travel needs, cities can facilitate more sustainable mobility that offers many climate, social, and health benefits. Inclusive transport designed with women in mind helps to reduce barriers to economic opportunities, education, and healthcare, empowering women to pursue professional and personal goals without the constraints of limited mobility. By addressing specific accessibility needs and integrating universal design measures, Nairobi's transport sector can be a beacon for women, persons with disabilities, older adults, children, and caregivers.



— The future of sustainable growth in Brazil requires electrifying transport systems like Rio de Janeiro's BRT. Image: ITDP Brazil

## With A Global Spotlight on Brazil, It's Time to Embrace Electric Mobility

By Leonardo Veiga and Clarisse Linke (ITDP Brazil)

**Earlier this year**, large Brazilian cities like Brasília and São Paulo were shrouded in visible layers of smoke and air pollution for days on end. On top of high temperatures, a combination of wildfires and energy-related emissions led to a state of emergency for millions nationwide. In Brazil and beyond, the climate crisis is an increasingly urgent and present problem that demands immediate action. Substantially reducing greenhouse gas (GHG) emissions across all sectors is crucial to achieving this, and Brazil has a significant role to play in the race to save the climate.

In 2025, Brazil will host UNFCCC's COP30 Belém, an annual gathering of global leaders convening to address environmental challenges and progress since the Paris Agreement. This event, alongside Brazil's G20 Presidency in 2024, presents a unique opportunity for the country to strengthen its work in energy decarbonization, particularly within the transport sector. To seize on this spotlight, Brazil's decision-makers must ramp up their efforts to put forward an agenda focused on equitable, low-emission mobility. In this arena, organizations like ITDP and our regional partners are committed to making transport electrification a fundamental piece of Brazil's leadership on the world stage.

### The Moment for Electrification

Brazil has committed to an absolute net GHG emissions target of 1.20 gigatonnes of CO<sub>2</sub>e by 2030, representing a 53% reduction compared to 2005 levels. Transport emissions play a significant



— ITDP is working with cities across Brazil to identify opportunities for fleet electrification and investment. Image: ITDP Brazil

role in this as it is currently responsible for 44% of Brazil's total energy sector emissions, having quintupled in the last five decades. With the urgent need to address this, the electrification of public transport fleets has recently been made a national priority with increased federal funding and subsidies. Brazil's 2023 New Growth Acceleration Program (PAC) development plan has even allocated 10 billion reais (over USD \$1.7 billion) to finance the acquisition of 2,296 electric buses, or e-buses, across 61 cities and seven states.

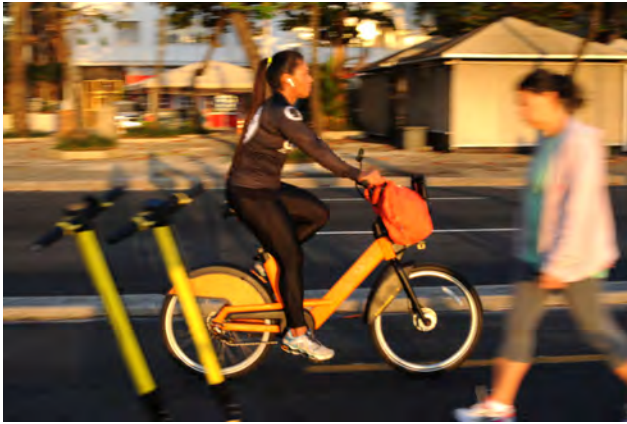
The e-bus industry is in fact growing rapidly in Brazil, with many regional manufacturers already producing vehicles to meet PAC specifications. Promising federal initiatives like the *Ecological Transition Plan* and New Industry Brazil Program aim to invest the equivalent of USD \$60 billion by 2026 into electric and sustainable transport development. The industrial MOVER Program was also created to expand the electrification of heavy-duty vehicles with subsidies and strategic investments into automobiles, trucks, and buses. Recent studies suggest Brazil could electrify up to 13,000 buses by 2030, positioning it as a leader in Latin America's e-bus market.

### Learning from Local and National Data

In support of decarbonizing the country's bus fleets, the team at ITDP Brazil has been conducting in-depth data analyses in collaboration with local and national government agencies. Using data from GPS, GTFS, vehicle fleets, topologies, and other parameters, researchers are working to estimate the emissions abatement potential of various electrification scenarios. At the country level, ITDP Brazil and partners have led a project with the Ministry of Cities to identify the number of traditional buses that could be rapidly replaced with e-buses, with considerations for energy demand, battery consumption, and without a significant increase in the number of vehicles. This analysis covered the country's 21 largest metropolitan regions and factored in the potential for more national investment in upcoming years. In total, 15 bus systems were analyzed, representing over 10% of the total number of urban buses in Brazil. This data will help the Ministry of Cities and government refine its framework for a mobility strategy that boosts both infrastructure and public transport growth.

Beyond the national assessments, ITDP Brazil has also been collaborating with cities like Rio de Janeiro and Belo Horizonte





— Promoting cycling access, especially with e-bikes, can complement the e-bus transition. Photo: ITDP Brazil

## With COP30 next year, Brazil has a chance to bolster its climate leadership in the transport sector.

to accelerate electrification within local contexts. In the case of Rio de Janeiro, the team identified multiple bus lines primed for electrification that maximize accessibility and economic impacts while minimizing upfront costs. After analyzing 29 bus lines in the Western and Central areas of the city, the findings identified that all of them were primed for electrification. While these lines represent just a fraction (7%) of Rio de Janeiro's buses in operation, the transition could benefit up to 700,000 nearby residents, including many low-income communities.

In Belo Horizonte, Brazil's sixth largest city, the city selected several bus lines for electrification as part of a plan to purchase 100 electric buses under the PAC program. To evaluate these lines' operations, topographical issues, and sites for bus depots, ITDP Brazil helped the city develop strategies for implementation and estimate budgets. With the full electrification of the 12 bus lines in the assessment, 380,000 residents (or 16% of the city's population) — including over 123,000 Black residents — would benefit from expanded e-bus access. In this proposal, transport electrification would also provide access to more than 340,000 formal job opportunities, potentially comprising 47% of all

formal economy jobs in the city. From this work in both Rio de Janeiro and Belo Horizonte, it is possible to see the potential economic, social, and emissions impacts of bus electrification at city- and region-wide levels.

### Towards Progress

Taken together, this work offers valuable insights into the barriers and opportunities for electric mobility across Brazil. Key lessons include: the need to consider local topography and infrastructure, the benefits of integrating e-bus lines, and the critical role of data in making informed planning decisions. Additionally, improving regulations to enhance data availability and transparency is crucial to electrification policies that are robust and actionable. Notable gaps in knowledge also emerged from this work, including the limited information on the country's energy supply systems which is crucial for future electrification plans.

Many cities lack a clear understanding of how to organize local infrastructure to charge e-buses and the challenges in developing operational plans. There is significant potential to expand technical expertise and capacity in these areas to support Brazil's energy transition. This is not about simply replacing vehicles and buses; it involves building new infrastructure along with regulatory frameworks and partnerships across sectors. ITDP Brazil, for our part, continues to be positioned at the center of this effort in many cities, connecting stakeholders within the electrification ecosystem.

The team continues to work on identifying systemic bottlenecks as well as areas for change, all in order to equip cities with the expertise to procure and deploy more e-buses with existing funds. The complexities and progress we are witnessing at this juncture for electrification in Brazil presents the country with a strategic opportunity. Public and private sector leaders have a chance to reimagine public transport — particularly bus systems — as the backbone of sustainable, equitable cities through stronger partnerships and collective action.

**"Partnerships are extremely important for the federal government, because in a country of continental scale, it is crucial to have organizations like ITDP Brazil that are more engaged with cities,"** said Marcos Daniel, the Director of the National Secretary of Urban Mobility at the Ministry of Cities. **"Acting as partners we can generate data and produce information to support the federal government in the formulation and reformulation of public policies aimed at the energy transition towards low-carbon urban mobility."**

As we look ahead to COP30, it is imperative that national and international leaders prioritize more financing mechanisms, data collection, and capacity-building to leverage opportunities for larger scale transport electrification in Brazil and beyond. Only through more transit-focused urban development, coupled with low-emission transport, can countries reach their urgent emissions reduction goals. With the climate spotlight turning to Brazil, this is a moment for the country to lead the way.



— Jinan’s electric trolleybuses are a model for transport innovation across China. Image: ITDP China

## Jinan’s Electric Trolleybuses Spark A Transformation for China

By Yanwen Huang and Qiuyang Lu (ITDP China)

In recent years, China has made remarkable achievements in vehicle electrification, positioning itself as a global leader in electric mobility as it pushes for a major reduction in greenhouse gas (GHG) emissions. China has also made great strides in significantly expanding electric bus, or e-bus, fleets in major cities. In 2023, the total number of buses nationwide reached an estimated 682,500, with 69% being fully electric and 11% being hybrid electric. In some large cities like Shenzhen, the fleet has even been fully transitioned. In addition, electrification in other areas like two-wheelers and freight vehicles is gaining

ground, furthering the country’s influence in both electric vehicle manufacturing and deployment.

China’s electrification progress is being driven by a combination of factors, including national policy and investment support, technological innovation, and clear frameworks for goal setting. In 2009, the national government initiated a *Ten Cities and Thousand New Energy Vehicles* pilot project, aiming at deploying 1,000 ‘new energy’ vehicles in 10 cities annually over three years, with a focus on public transport. To achieve this, a series of enabling policies were implemented to promote the acquisition of electric vehicles, including purchase subsidies, tax incentives for manufacturers, and the expansion of charging infrastructure. In just the past two years, the government has intensified its support of electrification in the public transport arena, with e-bus pilots launched in fifteen cities aimed at gathering replicable best practices.

### A City of Electric Opportunity

One Chinese city that has been a focal point of this transformation is Jinan, the capital of the eastern Shandong province, and home to over nine million people. Since 2016, ITDP China has been deeply engaged in the city’s Trolleybus Demonstration Project, funded in part by a major USD \$336



— The integration of trolleybuses with BRT lines has enhanced public transport access citywide. Image: ITDP China

million loan from the Asian Development Bank and other national investments. Over the past decade, Jinan has seen a fourfold increase in motor vehicle demand, turning it into one of the most congested cities nationally. Yet, Jinan is not just a city of mobility challenges; it is also a city of mobility opportunity. It has recently served as a pilot site for everything from smart city infrastructure to connected traffic systems, making it prime place to test and apply low-emission, electric mobility systems.

Jinan began by developing a pilot low emission zone (LEZ) in its most densely populated areas, blending historical and natural landscapes with new public transport and regulatory measures. The LEZ broadly sought to reduce the use of private vehicles in designated areas by making vehicle parking more expensive, investing in sustainable transport, and strengthening traffic enforcement. The city also planned a zero-emission rapid transit network in tandem with the LEZ, aiming to achieve the full electrification of public buses, enhance access, and reduce congestion and emissions within the areas. This was not only a plan for physical infrastructure, but also a scalable vision for public transport and urban planning citywide.

The Trolleybus Project was a core part of these LEZ development efforts, particularly in one of the city's the densest districts

where better public transport could greatly improve air quality, reduce safety hazards, and shorten travel time and costs. Coupled with measures to reduce private vehicle use, the trolleybus system has been critical for demonstrating that this car-oriented city can be shifted and empowered by electric, bus-based public transport. Additional strategies were employed to tame traffic demand and integrate transport and land use planning to guarantee the success of the trolleybus system.

### **Trolleybuses Lead the Way**

Jinan's trolleybuses, also known as dual-power trolleybuses, merge the efficiency of traditional buses with the adaptability of electric vehicles, equipped for operation on both overhead wires and battery power. Unlike battery-powered buses, they continuously charge via these wires, eliminating issues of range anxiety while offering offline flexibility with batteries. This dual mode reduces the environmental impact as they primarily run on electricity, with the potential for renewable energy sourcing, and lowers the operational costs of extensive charging infrastructure and battery replacements. Several cost analyses into trolleybuses show significant savings for these modern vehicles compared to standard electric buses. Of course, their successful implementation from a policy and infrastructure standpoint depends on the unique geographic, financial, and operational



— Along with public transit, improvements to walking and cycling networks is shifting Jinan’s car culture. Image: ITDP China

contexts of every city. For Jinan, the right conditions and mix of resources and political will helped make the system a reality.

The Trolleybus Project got underway in 2017 with technical support from ITDP China focused on integrating it with LEZ policies, corridor selection, walking and cycling networks, and operational demands. By mid-2024, Jinan had successfully debuted 6 trolleybus lines and 80 kilometers of bus rapid transit (BRT) corridors, procuring more than 350 trolleybuses and 800 standard electric buses. The city also renovated a total of 190 bus platforms to optimize rider access and comfort. These lines were further boosted by the construction of 16 bus yard stations and 75 kilometers of power supply facilities that helped to shore up charging and grid infrastructure citywide. According to the Jinan Bus Company, the project is expected to reduce emissions from urban transport by 62,035 tonnes of CO<sub>2</sub>e emissions per year, demonstrating the benefit and opportunity for transport transformation.

Jinan utilized the modern trolleybuses to further integrate with the existing BRT network, not only to enhance public transport connections, but also to leverage better integration to meet the travel demands of residents. Monitoring reports have shown that, by 2023, Jinan’s green travel mode exceeded an impressive 75 percent. To further enhance energy efficiency and boost the

sustainability of the BRT network, Jinan is planning to integrate or replace older BRT vehicles with electric trolleybuses. This approach not only optimizes resources but also significantly enhances the rider experience across Jinan’s public transport while improving traffic efficiency.

More compact and smaller electric ‘alley’ buses services have also become popular in Jinan’s transport system as feeder routes to busier trolleybus, metro, and BRT corridors. These alley buses provide more variable vehicle sizes for smaller, denser, and less high-traffic streets and districts, while making it easier for people to reach destinations purely by public transport. These connections are vital to integrating sustainable mobility options as a reliable alternative to private vehicles.

As China grows its reputation in electric vehicle technology and implementation, its success with Jinan’s trolleybuses should be considered an important model for mobility innovation, investment, and governance. Deploying more well-planned and integrated e-bus fleets within existing transport networks offers a win-win solution for China’s cities from both an economic and climate perspective. As one of the world’s largest economies — and thus largest emitters — it is crucial that China learns from Jinan’s example to continue expanding low-emission transport infrastructure in cities nationwide.

# A Marathon, Not a Sprint — Lessons from India's Walking and Cycling Challenges

By Kashmiri Medhora Dubash (ITDP India)



— The Streets4People Challenge reimagined city streets as places for civic engagement. Image: Smart Cities Mission / ITDP India

**As we close the chapter** on two of India's landmark mobility initiatives, the India Cycles4Change (C4C) and Streets4People Challenges (S4P), there is much to celebrate from this transformative four-year journey. Four years is also the time it takes to prepare for the Olympics, and just as the world has witnessed the spirit of the 2024 Paris Summer Games, these efforts share many things in common. Just like Olympic athletes need consistent training and resources to shine on the global stage, Indian cities received continuous support and guidance to shine throughout these Challenges. With help from national and local experts, they built a network of partners, engaged with their community, and strengthened their capacity through open dialogue and collaboration, ensuring they had everything they needed to create safer and more accessible streets for all.

In 2020, India's Smart Cities Mission, Ministry of Housing and Urban Affairs (MoHUA), and ITDP India collaboratively launched the India Cycles4Change and Streets4People Challenges with

a vision to transform Indian cities with improved walking and cycling infrastructure. Many of India's streets have become increasingly dangerous for the most vulnerable, with pedestrians accounting for 20% of road fatalities in 2022, according to the Ministry of Road Transport and Highways. This is a staggering 32,800 lives lost. Also, India's air pollution and quality ranks among the worst in the world. To combat this, we need more people to choose walking and cycling over private vehicles where possible. Cities must create a safer and more conducive environment for both new and existing pedestrians and cyclists for this shift to happen.

However, at the onset of the two Challenges, the team began to realize that expecting quick on-ground transformation was fairly ambitious. While 117 cities signed up for the Challenges, they were all at different points in their journeys, with respect to their understanding of sustainable mobility, resources, infrastructure, geography, and institutional ecosystems. Even



— Enabling a positive culture around walking and cycling for children and families was crucial to both Challenges. Image: Smart Cities Mission / ITDP India

though this was a friendly and healthy competition, fairness would be compromised if the participants started from different points. Thus, the team went back to the drawing board and changed the rules of the game itself. It was no longer just about the scale of on-the-ground transformations; equally important would be promoting the dialogue around walking and cycling, improving community engagement, and building a stronger foundation for capacity building and institutional reform. Over the next few years, these programs became a marathon, rather than a sprint.

The government and ITDP India began by channeling the focus on three aspects that ensured our efforts were sustained throughout the four years. One, by creating an ecosystem of champions from city leaders to local communities for support; two, by encouraging cities to engage with citizens to get their buy-in at the onset; and three, by building their technical capacities at regular intervals in the most innovative way possible. The true success of these Challenges came from lasting lessons that have set the cities on a course for change for years to come.

At the beginning of the Challenges, cities were required to pilot interventions locally and gather community feedback before making them permanent interventions. Many successfully implemented changes using tactical urbanism to test designs that could be adjusted based on how people engaged with spaces. For instance, the city of Kohima transformed an old parking lot into a vibrant community space for pedestrians and cyclists, featuring food vendors, pop-up seating, colorful artwork, and new landscaping. They also programmed street carnivals and engagement activities to activate the community

within the space. Some cities that lacked such expertise connected with support from partners such as civil society organizations, design experts, resident groups, and cycling advocates. The success of these partnerships underscored the importance of creating local communities of champions as knowledgeable stakeholders who could guide cities through the design and implementation process, ensuring that efforts were both sustainable and impactful.

While this was happening at the city-level, a burgeoning ecosystem was also taking shape at the national level with these Challenges. The commitment to promoting active mobility had full support from the national Ministry, driven by strong leadership that believed in the cause. It became evident that many city leaders were inspired to become champions after seeing the dedication of the Ministry. The national ecosystem was further strengthened by the collaboration with organizations like ITDP India, which played a crucial role in providing technical expertise. This guaranteed that, while cities had the financial and national support to implement the Challenges, they could also benefit from strong technical guidance to ensure their concerns were addressed throughout the process.

Of course, no best practice can be formed without citizen and public engagement. Cities initially faced challenges in motivating their people, shifting perceptions, and breaking stereotypes around cycling and walking. Many residents did not view these as practical alternatives to personal vehicles and resistance to streetscape changes made progress challenging. However, as the programs progressed, engaging communities in decision-making was crucial to fostering a sense of ownership, leading to greater



— The Cycles4Change Challenge encouraged cities to improve safe, connected cycling infrastructure. Image: Smart Cities Mission / ITDP India

acceptance and behavior change. Take the city of Davanagere, for example. They ran a creative campaign that made cycling 'cool' again with themed merchandise, bike rallies, and citywide promotions. Local residents soon embraced cycling en masse, rallying behind the vision for safer, more sustainable mobility. That is the power of bringing people along for the ride.

Each city's own growth remained at heart of this work, which is why building capacity was crucial for the success of these Challenges. Having the right support to build expertise and skillsets for cities was part of a winning strategy. Throughout the Challenges, ITDP India helped host 18 sessions for cities, including national Healthy Streets and Public Spaces workshops in cities like Bengaluru, Chandigarh, and Pimpri Chinchwad, and interactive design clinics for city leaders to receive input from experts. Over 85 toolkits and technical resources on planning, budgeting, and infrastructure were developed and disseminated during these workshops.

To make capacity building even more engaging, ITDP India also introduced an innovative game during these workshops. This fun and interactive approach helped city leaders learn how to develop a Healthy Streets Plan, map out a multi-year action plan, and identify key interventions in three crucial areas: action, foundation, and communication. This 'gamification' strategy helped the leaders immerse themselves in a hands-on learning

experience, moving beyond traditional presentations to explore the complexities of sustainable mobility.

By January 2024, 15 cities emerged as leaders, with many others making great strides in changing their streets. **Across 33 cities, over 350 kilometers of improved footpaths and more than 220 kilometers of cycle tracks were developed, while 48 cities launched projects to revamp over 1,400 kilometers of streets.** Plus, 15 cities adopted Healthy Streets Policies, 18 set up dedicated Healthy Streets groups, and 17 developed their three-year action plans. To top it off, 33 cities formed Apex Committees to keep the momentum going with future collaboration.

As we close the transformative chapter of the Cycles4Change and Streets4People Challenges, these initiatives have set the stage for long-term change nationwide. Success was not merely about achieving quick wins; it was about laying the groundwork for resilience by mainstreaming dialogues, building capacity, and fostering an ecosystem of walking and cycling champions. Like coaches preparing a team for victory, the Ministry and ITDP India helped lay a solid foundation for scaling walking and cycling options across India. Now, it is important for the national government to capitalize on this momentum by allocating more budgets and strengthening policies and institutional reforms in favor of safe, equitable streets for everyone. Let the next Challenge begin!



— Strong policies to address traffic congestion are crucial to lowering emissions and improving life in Jakarta. Image: ITDP Indonesia

**Jakarta, the largest metropolitan area in Indonesia**, is currently facing a serious challenge in its road transport sector. A heavy reliance on private vehicles has made Jakarta one of the most congested cities in the world, with an annual economic loss estimated at USD \$4.25 billion from lost productivity, high pollution, and fuel costs. Research has found that road transport, like in many major global cities, is the main contributor to rising greenhouse gas (GHG) emissions and worsening air quality. This has led to serious health implications and premature deaths among other concerns. A comprehensive approach to tackling these inter-related mobility issues requires Jakarta to balance both ‘push’ and ‘pull’ policy measures to reduce private vehicle use while prioritizing sustainable transport options.

To this end, Jakarta has made much progress on its public transit by expanding the world’s longest bus rapid transit (BRT) system, Transjakarta, and improving service to reach a record 1.2 daily million passengers. Jakarta also allocates 4 trillion rupiah

(over USD \$250 million) each year to public transport subsidies that help encourage ridership and improve operations. At the same time, focusing solely on public transport (whose current mode share is around just 10% in Jakarta) is not enough to effectively tackle the safety, pollution, and emissions challenges facing the city.

To truly encourage more people to shift away from private vehicles, measures focused on improving traffic and parking management are also essential. These strategies can reduce overall congestion to enable better access and efficiency for pedestrians, cyclists, and public transit users alike. Jakarta has been exploring solutions for realizing this vision in recent years, collaborating with organizations like ITDP Indonesia to develop strategies for electronic road pricing (ERP), low emission zone (LEZs), and on-street parking management. The outcomes of these collective efforts aim to encourage and inspire more changes in cities throughout Indonesia.





# Jakarta's Traffic Management Strategies Set A Standard for Indonesia

By Carlos Nemesis (ITDP Indonesia)

## Piloting LEZs

Cleaner air has long been a shared goal for Jakartans, and it has become increasingly urgent with visible smog and pollution shrouding the city regularly. The implementation of LEZs offers a solution for improving air quality by cutting transport-related emissions and limiting the use of polluting vehicles in high-traffic districts. In general, LEZs are adjoining areas that employ both priced (fines or fees) and non-priced (time restrictions) strategies to reduce vehicle use. In 2021, the Government of Jakarta initiated a pilot LEZ project within the busy and popular Old Town district of the city, where only pedestrians, cyclists, public buses, and designated vehicles are allowed access. Initial results from air quality monitoring and public perception surveys indicate positive improvements in Old Town's accessibility and street conditions.

To determine other locations for LEZ pilots, ITDP Indonesia developed six key indicators for the city, focusing on emissions hotspots, transit access, pedestrian and cycling infrastructure, mobility policies, land use, and residential density. ITDP Indonesia also recommended deploying Inner-City zones,

which regulate the use of all high-emission vehicles, and Citywide zones, which focus on regulating large and heavy freight vehicles. Together, these zones are designed to help Jakarta employ dual approaches for reducing congestion and pollution with area-specific considerations. LEZ implementation across Jakarta, if done according to current plans, could reduce emissions by more than 12%, offering a valuable way forward for the city's sustainability targets.

## Tackling Congestion

With Jakarta's traffic jams costing the city significantly in economic and health losses, local policymakers face a difficult decision. Strategies like ERP and parking reforms are not often publicly popular, but the long-term climate and cost savings benefits are undeniable. ERP, sometimes known as congestion pricing, would impose fees on vehicles in specific traffic corridors or areas with high density and congestion. Initially proposed as a corridor-based approach for the city, ITDP Indonesia recommended adding area-based and distance-



— Parking reform measures are crucial to reclaiming street space and reducing car use. Image: ITDP Indonesia

## Jakarta needs traffic reduction strategies that prioritize people over vehicles.

based ERP scenarios to further mitigate the rerouting of vehicles. ERP's success depends on both reducing congestion and furthering public transit ridership, with considerations for the fairness, affordability, and equity of various types of drivers. While Jakarta's regulations are still in progress since their legal approval in 2021, ERP offers another important tool for taming traffic, particularly if revenues are directed towards other transit and infrastructure improvements.

Better parking management and related reforms also offer an important avenue for change. A zone-based system in the city can re-categorize parking areas according to varying levels of restrictions and fees. A red zone, for instance, might have the strictest parking limitations and the highest fines, while restrictions vary across others depending on demand. Such reforms target inefficient parking regulations and behaviors, a challenge that is present across Jakarta. To expand on this approach, ITDP Indonesia proposed implementing, progressive on-street parking fees to the city while reducing available parking over time. Like with ERP, enhancing digital fee collection and earmarking revenues for public transit could encourage people to choose more sustainable modes. In some areas, a better parking strategy could also support more efficient land usage.

For instance, ITDP Indonesia found that near one central transit station, the equivalent of 3,680 housing units could be built on land reclaimed from underused parking space.

### A Time for Action

Traffic management policies and vehicle restrictions can be seen as a burden by the public in the short-term, but they offer much longer-term economic, social, and climate benefits if promoted and implemented effectively. Jakarta, in its exploration of solutions like LEZs, ERP, and parking reforms, has the potential to become a model for shifting Indonesians' relationships with private vehicles and public transport as a whole. However, achieving this requires sustained political and resource commitments from city leaders and a vision for expanding walking, cycling, and public transit access. In Jakarta, progress would mean these strategies being enshrined in provincial regulations with the buy-in of multiple transport and infrastructure agencies.

Research has shown that the full benefits of plans like LEZs and ERP, and the public perceptions towards them, are only truly measurable after at least five years of implementation. The advancement of similar efforts over the last decade in major cities like London, UK and Stockholm, Sweden have shown that comprehensive planning, community engagement, and government investment are some of the keys to success. While the full emissions and economic impacts may take time to assess, a meaningful push to deploy these traffic management strategies is critical to a future Jakarta that is more sustainable, equitable, and livable. There is no time like the present to start making the change.

# In Mexico, A New Approach to Road Safety Can Save Lives

By Alejandro Lerma and Gonzalo Peón (ITDP Mexico)



— A safe systems approach to road safety can help protect pedestrians, cyclists and drivers in Mexico City. Image: ITDP Mexico

**Improving road safety** is a critical issue for public health and for the development of all cities and urban communities. According to the latest *Global Status Report on Road Safety*, there are nearly 1.19 million road traffic fatalities occurring worldwide each year. The number of victims rises to 51 million if we consider injured people, representing a global economic cost of more than USD \$3.6 trillion per year. Traffic collisions are still the leading cause of death among children and young adults, which disproportionately impacts those living in low and middle-income countries.

At the global level, there is growing demand for stakeholders in the public, private, and civil society arenas to assume the shared responsibility of improving mobility and safety for us all. By 2030, the UN's Sustainable Development Goals aim to halve the number of global deaths and injuries from road traffic accidents. To that end, a number of national efforts are underway around the world to ensure that decision-makers are taking ownership of these targets and are aligned with a holistic 'safe system' approach to road safety.

The 'safe system' framework recognizes that mobility is a complex issue resulting from varying interactions between humans, vehicles, and infrastructure. This approach includes a comprehensive perspective that aims to minimize the physical, economic, and social harm caused by road traffic crashes. Instead of focusing on individual behaviors, it recognizes that road accidents are a result of linkages between both systemic and individual issues. For example, drivers may choose to drive at high speeds because of roadways designed to facilitate this action without adequate pedestrian protection, resulting in more crashes. Therefore, while road safety policies must account for human error, they must also recognize the responsibility of systems that make these errors possible. Stakeholders across all levels must take a proactive, holistic stance to ensure that safety and security on our roads is a priority.

### A Vision for Road Safety in Mexico

In 2020, Mexico became the first country in the world to recognize in its Constitution the 'Right to Mobility' by stating that **"...everyone has the right to mobility in conditions of road safety, accessibility, efficiency, sustainability, quality, inclusion and equality"**. Since this landmark achievement, organizations like ITDP Mexico have joined multi-stakeholder efforts to make city streets free of traffic deaths and injuries. As part of this movement, a comprehensive vision for road governance and evidence-based policies are forming a foundation for top-down changes. To further enshrine this right to safe mobility, the Government of Mexico developed its *National Strategy for Mobility and Road Safety* (ENAMOV). The Strategy was published in 2023 and has a two-decade implementation horizon in recognition of the complex factors that need to be addressed to improve current conditions.

It is structured around four strategic axes, each with specific objectives and lines of action: land use and territorial development; public transport services; active mobility; and road safety. This Strategy marks a substantial step forward to improving and aligning policy implementation frameworks in a country where governing agencies are often disjointed. In the road safety axis, it proposes an alignment around the safe systems framework through the standardization of regulations, infrastructure inspections, traffic records and data, traffic calming interventions, emergency response, and beyond.

ITDP Mexico was involved in proposing and refining several of these lines of action. During the conception of the Strategy, partners participated in community engagement activities through regional and sectoral forums in cities across the country with a variety of stakeholders. During the implementation of the Strategy, ITDP also provided technical advice to public authorities to improve road safety criteria in Mexico's regulations for motorcycle helmets and traffic record integration at a national level.



### Managing Speed with Better Data

Taking a holistic view of road safety is necessary as there is no single cause of road incidents. However, there are risk factors that are more determinant than others, such as driving at excessive speed limits. Speed is a major factor involved in the probability and severity of road crashes, and its management is therefore fundamental for the formulation of effective safety policies.

As part of speed management strategies, some local governments in Mexico have opted for automatic speed control systems, known as speed cameras. These measures have been controversial for some sectors of society, who may believe their objective is to increase public revenue rather than improve road safety. To better understand their impact, ITDP Mexico conducted an analysis of the impact of speed cameras on the reduction of traffic fatalities and injuries across Latin American cities. We prepared a comparative analysis of the programs implemented in Guadalajara, Mexico City, and São Paulo (Brazil) and found different impacts for different levels of camera coverage.



— Complete street designs that give equal consideration to all modes of transport is key to road safety. Image: ITDP Mexico

The findings show that such speed camera programs only have positive effects on road safety if deployed at scale. The efforts in Mexico have little coverage and limited expansion plans and, as a result, there are no statistically significant impacts to measure. Meanwhile, in São Paulo, the city's robust program is continuing to grow and research revealed that, between 2016 and 2020, there was a reduction of between 31% and 54% in injuries and between 41% and 94% in fatalities on roads where they were in use.

Based on this evidence, it is crucial for transport agencies and city leaders to commit to expanding such solutions, especially in Mexican cities, that can have replicable and scalable effects. A handbook of best practices for road safety in Latin American cities was recently published by ITDP Mexico and partners to recommend more comprehensive measures for speed management. This includes the enforcement of more speed limits and fines, physical interventions at high-risk intersections,

driver outreach campaigns, and actions to identify dangerous drivers. Finally, an essential component of improving road safety is to invest in infrastructure that supports pedestrians, cyclists, and public transit users to decrease the need for cars and, thereby, the number of crashes. Public revenues from fines for speeding, for example, could also be directed towards funding better transit infrastructure for everyone.

In any city, road safety and sustainable mobility are not issues that can be addressed in isolation. Better streets depend on ensuring an adequate distribution of space for all types of users, minimizing traffic speeds, and encouraging shifts towards more active modes. Advocates for road safety must continue to promote a comprehensive safe systems perspective that targets both the high-level and direct causes of fatalities and injuries, beyond just individual actions. Only by using evidence-based, systemic approaches to protecting road users can cities in Mexico truly ensure everyone's right to mobility.

# ITDP's Reading List

New resources, publications, and research from ITDP's teams around the world.



## Compact Cities Electrified Country Reports

Addressing the climate crisis will require rapid, sustained transformation in every country and every sector of industrial activity. In the *Compact Cities Electrified* country series, research from ITDP and the University of California, Davis modeled the regional changes necessary to decarbonize urban passenger transport for key regions around the world. Throughout the past year, we published research focused on the Africa region, Brazil, China, Egypt, India, Indonesia, Mexico, and the United States. This series presents a strong case for the *Electrification + Shift* scenario for each region and nation to achieve their emissions reduction targets while providing significant economic and social benefits.

Access all the reports at [ITDP.org/  
Publications](https://ITDP.org/Publications)



## The 2024 Edition of The Bus Rapid Transit (BRT) Standard

This year, ITDP released the anticipated update to the *BRT Standard*, the first edition since 2016, based on input from BRT and public transport practitioners around the world. The *Standard* has been refreshed by adding, combining, and revising elements based on expert feedback and increasing deductions for operations. Defining the essential elements of BRT, the *Standard* continues to serve as an essential framework for system designers, decision-makers, and the sustainable-transport community to understand and implement high-quality BRT corridors. Translations of the 2024 Edition are also available in Arabic, Chinese, French, Spanish, Portuguese, and Bahasa Indonesia. In addition, six BRT corridors across the United States, Brazil, and Mexico received updated scores based on the 2024 scorecard.

Get the latest updates at [BRTStandard.org](https://BRTStandard.org)



### E-bikes: Charging Toward Compact Cycling Cities

Electric bikes, or e-bikes, are close substitutes for cars and two-wheelers because they cover longer distances with less effort. Thus, e-bikes will play a key role in shifting passenger and freight trips away from high-polluting private vehicles and generating fewer emissions if used at scale. While vehicle electrification has focused primarily on large high-polluting vehicles, the electrification of bicycles has been largely overlooked as a critical and promising climate and mobility strategy. The key recommendations in this report highlight the need for governments to recognize e-bikes as an important piece of a holistic sustainable transport network, and to take steps to ensure e-bikes are made affordable, safe, and accessible.

Read the report at [ITDP.org/Publications](https://ITDP.org/Publications)



### The Future of Public Transport: Well-Funded, Equitable and Resilient

In response to equity, climate, health and economic crises worldwide, ITDP and partners convened global transport stakeholders in 2022-2023 to discuss the importance of public transport as the main enabler for accessible and just cities. The year-long MOBILIZE Learning Lab program gathered expert researchers and practitioners from around the world to decide on the actions needed to move cities towards a future of better public transport systems for all. The Lab developed their key takeaways and recommendations into a white paper, drawing on in-depth workshops framed around the idea that the future of public transport needs to be resilient, equitable, and well-funded.

Read the full white paper at [ITDP.org/Publications](https://ITDP.org/Publications)



### The Opportunity of Reforming Parking: A Taming Traffic Deep Dive Report

Parking reform is on the rise in cities around the world, as many look to repeal parking minimums and better manage and price their on-street parking. On and off-street parking, however, is often not managed by the same city staff members, let alone by the same agency. To ensure that parking supply and demand are appropriately balanced, cities must understand parking as a holistic ecosystem, with on and off-street parking ultimately affecting one another. In this report, ITDP underscores this comprehensive approach to parking through five urban case studies that explore opportunities for managing on and off-street parking together.

Read the report at [ITDP.org/Publications](https://ITDP.org/Publications)

# ITDP's Reading List

New resources, publications, and research from ITDP's teams around the world.



## **Sustainable Cities Through Transport: Optimizing Urban Investments in Africa**

Africa's urbanization is accelerating the demand for sustainable transport solutions. However, current investments are still heavily skewed towards private vehicle infrastructure, leading to traffic congestion, environmental degradation, and limited access to efficient public and non-motorized transport options. This report from ITDP Africa examines pathways for addressing these urgent issues by prioritizing mass rapid transit, walking, and cycling to offer a vision of inclusive, low-carbon urban mobility across the region.

Read the full report at [Africa.ITDP.org](https://Africa.ITDP.org)

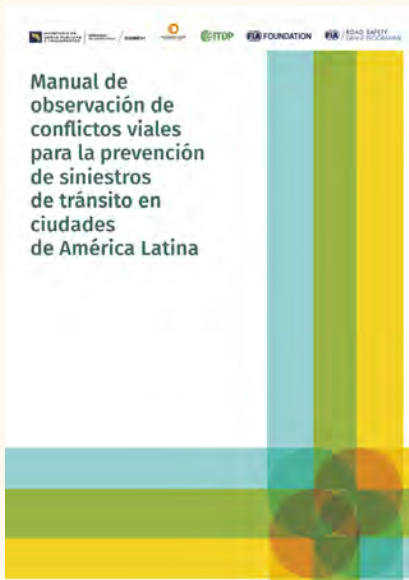


## **Steps to Sustainability: The Impacts of New Footpaths in Chennai, India**

Between 2013 and 2019, the city of Chennai, India designed and built footpaths on more than 100 kilometers of streets. Using data collected in 2019, ITDP India found that between 9% and 29% of people walking on the improved footpaths would have used a private motorized mode if the footpaths had not been redesigned. This study presents milestone evidence that improved footpaths are a highly cost-effective means to mitigate emissions, improve public health, save money for residents, and enhance safety in cities in lower- and middle-income countries.

Read the report at [ITDP.in](https://ITDP.in)





### Road Conflict Observation Manual: A Tool for Preventing Road Accidents in Latin America

The World Health Organization estimates that deaths from road accidents exceed 1.35 million people worldwide. To reduce these figures and promote a preventive approach in Latin America, ITDP Mexico and partners developed this manual for assessing road conflicts and preventing traffic accidents in the region's cities. This manual is divided into five sections for observing and analyzing causes and solutions for road conflicts. It serves as a useful and adaptable tool for conceptualizing and designing safer spaces for all people on the road, especially vulnerable users like pedestrians and cyclists.

Access the full guide at [Mexico.ITDP.org](https://Mexico.ITDP.org)



### Safe School Environments Guide for Brazil's Cities

The Safe School Environments Guide offers design recommendations to ensure student safety, addressing topics such as safe crossings, road signs, and speed management. In addition, specific recommendations are proposed to strengthen and expand the "On the Road to School 2.0 Program" in Brazil, targeting future expansion projects in new school environments and the maintenance of projects already implemented. The guide's recommendations seek not only to improve road safety, but also to raise awareness among the school community and different departments of city governments about the importance of safe and accessible mobility around schools.

Access the full guide at [ITDPBrasil.org](https://ITDPBrasil.org)



### Jakarta Low Emission Zone (LEZ) Roadmap

Low emission zones (LEZs) are an important strategy to address the issues of air pollution and emissions from road transport in Jakarta. Although the municipal government has implemented micro LEZs in some neighborhoods, it is not enough to contribute to meaningful reductions at the city level. ITDP Indonesia and partners developed the roadmap to formulate solutions for delineating a larger and more impactful LEZ area in the city. The roadmap also recommends implementation stages as one of the core strategies for decreasing pollution, congestion, and emissions in some of the city's busiest sectors.

Access the roadmap at [ITDP-Indonesia.org](https://ITDP-Indonesia.org)

**Publisher:** Institute for Transportation and Development Policy

**Editor:** Alphonse Tam

**Design and Production:** Maru Aguzzi

*The Institute for Transportation and Development Policy (ITDP) works around the world to design and implement high-quality transport systems and policy solutions that make cities more livable, equitable, and sustainable. ITDP is a global nonprofit at the forefront of innovation, providing technical expertise to accelerate the growth of sustainable transport and urban development around the world.*

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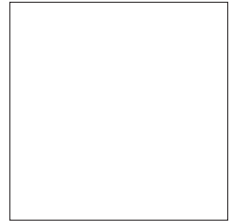




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