Electrifying Ridehail in India

Actions for industry, government, and utilities

January 2026

Uber

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About

This white paper advances a set of actions to accelerate ridehail electrification in India. Ridehailing is a natural fit for electrification—vehicles on ridehail platforms have high kilometers meaning a switch to electric vehicles (EVs) brings outsized benefits to air quality, public health, and energy independence. Additionally, vehicles on ridehail platforms can serve as a catalyst for quickly increasing EV penetration in India since they turn over faster than other vehicles. This paper is a call to action for government, utilities, industry, and private citizens to collectively push forward an electrification agenda that includes actions on vehicle supply and demand, infrastructure, financing, and preferred access programs. The white paper is part of a series sponsored by Uber that examines similar topics for Europe, United States and Canada, and Brazil, and builds on the considerable investment by Uber in recent years to advance the adoption of EVs among drivers on its platform.

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About Uber

Uber's mission is to create opportunity through movement. We started in 2010 to solve a simple problem: how do you get access to a ride at the touch of a button? More than 61 billion trips later, we are building products to get people closer to where they want to be. By changing how people, food, and things move through cities, Uber is a platform that opens the world to new possibilities.

About Cadmus

The Cadmus Group LLC (Cadmus), a technical consulting company, has over 1,000 employees specializing in energy technologies, including zero emission vehicles and infrastructure, renewable electricity, energy efficiency, resiliency and renewable heating and cooling. Cadmus works with private industry, government, and utilities across the globe to rethink multi-sector public policy and advance ideas that are innovative, cost-effective, and science based. Primary authors include Rex Hazelton and Geoff Morrison. Other contributors include Megan Lynch, Jack Hansen, and Grant Bennett.

About The Global South Centre at the UC Davis Institute of Transportation Studies

The Global South Center aims to elevate the amount of information and research brought to the transportation decarbonization policy process in India and across the Global South, elucidating real-world global and national policy priorities, providing an opportunity to engage policymakers globally in well-orchestrated efforts. To do this, the Center builds strategic relationships with state and national governments, NGOs, and industry partners across the Global South to support decisions grounded in science and sustainability. The primary author from ITS-Davis included Anannya Das Banerjee and Aditya Ramji. Other contributors include Ridhi Palia and Rijhul Ladha.

Executive Summary

Around the world, electric vehicle (EV) adoption is enabling countries to achieve multi-layered decarbonization goals encompassing energy security, air pollution, and public health. In India, governments at every level are committed to investing in the EV transition through programs such as the 2013 National Electric Mobility Mission Plan (NEMMP) and the Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) I and II schemes. Nationally, EVs are gaining traction, especially for two- and three-wheelers (2w and 3w), now making up 9% of new vehicle sales.[1] Additionally, India's automakers have announced plans to manufacture 2.5 million four-wheel (4w) EVs by 2030—including existing, under construction, and announced factories—exceeding the planned EV production of other automotive hubs like Japan and South Korea.[2]

Highlights

6.6 million two- and three-wheel EVs registered in India through 2024 based on IEA statistics

About 80% of electric cars manufactured domestically

About 35% the estimated four-year total cost of ownership savings of an EV versus petrol two-wheeler when charging at home

132% average annual growth rate of EV drivers on Uber platform over the last four years, including 2w, 3w, and 4w vehicles

43% drivers on Uber platform who plan to adopt or who are open to adopting an EV for their next vehicle

Ridehail is at the forefront of this transition. Commercial fleets across India have committed to rapid decarbonization, and today ridehail electric vehicle kilometers traveled is growing three times faster than EV penetration in the general population.[3] In cities such as Lucknow, Agra, and Kanpur, EVs account for over 17% of all ridehail trips on Uber.[4] Ridehail is natural fit for electrification – drivers travel farther than personal vehicle owners daily. This means that fuel cost savings, and emissions reductions, are more significant. A rupee invested in ridehail electrification, such as per mile subsidies, has outsized economic and environmental benefits long term.

While good initial progress has been made, further policy intervention is essential to ensure that the ridehail industry transition to electric remains impactful and is able to continue at pace. Higher up-front vehicle costs; burdensome, expensive vehicle financing; limited market offerings; and sparse reliable, low-cost EV charging infrastructure when and where it is needed, each restrict the ability for drivers to make the switch. But these challenges are not insurmountable. Through a comprehensive approach that integrates action at the national, state, and local level across industries and sectors, EVs can not only rapidly reduce carbon emissions and improve air quality but do so while reducing transportation costs compared to fossil-fuel vehicles and spurring local economic development.

[1] 2w and 3w market share in 2024 was 9.1%. 4w share was 2.1%. Source: International Energy Agency. (2025). *Global EV Data Explorer* [Data tool]. International Energy Agency. https://www.iea.org/data-and-statistics/data-tools/global-ev-data-explorer
[2] See figure ES6 from Rhodium Group. (2025). *Global clean investment monitor: Electric vehicles and batteries* [PDF]. Rhodium Group. https://rhg.com/wp-content/uploads/2025/06/Global-Clean-Investment-Monitor-Electric-Vehicles-and-Batteries-1.pdf
[3] Comparison of eVKT of drivers on the Uber platform versus portion of total vehicle stock in India that are EVs.
[4] Lucknow eVMT = 18.1%, Agra eVMT = 17.6%, and Kanpur eVMT = 30.7%. Includes 2w, 3w, and 4w vehicles.

This white paper is a call to action for government, industry, utilities, and the public to each do their share in advancing the EV transition. India needs a unified coalition of stakeholders to drive ridehail electrification through smart, complementary actions – and active communication and coordination to ensure that policy, industry, and public awareness align. We offer a full set of actions (Figure 1) developed and validated by a coalition of experts representing automotive manufacturers, EV charging providers, fleet operators, researchers, and government leaders. Figure 1 is split between two types of actions: **High Impact** and **Enablers**. We define **High Impact** actions as those that directly incentivize the adoption of EVs or directly deter the sale of internal combustion engine (ICE) vehicles. Enablers are actions that create a supportive, collaborative EV ecosystem that bolsters consumer confidence in EV technology. Actions are organized by five groups, including supply-side, demand-side, infrastructure, financing, and preferred access programs.

	High Impact Actions that directly incentivize EV adoption or discourage ICE vehicle use through financial incentives, regulatory measures, or behavioral interventions	**Enablers** Actions that directly support EV adoption by bolstering consumer confidence in the new technology and building a stronger, more collaborative EV ecosystem
Supply Side Actions	**A.1. Binding Sales Requirement** **A.2. Fuel Economy Standards**	**A.3. Battery Recycling and Reuse**
Demand Side Actions	**B.1. GST Rates** **B.2. Performance Incentive** **B.3. Road Fee Waivers** **B.4. Electric 3w Vehicle Program**	**B.5. Aggregated Procurement** **B.6. EV Service Network**
Infrastructure Actions	**C.1. Tariff Reform**	**C.2. Public Charging** **C.3. Fast-Track Infrastructure** **C.4. Risk Sharing**
Financing Actions	**D.1. EV Loans at Lower Cost**	**D.2. Bankability and Residual Value of EVs**
Preferred Access Actions	**E.1. Preferential Access and Exemptions for EVs**	

Figure 1. Prioritized Actions

Ultimately, this white paper offers a vision for how India can transform the transportation sector by leveraging proven strategies both in India and globally. While this white paper focuses on ridehail, many of the suggested actions aim to catalyze EV adoption for all.

Introduction: Overview of Ridehail in India

India's ridehailing sector has become a cornerstone of the nation's urban mobility, transforming how millions of people and goods move through cities each day. This section highlights key trends shaping the ridehail market and examines how ridehail drivers and vehicles differ from the broader vehicle population.

Ridehail Market in India

India's ridehail market includes an assorted combination of form factors,[5] operating models, ownership models, and approaches for financing vehicles (Figure 2). Two-wheeler (2w) and three-wheeler (3w) vehicles dominate in vehicle count and are used for both passenger and last-mile delivery. Commercial four-wheeler (4w) vehicles—commonly known as cabs—are largely used for passenger mobility. Three-wheeler and 4w ridehail vehicles are registered as commercial vehicles and have different license plates and permits than private vehicles.

The app-based aggregator model has been operating in India for over a decade (Uber started in 2013) and competes with street hail, traditional taxi stands, business-to-business (B2B) services,[6] and self-drive.[7] Vehicles on app-based aggregators have both individual and fleet owners. Owners finance vehicles through self-financing, commercial banks, Non-Banking Financial Company (NBFCs), or other financial institutions.

The ridehail market is highly competitive in India with frequent changes to pricing and service offerings across platforms. Uber, Rapido, and Ola are the largest app-based platforms in India in terms of monthly active users, although market share varies by form factor. Other app-based aggregators operate at the regional- or city-level. With increasing government support for electrification and digital mobility, India's ride-hailing ecosystem is evolving rapidly, blending affordability with innovation and sustainability.

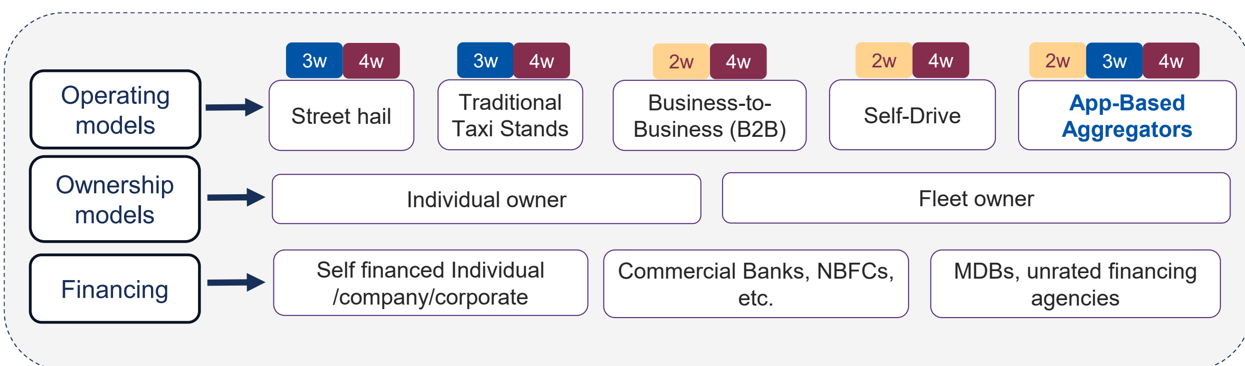

Figure 2. Ridehail Market in India

[5] In this paper, we use "form factor" to refer to 2w, 3w, or 4w vehicles.
[6] Services that include employee transport, executive and guest travel, airport transfers, and goods deliveries.
[7] Car-sharing services in which the customer drives the vehicle.

State-Level Ridehail Populations

Figure 3 illustrates state-level annual ridehail registrations for 2024 for 3w and 4w vehicles using data from the Vahan Dashboard.[8] Uttar Pradesh, Bihar, and Maharashtra have the highest 3w passenger registrations, whereas Karnataka and West Bengal have the highest number of 4w vehicles. Data on 2w vehicles are not disaggregated between commercial and private vehicles and therefore are not presented below.

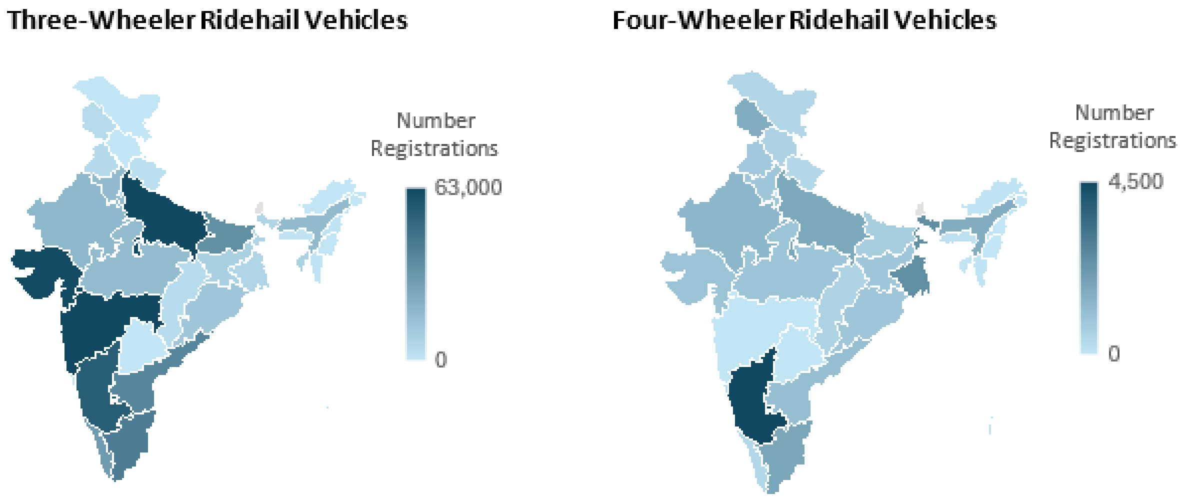

Figure 3. 3w and 4w Ridehail Registrations, by State

Vehicle and Battery Suppliers

Vehicle sales in India are largely 2w vehicles (80%), followed by 4w (17%), and 3w (3%).[9] The 2w market is still mostly internal combustion engine (ICE) vehicles, which accounted for 88% of 2w sales in 2024.[10] Hero MotoCorp and Honda were the largest supplier of 2w last year, with 29% and 25% market shares.[11] Bajaj Auto has rapidly expanded its EV offerings among 2w, becoming India's top electric 2w manufacturer in early 2025 with its Chetak scooter.[12]

Among 3w vehicles, Bajaj Auto holds the largest market share—for both internal combustion engine and electric. The Indian 3w market is transitioning faster towards EVs driven by supportive policies such as FAME, state EV policies, and the Production Linked Incentive (PLI) scheme of 2021 to stimulate domestic production of EVs and EV components.

Among 4w vehicles, domestic automakers supply two-thirds of India's market, with the other one-third coming from the India subsidiaries of global automakers (Figure 4). Unlike other countries in South Asia

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[8] Ministry of Road Transport & Highways, Government of India. (n.d.). *VAHAN SEWA: Vahan-4 dashboard* [Data dashboard]. Parivahan Sewa. https://vahan.parivahan.gov.in/vahan4dashboard/

[9] Society of Indian Automobile Manufacturers. (n.d.). *Statistics* [Data tool]. SIAM. https://www.siam.in/statistics.aspx?mpgid=8&pgidtrail=14

[10] Mordor Intelligence. (2025). *India Two-Wheeler Market Size & Share Analysis – Growth Trends and Forecast (2025–2030)* [Industry report]. Mordor Intelligence. https://www.mordorintelligence.com/industry-reports/india-two-wheeler-market

[11] Murali, K. (2025, April 7). Hero MotoCorp leads FY25 2-wheeler retail sales; market share dips. *Autocar Professional*. https://www.autocarpro.in/news/hero-motocorp-leads-fy25-2-wheeler-retail-sales-market-share-dips-125783

[12] E-Vehicle Info. (2025, April). *Electric two-wheeler sales data in March 2025 – Top 10 companies*. E-Vehicle Info. https://e-vehicleinfo.com/electric-two-wheeler-sales-data-in-march-2025-top-10-companies/

and Southeast Asia, import tariffs of 70-100% have limited the presence of Chinese imports among 4w vehicles in India.[13] Maruti Suzuki, Tata Motors, and Mahindra & Mahindra have the largest market shares of 4w vehicles. In 2024, India was the fourth largest 4w automaker in the world, behind China, the United States (U.S.), and Japan. India is expected to grow its EV exports, with a planned production of 2.5 million electric 4w vehicles by 2030—higher than all regions except for China, the U.S., and the European Union.[14] Popular ridehail 4w vehicles in India include Maruti Suzuki Dzire, Hyundai Xcent, and Honda Amaze, and Tata Indica. The India 4w ridehail market is unique in that automakers sell ridehail-specific vehicles, focusing on high-efficiency and low cost.

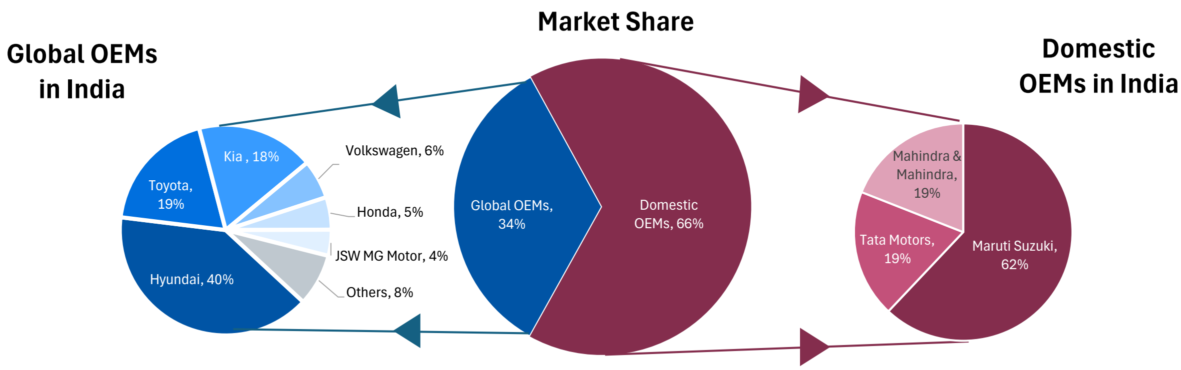


Figure 4. Suppliers of 4W Vehicles in India

Key EV producers of 4w vehicles in India include Tata Motors, MG JSW Motors, and Mahindra & Mahindra, with smaller contributions from global manufacturers such as BMW, BYD, Stellantis, Mercedes-Benz, Hyundai, Geely-Volvo, and VW Group. The batteries used in Indian 4w EVs are primarily Lithium Iron Phosphate (LFP) and Lithium Nickel Manganese Cobalt Oxide (NMC) with varying ratios of Nickel, Manganese, and Cobalt.[15]

Turnover of Vehicles on App-Based Aggregators

As of July 2025, under the Motor Vehicles Aggregator Guidelines (MVAG) 2025, the Government of India mandated that vehicles used by ridehail platforms must not be older than eight years from the date of initial registration. This requirement is an attempt to ensure a consistent quality for riders. In comparison, vehicles in the general population must pass a fitness and emissions test once they reach 15 years of age (for private vehicles) and 20 years of age (for commercial vehicles) under the national Vehicle Scrappage Policy.[16] The eight-year maximum age requirement for app-based aggregators is likely to result in faster turnover of ridehail vehicles compared to general vehicle population vehicles, indicating ridehail market's greater potential for faster transitioning to EVs.

[13] Rhodium Group. (2025). *Global clean investment monitor: Electric vehicles and batteries* [PDF]. Rhodium Group. https://rhg.com/wp-content/uploads/2025/06/Global-Clean-Investment-Monitor-Electric-Vehicles-and-Batteries-1.pdf
[14] Ibid.
[15] Ratios include 50%-80% Nickel, 10%-30% Manganese, and 10%-20% Cobalt
[16] IEA (2024) Vehicle Scrappage Programs https://www.iea.org/policies/16909-vehicle-scrappage-policy

EV Adoption in India

Figure 5 shows state-level EV sales shares (e.g., new EVs as a fraction of the all new 3w and 4w vehicles) among general population drivers between April 2024 and March 2025.[17] States such as Uttar Pradesh, Maharashtra, and Karnataka have new EV sales shares that exceed 10%. At the same time, EV sales in some states, particularly in eastern and northern states still account to less than 1% sales. This difference between states suggests a need to better understand the underlying policy, market, climate, and/or socio-economic drivers of EV sales shares.

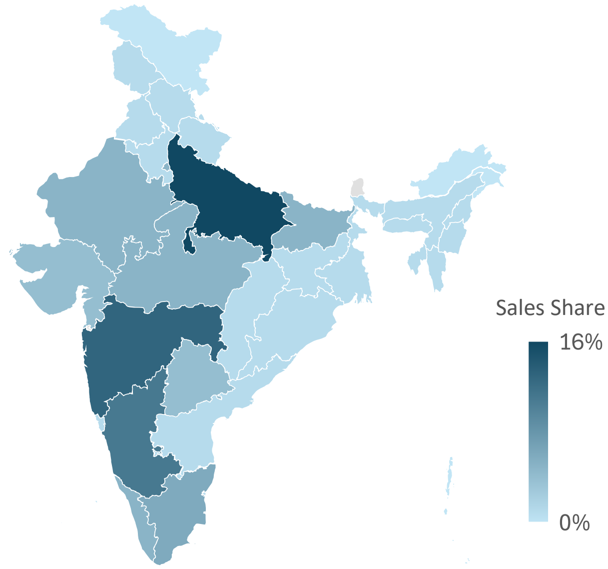


Figure 5. General Population EV Sales Shares Across States (3W, 4W)[17]

Vehicles on ridehail platforms are quickly electrifying. For example, since 2021, EVs on Uber have grown at an average annual growth rate of 132% across 2w, 3w, and 4w vehicles (Figure 6). This can again be attributed to cohesive demand-side policies that favor adoption of EVs in small passenger vehicles (a large portion of fleet vehicles on Uber).

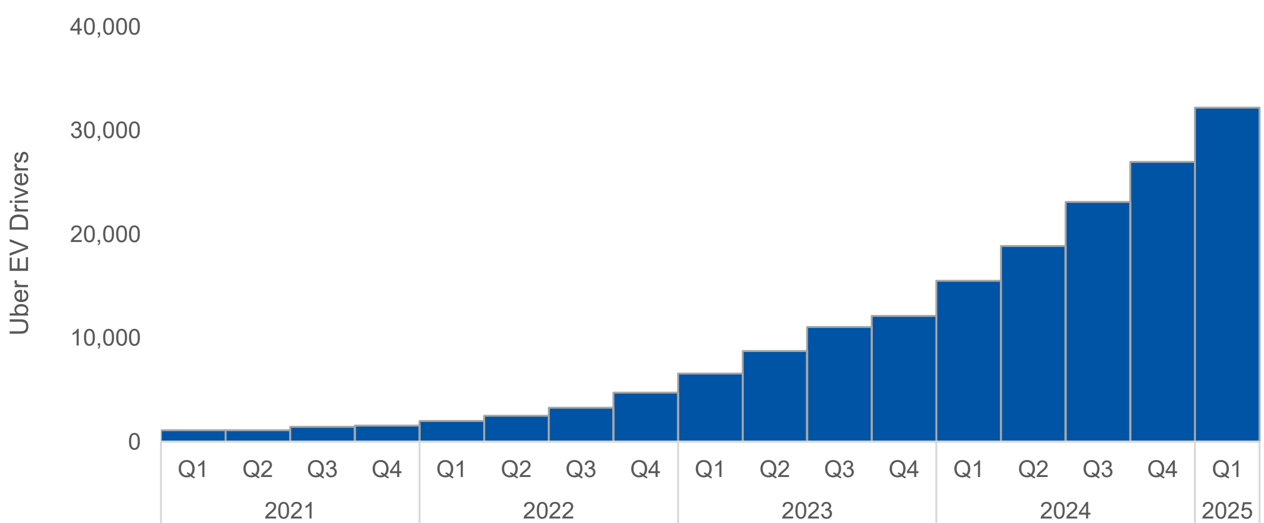


Figure 6. Growth of 2w, 3w, and 4w EVs on Uber in India

[17] Ministry of Road Transport & Highways, Government of India. (n.d.). *VAHAN SEWA: Vahan-4 dashboard* [Data dashboard]. Parivahan Sewa. https://vahan.parivahan.gov.in/vahan4dashboard/

Daily travel of drivers on Uber

Uber drivers often clock far more kilometers on their vehicles compared to general population drivers. Figure 7 shows global, daily kilometers traveled by drivers on the Uber platform, by percentile. The figure shows only the kilometers driven with customers in the vehicle and does not show kilometers traveled when driving to a job, waiting for dispatch, or for personal reasons and therefore is an undercount of the total travel by each driver. As shown, the 50th percentile global driver on the Uber platform drives about 55 kilometers per day. The top 90th percentile driver globally on the Uber platform averages over 156 kilometers per day.

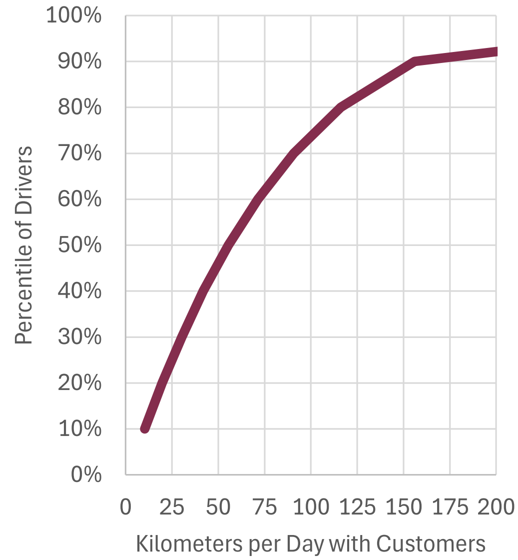


Figure 7. Global Daily Travel Distance of Drivers on Uber

India does not maintain a national dataset of household travel behavior, making comparisons difficult between ridehail and non-ridehail drivers. However, based on an analysis by University of California, Davis, data from 14 largest million-plus cities in India suggest that average daily travel of a 4w vehicle personally driven is about 12 kilometers per day.[18] Given travel distances within most cities, this distance makes sense. For example, the longest one-way trip inside the urban boundaries of cities such as Mumbai and Delhi NCR is approximately 25 kilometers and as short as 4 kilometers in smaller towns. Overall, it is clear drivers on ridehail platforms travel much further per day than general motorists.

Figure 8. Tata Power EV charging station in Mumbai with 16 parking bays and 16 connectors.

[18] Base data was used from City Mobility plans for these cities and then modelled to 2019 (Variables used includes - per capita trip rate, purchasing power parity, population growth, employment).

Cost of ICE Vehicles and EVs to Uber drivers

Commercial drivers in India tend to be price sensitive and maintain a keen understanding of the total cost of ownership (TCO) of their vehicles—including the full costs of owning and operating the vehicles. Figure 9 below gives an TCO analysis across India, comparing a popular ICE, hybrid, and electric vehicles on the Uber platform, including 2w, 3w, and 4w vehicles. The figure is for illustrative purposes using assumptions of typical vehicle characteristics. Actual TCO will vary depending on vehicle model and driving behavior. The analysis includes vehicle depreciation, fuel, insurance, maintenance, and the opportunity cost of charging (i.e., foregone wages due to time spent charging) over a four-year ownership period (a typical vehicle ownership period for Uber drivers). Government incentives are not included in the TCO calculation. A full methodology is in the Appendix.

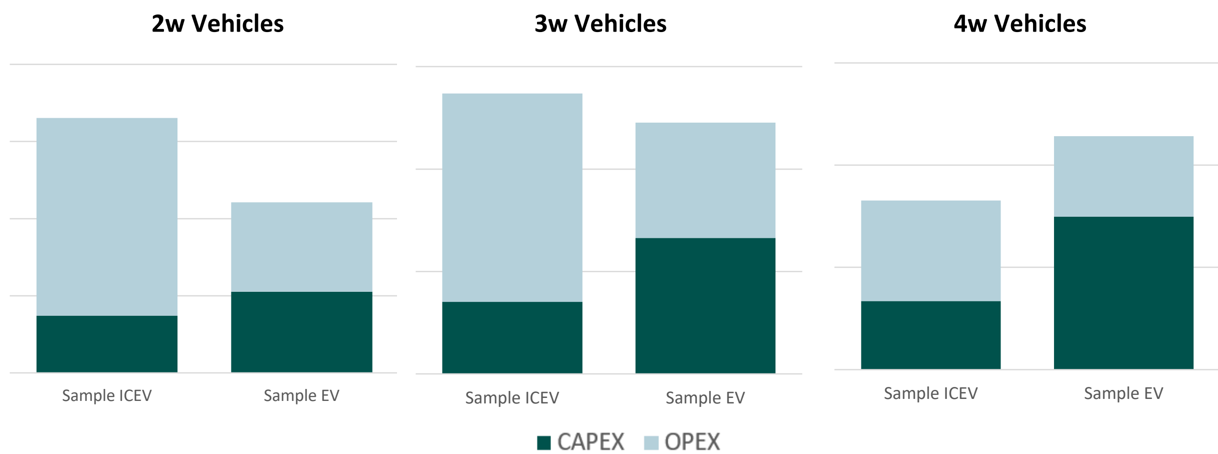


Figure 9. Comparative TCO over Four Years of Ownership for Most Common 2w, 3w, and 4w Vehicles on Uber Platform Scale varies, and has been increased across some vehicle categories for clearer illustrative purposes.

The analysis shows several key insights:

- There is a clear trade-off between capital expenditures (CAPEX) and operating expenses (OPEX). Across all vehicle types, electric models have lower OPEX but higher CAPEX.
- Higher kilometers traveled equates to better relative TCO of the EV option. Uber's data suggests that EVs are driven farther per vehicle than ICE vehicles on Uber, suggesting fleet operators increase asset value through higher utilization of EVs than ICE vehicles.[19]
- While both electric 2w and 3w vehicle options have a lower TCO than the comparable ICE vehicle, electric 2w vehicles have the best economics. Note that most 2w ridehail vehicles are not bought new for ridehail purposes. Many drivers either buy used vehicles or have another primary use case for the 2w vehicle.
- The TCO for electric 4w vehicles is currently higher than equivalent ICE vehicles but is expected to converge with ICE vehicle TCO by the late 2020s,[20] due to declines in battery pack prices, economies of scale in EV manufacturing, and increased competition amongst automakers.

[19] Per results from an Uber survey of over 1,700 Uber drivers in 2024.
[20] IEA (2025), *Global EV Outlook 2025*, IEA, Paris https://www.iea.org/reports/global-ev-outlook-2025, License: CC BY 4.0

Charging Infrastructure in India

Charging an EV poses both a monetary and non-monetary cost to drivers. The monetary cost is the cost of the electricity and/or the charger. In India, many EV drivers must charge at public stations because of the high share of homes that are apartments or condominiums (e.g., 70% of new home constructions in 2024[21]). Public stations can be more expensive than petrol or CNG, particularly for fast chargers. The non-monetary cost of charging comes in the form of an opportunity cost from stopping to charge during work hours and/or detouring to find public charging.

Public charging is sparse in India. According to the NITI Aayog India Electric Mobility Index, there are approximately 35,000 total public charging ports available to drivers to serve 5.7 million total 2, 3 and 4-wheeled EVs registered in India, or 160 EVs per port (Figure 10).[22] This is far less favorable than ratios in jurisdictions such as China, which has approximately 10 vehicles per port, and the European Union,

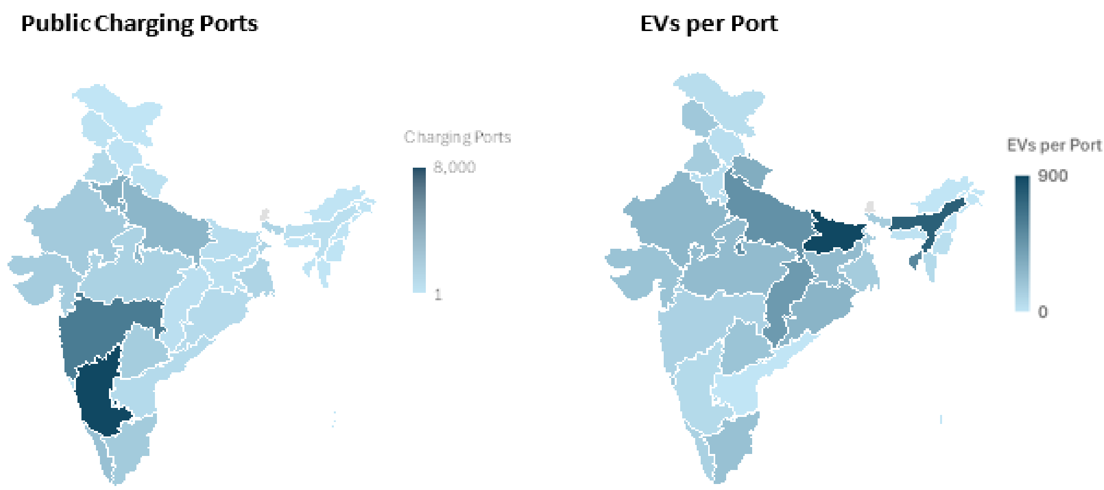


Figure 10. Total Public Charging Ports and Total EVs Registered by Port Across India

which has 13 vehicles per port.[23] At a global level, the ratio is 10 vehicles per port.[24] An important caveat is that India's EVs to port ratio is driven by the prevalence of electric 2w vehicles, which have shorter charging times than 3w and 4w vehicles, and therefore lower total numbers of charging ports, and greater use of battery-swapping technologies.

Charging infrastructure is also not uniformly developed across the Subcontinent. Several states with the highest number of EVs registered, including Uttar Pradesh and Rajasthan, have far lower numbers of public charging ports than other leading states, such as Maharashtra and Karnataka (Figure 10).

[21] Mordor Intelligence. (n.d.). *India residential construction market: Size, trends, growth & outlook 2025–2030* [Industry report]. Mordor Intelligence. https://www.mordorintelligence.com/industry-reports/india-residential-construction-market

[22] NITI Aayog. (2025, August 4). *India Electric Mobility Index* [Press release]. Press Information Bureau. https://pib.gov.in/PressReleasePage.aspx?PRID=2152243

[23] IEA (2025), *Global EV Outlook 2025*, IEA, Paris https://www.iea.org/reports/global-ev-outlook-2025, License: CC BY 4.0

[24] See Figure 4 of Muratori, M., Arent, D., Bazilian, M.D. *et al.* Trends and 2025 insights on the rise of electric vehicles in the USA. *Nat. Rev. Clean Technol.* (2025). https://doi.org/10.1038/s44359-025-00108-3

Battery swapping has also emerged as a major charging technology application in India in recent years for the 2w and 3w market segments. Battery swapping provides a network of strategically located stations that allow EV users to replace their depleted batteries with fully charged ones within a few minutes, rather than plugging in to charge. There are currently over 3,500 battery swapping stations in India, up from 2,600 in 2024,[25] which are concentrated in urban centers such as Bengaluru, Delhi, and Hyderabad. The number of 2w and 3w models capable of battery swapping have also increased, with 16 2w models from six OEMs and four 3w models currently available in India (Figure 11).[26]

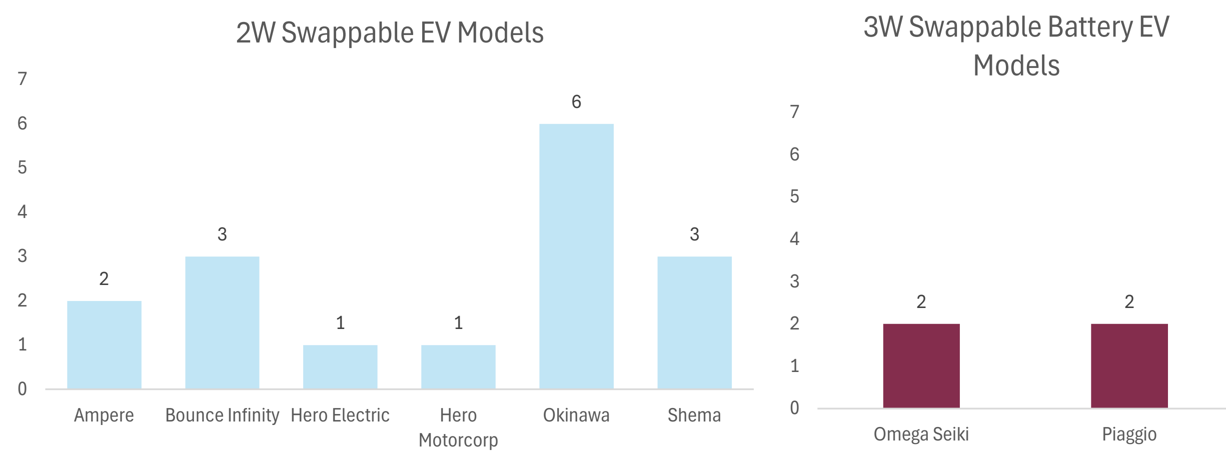


Figure 11. 2w (Left) and 3w (Right) OEMs and Vehicle Models Capable of Battery Swapping in India

In response to this growth, several actions have been taken by the Government of India to promote battery swapping, including a draft policy on battery swapping published by NITI Aayog in 2022[27] and the Bureau of Indian Standards (BIS) publishing Indian Standard (IS) 17896, which outlines safety standards for swap systems. Most recently, the Ministry of Power (MoP) released “Guidelines for Installation and Operation of Batter Swapping and Charging Stations” in 2025 to support Battery as a Service (BaaS) business models and further develop the battery swapping network in India.

[25] India Battery Swapping Association. (2025). *White paper: Battery swapping in 2-ws* [White paper]. India Battery Swapping Association. http://ibsa.org.in/wp-content/uploads/2025/04/White-Paper_Battery-Swapping-in-2Ws-IBSA.pdf [ibsa.org.in]

[26] JMK Research & Analytics. (2024, October). *Navigating India’s battery swapping ecosystem* [White paper]. JMK Research & Analytics. https://jmkresearch.com/wp-content/uploads/2024/10/Battery-Swapping-White-Paper.pdf

[27] NITI Aayog. (2022, April). *Battery swapping policy (Draft)* [Policy document]. NITI Aayog. https://www.niti.gov.in/sites/default/files/2022-04/20220420_Battery_Swapping_Policy_Draft_0.pdf

Actions to Accelerate EVs in India

This section provides prioritized actions for government, electric utilities, and industry to aid in the transformation and electrification of the ridehail industry (Table 1). As illustrated in the Introduction Section, vehicles on ridehail platforms are driven farther and turn over faster than typical vehicles. This means the ridehail sector is a force multiplier for EVs—enabling outsized benefits to air quality, public health, and energy independence. Yet, more work is needed. A 2024 survey of 1,700 drivers on the Uber platform across India highlights a number of impediments to greater electrification—including upfront cost of vehicles, vehicle range, charging speed, and operating costs.

Table 1. Summary of Actions

	Recommended Actions	Implementer
Supply-Side Actions	**A.1. Binding Sales Requirement** Enact EV sales requirements for automakers	National government
	A.2. Fuel Economy Standards Tighten fuel economy standards for 4w passenger vehicles	National, state, city government
	A.3. Battery Recycling and Reuse Develop thriving battery supply chain ecosystem	National government
Demand-Side Actions	**B.1. Goods and Service Tax (GST) Rates** Harmonise GST Rates on EVs and EV components	National government
	B.2. Performance Incentive Link commercial EV subsidy to performance of fleet operators	National, state government
	B.3. Road Fee Waivers Institute waivers for EVs for road usage fees	National, state government
	B.4. Electric 3w Vehicle Program Develop sub-regional recommendation to bolster electric 3-wheelers	National, state, city government
	B.5. Aggregated Procurement Develop an aggregated procurement program that incentivizes the replacement of ICE vehicles with EVs	National, state government
	B.6. EV Service Network Scale EV service network to improve maintenance time	Automakers, National, state government
Infrastructure Actions	**C.1. Tariff Reform** Introduce demand based, time-of-use, EV charging rates	Utilities
	C.2. Public Charging Install chargers at public parking areas	National, state, city government, and utilities
	C.3. Fast-Track Infrastructure Installs Improve turn-around-time (TAT) of installing EV charging stations	National government, utilities
	C.4. Risk Sharing Develop risk sharing mechanism on land leasing to avoid transfer of cost to users	National, state, city government

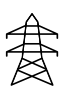
Financing Actions	**D.1. EV Loans at Lower Cost** Improve access to affordable financing through interest rate subvention and loan tenure parity	Institutional lenders, multilateral development banks (MDBs), commercial banks, Non-Banking Financial Company (NBFCs)
	D.2. Bankability and Residual Value of EVs Strengthen bankability of EVs by ensuring residual value with improved insurance and warranty products	National government
Preferred Access Actions	**E.1. Preferential Access and Exemptions for EVs** Establish preferential access programs and road fee exemptions for EVs on ridehail platforms	City government

In developing these recommendations, we identified the most critical actions with input from an expert roundtable that included public and private leaders across the ridehail sector to develop a set of proposed actions. These recommended actions are only the start. Stakeholders in India need to refine these actions into tailored programs that harness an all-hands-on-deck approach and mobilize all actors in a thoughtful, prioritized fashion. The call-out box below describes specific roles of the national, state, and local governments, electric utilities, and industry.

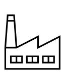
Roles in Ridehail Electrification

National Government. The primary role of the national government is to enact and enforce policies that provide long-term market certainty, supporting a strong investment environment. National governments in many leading EV countries—such as in Europe and North America—also provide funding for a standardized network of fast charge stations to provide drivers with range confidence.

State and Local Government. The role of state and local government is to enact and enforce policies that provide long-term market certainty and to enable a healthy investment environment for industry.



Utilities. Utilities play a key role in minimizing the costs associated with EV charging. This could include installing or incentivizing installation of charging infrastructure, fast-tracking development timelines, and providing favorable rates for EV drivers that minimize operational costs. Utilities should help promote an ecosystem of support by having dedicated staff and programs that enable rather than hinder charging infrastructure development.



Industry. The role of industry is to bring innovative, efficient products to market and expand consumer choice. Industry plays a key role in being able to align product availability, cost, and infrastructure investment. Collaboration across industry players, as well as with government is essential to ensure electric vehicle products remain a viable option for drivers and consumers.

A. Supply-Side Actions

Supply-side actions push vehicle suppliers—such as auto manufacturers and vehicle dealers— to increase EV production and sales. These actions support ridehail electrification by increasing the availability of EV models on the market and by encouraging vehicle suppliers to lower the upfront cost of EVs relative to ICE vehicles. Supply-side actions have demonstrated specific benefits such as boosting EV model availability, reducing prices, increasing EV sales, and thereby mobilizing investment for charging infrastructure and increasing employment opportunities with reduced need for government subsidies.[28]

A.1. Binding Sales Requirement

Enforce binding EV sales requirements for automakers

Implementer: National government

How: Regulate vehicle suppliers towards an EV sales requirement on passenger vehicles, expressed as a percentage of new vehicle sales that are electric, which increases each year into the future. This policy should allow automakers and importers flexibilities in meeting the requirements through a tradeable credit system (e.g., a system that allows some automakers to over comply and sell credits to those who under comply). As the program reaches higher levels of maturity, automakers and importers should have access to an increasing number of flexibilities such as banking credits over time or earning credits for indirectly supporting the EV market (e.g., by installing charging).[29]

Why: India has a non-binding national 30% sales target for EVs in 2030 which lacks accountability for compliance and therefore sends a weak long-term signal to automakers and importers to sell EVs. On the other hand, binding sales requirements send a strong long-term signal[30,31,32] and pushes EV adoption in a more cost effective way than other supply-side regulations such as emissions standards.[33] A wide set of other research also supports the observation that an EV

[28] Natural Resources Defense Council (NRDC). (2025, August). *Fueling ZEV transition: Global review of supply-side regulations and India's opportunity* [White paper]. NRDC India. https://www.nrdcindia.org/pdf/NRDC_Fueling_ZEV_Transition%20_updated.pdf
[29]McConnell, V. D., & Leard, B. (2021). Pushing new technology into the market: California's zero emissions vehicle mandate. *Review of Environmental Economics and Policy, 15*(1), 169–179. https://doi.org/10.1086/713055
[30] Melton, N., Axsen, J., & Goldberg, S. (2017). Evaluating plug-in electric vehicle policies in the context of long-term greenhouse gas reduction goals: Comparing Canadian provinces using the 'PEV Policy Report Card'. *Energy Policy, 107*, 381–393. https://doi.org/10.1016/j.enpol.2017.04.052
[31] Gujral, H., Franklin, M., & Easterbrook, S. (2025, April). Emerging evidence for the impact of electric vehicle sales on childhood asthma: Can ZEV mandates help? *Environmental Research, 270*, 120845. https://doi.org/10.1016/j.envres.2025.120845
[32] Axsen, J., Hardman, S., & Jenn, A. (2022). What do we know about zero-emission vehicle mandates? *Environmental Science & Technology, 56*(13), 7553–7563. https://doi.org/10.1021/acs.est.1c08581
[33] Axsen, J., Bhardwaj, C., & Crawford, C. (2022). Comparing policy pathways to achieve 100% zero-emissions vehicle sales by 2035. *Transportation Research Part D: Transport and Environment, 112*, 103488. https://doi.org/10.1016/j.trd.2022.103488

sales requirement is the single most important policy to support EV sales.[34] Yet, EV sales requirements have a mixed public support with some research showing binding sales requirements have higher popularity than a carbon tax but lower popularly than emissions standards (see next recommendation).[35]

Example: A set of 15 states in the U.S. enacted the Advanced Clean Cars II regulation which requires automakers to meet increasingly stringent annual sales requirements by delivering their own vehicles or purchasing credits from another automaker. Several other Asian and European nations also have binding sales requirements (see box to the right). For example, China's new energy vehicle (NEV) policy 2021–2035 requires that each vehicle manufacturer and importer make or import at least 20% EVs by 2025 and ramping up to 100% by 2035. The sales requirements apply to any company that manufactures or imports more than 30,000 vehicles. Companies that fail to achieve the required percentages may purchase credits from companies that over-comply.

Governments with binding EV sales requirements

- 15 states in the U.S. (100%, 2035)[36]
- British Columbia (100%, 2035)[37]
- E.U. (100%, 2035)[38]
- Netherlands (100%, 2030)[39]
- U.K. (100%, 2035)[40]

A.2. Fuel Economy Standards

Tighten fuel economy standard for 4w passenger vehicles

Implementer: National government

How: Increase the stringency of the draft CAFÉ III regulations for passenger vehicles to drive EV sales among 4w vehicles. Two changes would support ridehail electrification.

[34] Jenn, A., Chakraborty, A., Hardman, S., Hoogland, K., Sugihara, C., Tal, G., Helveston, J., Rich, J., Jochem, P., Plötz, P., Sprei, F., Williams, B., Axsen, J., Figenbaum, E., Pontes, J., & Refa, N. (2025). Supply-side challenges and research needs on the road to 100% zero-emissions vehicle sales. *Progress in Energy, 7*(2), Article 022002. https://doi.org/10.1088/2516-1083/ada199
[35] Long, Z., Axsen, J., & Kitt, S. (2020). Public support for supply-focused transport policies: Vehicle emissions, low-carbon fuels, and ZEV sales standards in Canada and California. *Transportation Research Part A: Policy and Practice, 141*, 98–115. https://doi.org/10.1016/j.tra.2020.09.009
[36] ZETA. (n.d.). *Advanced Clean Cars II*. Zero-Emission Transportation Association. https://www.zeta.org/advanced-clean-cars-ii
[37] Government of British Columbia. (n.d.). *Zero-Emission Vehicles Act*. https://www2.gov.bc.ca/gov/content/industry/electricity-alternative-energy/transportation-energies/clean-transportation-policies-programs/zero-emission-vehicles-act
[38] European Commission. (n.d.). *EU light-duty vehicle CO_2 standards*. https://climate.ec.europa.eu/eu-action/transport-decarbonisation/road-transport/light-duty-vehicles_en
[39] Netherlands Enterprise Agency (RVO). (n.d.). *Electric transport*. https://english.rvo.nl/topics/electric-transport
[40] UK Department for Transport. (n.d., June 2025). *Pathway for zero-emission vehicle transition by 2035 becomes law*. https://www.gov.uk/government/news/pathway-for-zero-emission-vehicle-transition-by-2035-becomes-law

- **Supercredit Multiplier**. The super-credit multiplier is currently set at 3.0, meaning that each EV a manufacturer sells is counted as three vehicles toward their fleet-wide CO_2 emissions target. While the super credit is useful in boosting EV sales, it has the perverse effect of enabling dirtier non-EVs to persist. Thus, they should be gradually phased down for BEVs and Plug-in Hybrid Electric Vehicles (PHEVs), and completely phased out for strong hybrids, range extenders, and flex-fuel vehicles over time.
- **Small Car Flexibility**. Second, as of September 2025, the draft CAFÉ III regulations provided a 3 grams of CO_2 per kilometer credit (up to a maximum of 9 grams CO_2/km) on small cars, defined as less than 4 meters in length, weighing under 909 kg, and having engines below 1200 cc. While this flexibility incentivizes sales of smaller vehicles, it enables the persistence of ICE vehicles among this small car segment – which is the low-hanging fruit for the ridehailing sector where EVs could be affordable for the drivers. Therefore, the draft CAFE III should be amended to either remove such relaxation for small petrol car or introduce a small EV car credit to create a level playing field for all technologies

Why: Fuel economy standards act as a long-term regulatory signal to invest in manufacturing more efficient powertrains and fuels, such as EVs.[41] These standards are one of the most widely used mechanisms by national governments worldwide to advance electrification. The International Council on Clean Transportation estimates achieving India's 30% EV share by 2030 target is possible with a fleet-average target of 75 to 90 gCO_2/km and no change to the above-mentioned super credit multiplier.[42] While ridehail is not a specific element of fuel economy standards, individual and fleet owners on ridehail platforms benefit when there is a greater supply of efficient vehicles in the market given the importance of affordability to drivers. [43]

Example: The European Union passenger car market shares similarities with India's regarding fuel mix, but historically, Indian cars have been smaller, lighter, and less powerful than their European counterparts. In the E.U., the current fleet CO_2 standard is 93.6 grams of CO_2 per kilometer[44] compared to 113 grams of CO_2 per kilometer for India.[45] However, Europe's fleet-average CO_2 emissions have decreased over time, despite larger, heavier, more powerful vehicles.

[41] Long, Z., Axsen, J., & Kitt, S. (2020). Public support for supply-focused transport policies: Vehicle emissions, low-carbon fuels, and ZEV sales standards in Canada and California. *Transportation Research Part A: Policy and Practice, 141*, 98–115. https://doi.org/10.1016/j.tra.2020.09.009
[42] Deo, A., & Kaur, H. (2024, June). Role of fuel efficiency norms in accelerating sales of electric vehicles in India. *ICCT Policy Brief* (ID-175). International Council on Clean Transportation. https://theicct.org/wp-content/uploads/2024/06/ID-175-%E2%80%93-India-FE-policy_final.pdf
[43] Jenn, A., Chakraborty, A., Hardman, S., Hoogland, K., Sugihara, C., Tal, G., Helveston, J., Rich, J., Jochem, P., Plötz, P., Sprei, F., Williams, B., Axsen, J., Figenbaum, E., Pontes, J., & Refa, N. (2025). Supply-side challenges and research needs on the road to 100% zero-emissions vehicle sales. *Progress in Energy, 7*(2), Article 022002. https://doi.org/10.1088/2516-1083/ada199
[44] European Commission. (n.d.). Light-Duty Vehicles. In *Climate Action: Transport Decarbonisation.* Retrieved from https://climate.ec.europa.eu/eu-action/transport-decarbonisation/road-transport/light-duty-vehicles_en
[45] UDIT. (2025). India CAFE [Corporate Average Fuel Efficiency dashboard]. Urja Dakshata Information Tool. Retrieved from https://udit.beeindia.gov.in/cafe/

A.3. Battery Recycling and Reuse

Develop thriving battery supply chain ecosystem

Implementer: National government

How: India already has made the largest investments in battery manufacturing outside of China, the E.U. and the U.S.[46] Inda could further boost this investment through subsidizing battery recycling and reuse. Additionally, India's national government could create a sister program to the European Union's (EU's) battery passport program to ensure battery reliability, transparency, and help maintain residual value. Battery passport data requirements should be kept as simple as possible since complex requirements can increase battery costs, impede implementation, and hinder enforcement.

Why: Investments in the battery recycling and reuse create economic strength and jobs, enhance national energy security, improve supply chain resilience against disruptions, and promote greater sustainability through localized production and increased recycling. Further, residual values are essential when determining the TCO, which affects buying, financing, and leasing decisions for both consumers and fleets.

Example: Starting in February 2027, the European Union will require all EVs sold within its borders to include a digital battery passport, a secure and standardized record detailing the battery's entire lifecycle—from raw material sourcing to manufacturing, usage, and end-of-life recycling. This initiative, part of the EU Battery Regulation, aims to enhance transparency, sustainability, and circularity in the EV sector.[47] All batteries having a capacity of greater than 2 kilowatt hours (kWhs) will be covered under the legislation, effectively encompassing all EVs.

[46] See figure 46 from Rhodium Group. (2025). *Global clean investment monitor: Electric vehicles and batteries* [PDF]. Rhodium Group. https://rhg.com/wp-content/uploads/2025/06/Global-Clean-Investment-Monitor-Electric-Vehicles-and-Batteries-1.pdf

[47] Rizos, V., & Urban, P. (2024, March). Implementing the EU digital battery passport: Opportunities and challenges for battery circularity. *CEPS In-Depth Analysis*. European Circular Economy Stakeholder Platform. https://circulareconomy.europa.eu/platform/sites/default/files/2024-03/1qp5rxiZ-CEPS-InDepthAnalysis-2024-05_Implementing-the-EU-digital-battery-passport.pdf

B. Demand Side Actions

Demand-side interventions act as a short-term measure to kick start a market, typically needing funding support by government. These actions have been effective in nascent market and technology transitions, but without supply-side interventions, demand-side interventions alone may not be a long-term solution.

B.1. Goods and Service Tax (GST) Rates

Harmonise GST Rates on EVs and EV components

Implementer: National government

How: Revise the national goods and service tax (GST) rates to a uniform 5% GST rate for all capital goods and services related to EVs, including new and used EVs; vehicle maintenance fees; spare parts and accessories; and charging station equipment. Standardization of the GST rates for EV-related purchases should include government coordination between GST Council, Ministry of Heavy Industries, and Ministry of Finance.

Why: As of September 2025, GST rates for new and used EVs is 5% and 18%, respectively, while spare parts are 28% (increased from 18% earlier in 2025) and EV charging equipment is 5%.[48] For comparison, new internal combustion engine vehicles draw a GST of 18% to 40% depending on engine capacity from small car to luxury car (previously it was a flat 28%).

A standardized GST rate supports ridehail electrification in several ways. First, it simplifies the purchase decisions for potential EV adopters. Research illustrates that simplicity in policy design—such as a harmonized GST rate—bolsters policy legitimacy and effectiveness.[49]

Second, a standardized GST rate on EV components also lowers the TCO of EVs relative to ICE vehicles, particularly for commercial passenger operators like taxis and ride-hailing fleets which have a higher daily operating distances and require more frequent servicing than personal EVs. Lower GST could benefit adoption of commercial EVs by making servicing and maintenance more affordable, improve fleet uptime, and encourage faster adoption in price-sensitive markets. Of course, servicing and maintenance costs less with EVs than ICE vehicles on average due to a simpler powertrain.

Reduced tax rates and subsidies are essential in jumpstarting supply chains for EVs. These interventions encourage manufacturers and importers to expand their offerings, reduce prices for consumers, and invest in new manufacturing.

[48] Gupta (2025, September 10). gst on electric vehicles. *ClearTax*. Retrieved from https://cleartax.in/s/gst-on-electric-vehicles

[49] Fesenfeld, L. P. (2025). The effects of policy design complexity on public support for climate policy. *Behavioural Public Policy, 9*(1), 106–131. https://doi.org/10.1017/bpp.2022.3

Example: Minimizing taxes and other fees on EV ownership has been shown to boost EV adoption.[50,51] For example, in Norway—the nation with the highest EV adoption rate-- study of Norwegian EV buyers found that annual tax discounts were an important contributor for 49% of buyers of an EV.[52]

B.2. Performance Incentive

Link commercial EV subsidy to performance of fleet operators

Implementer: National, state government

How: Design a subsidy program in which fleet operators are incentivized to purchase and operate EVs. The program could use simple performance indicators like the electrified fraction of the fleet's kilometers linked to a subsidy. Establish clear eligibility criteria, data reporting requirements, and monitoring and verification mechanisms to promote transparency. Structure incentive to scale with a fleet's performance—more electrified kilometers leads to more incentive.

Why: Linking subsidies to the electrified kilometers traveled (i.e., performance) ensures that commercial fleets are incentivized to use their EVs. For example, an EV purchase is not sufficient to receive an incentive under a performance incentive. Instead, commercial fleets must displace ICE vehicle travel with electric kilometers. This system encourages fleet operators to identify how and where to deploy their vehicles to maximize electric kilometers traveled.

Example: Although a supply side policy, India's Production Linked Incentive (PLI) scheme provides performance-linked financial incentives (subsidies) to companies for incremental sales of products manufactured domestically, aiming to boost domestic production, attract investment, promote imports substitution, and generate employment.[53] Launched in 2020, the scheme covers various sectors like electronics, pharmaceuticals, and automobiles, offering a percentage-based subsidy tied to increased production and sales beyond a baseline.

[50] Hackbarth, A., & Madlener, R. (2013). Consumer preferences for alternative fuel vehicles: A discrete choice analysis. *Transportation Research Part D: Transport and Environment, 25*, 5–17. https://doi.org/10.1016/j.trd.2013.07.002
[51] Lieven, T. (2015). Policy measures to promote electric mobility – A global perspective. *Transportation Research Part A: Policy and Practice, 82*, 78–93. https://doi.org/10.1016/j.tra.2015.09.008
[52] Figenbaum, E. (2017). Perspectives on Norway's supercharged electric vehicle policy. *Environmental Innovation and Societal Transitions, 25*, 14–34. https://doi.org/10.1016/j.eist.2016.11.002
[53] Ministry of New and Renewable Energy. (n.d.). Production Linked Incentive (PLI) Scheme: National Programme on High Efficiency Solar PV Modules. Government of India. Retrieved from https://mnre.gov.in/en/production-linked-incentive-pli/ .

B.3. Road Fee Waivers

Institute waivers for EVs for road usage fees

Implementer: National, state government

How: Introduce a framework that offers waivers or rebates on border entry taxes, road toll fees, and other road user charges. The waiver could be for all EVs or just for EV commercial passenger vehicles. Integrate framework with existing tax collection systems for seamless and automated discounts.

Why: Border taxes, tolls, and other road usage charges contribute significantly to the operational costs of commercial passenger vehicles especially for interstate and intercity drivers. The government levies these fees to build and maintain roads. Offering waivers on such charges can reduce the total cost of ownership of EVs, thereby incentivizing EV adoption.[54]

Example: Most research on the impacts of road usage waivers on EV uptake illustrates a strong positive impact on EV adoption.[55,56] Literature has focused on waivers in Norway, France, Netherlands, and China. For example, Bjerkan et al. (2016) illustrated through a survey of EV owners in Norway the road usage waivers were the decisive factor in EV adoption in a large number of EV drivers. As the EV population grows, governments modify or phase out the incentives.[57]

B.4. Electric 3w Vehicle Program

Develop sub-regional recommendation to bolster electric 3-wheelers

Implementer: National, state, and local governments

[54] Hardman, S. (2019). Understanding the impact of reoccurring and non-financial incentives on plug-in electric vehicle adoption – A review. *Transportation Research Part A: Policy and Practice, 119*, 1–14. https://escholarship.org/uc/item/7v13w987 [escholarship.org], [sci-hub.se]
[55] Bjerkan, K. Y., Nørbech, T. E., & Nordtømme, M. E. (2016). Incentives for promoting battery electric vehicle (BEV) adoption in Norway. *Transportation Research Part D: Transport and Environment, 43*, 169–180. https://doi.org/10.1016/j.trd.2015.12.002
[56] Zhang, Y., Qian, Z. S., Sprei, F., & Li, B. (2016). The impact of car specifications, prices, and incentives for battery electric vehicles in Norway: Choices of heterogeneous consumers. *Transportation Research Part C: Emerging Technologies, 69*, 386–401. https://doi.org/10.1016/j.trc.2016.06.014
[57] DriveElectric UK. (2025). London Congestion Charge and electric vehicles: Everything you need to know. Retrieved from https://www.drive-electric.co.uk/guides/general/congestion-charge-and-electric-vehicles/

How: Incentivise the replacement of ICE 3w vehicles with electric 3w vehicles, especially in permit-capped markets where the number of permits issued for operating autos is fixed. The incentive could include continuing direct subsidies at national and sub-national levels for purchase of electric autorickshaws.

Why: Conventional 3w vehicles remain the dominant ridehailing vehicle type in most Indian cities in terms of total trip volume, driven by lower costs, greater availability, and better maneuverability in congested urban traffic. The International Energy Agency shows that the TCO of electric 3w vehicles is 70% lower than their gasoline-powered ICE equivalents over their lifetime.[58] Yet, high upfront costs can deter consumers. Thus, a small incentive for electric 3w vehicles could pay dramatic dividends.

Example: The Government of Thailand operates a trade-in scheme that enables owners of conventional ICE tuk-tuks to trade them in for fully electric six-seater e-tuk tuks. The program is designed to reduce upfront costs for operators by combining financing support with charging infrastructure development.[59]

B.5. Aggregated Procurement

Develop an aggregated procurement program that incentivizes the replacement of ICE vehicles with EVs

Implementer: National or state governments

How: Aggregate demand for EVs with multiple fleet operators (including ride-hailing fleets) to negotiate lower purchase prices and better financing. Establish standard tendering procedures, create a trusted administrator, and develop partnerships with OEMs. Incentivize replacement of internal combustion engine (ICE) vehicles through the programs.

Why: Bulk purchasing schemes provide demand certainty for vehicle suppliers, allowing them to provide discounted prices and to potentially expand their supply chains. Fleet operators benefit

[58] International Energy Agency (IEA). (2023, July 20). *Transitioning India's road transport sector* [Report]. IEA. https://www.iea.org/reports/transitioning-indias-road-transport-sector
[59] Banpu Public Company Limited. (2024, January 23). *Banpu signs THB 2.4 billion deal with ADB to bolster e-mobility and battery businesses* [Press release]. Banpu. https://www.banpu.com/wp-content/uploads/2024/01/EN_Press-Release_Banpu-Signs-THB-2.4-billion-Deal-with-ADB-_19012024_Final.pdf

through lower upfront costs, favorable financing terms, standardized procurement processes, and reliable after-sales support.

Example: Aggregated fleet procurement programs are typically run by non-profit or quasi-governmental organizations, such as the Climate Mayors EV Purchasing Collaborative (U.S) program, Viable Cities (Sweden & EU),[60] and RAMCC Trust Fund (Argentina).[61]

B.6. EV Service Network

Scale EV service network to improve maintenance time

Implementer: Automakers, supported through national or state governments

How: Expand service centers and strengthen the workforce for EV technicians across urban and semi-urban locations to reduce downtime for maintenance and servicing and therefore improve consumer confidence in EVs. Similarly, expand the technical workforce who maintains charging stations and the related infrastructure. Develop innovative models for quick repairs and routine maintenance at fleet charging/parking locations. Partner with authorized local workshops, create partnerships models, and invest in capacity building for EV maintenance.

Why: In the ride-hailing market, vehicle downtime equates to lost revenue. Although evidence is still limited, data and information from fleet owners suggest EVs have longer downtime than internal combustion engine vehicles due to a lack of service stations.[62,63] This means that even minor breakdown can lead to prolonged downtime, thus disrupting fleet operations and revenue. Without a robust service ecosystem, operational risks rise, undermining the cost advantages of EVs and weakening consumer reliability. Similarly, inoperable charging equipment erodes consumer confidence in EVs, suggesting a need for charger uptime requirements or targets (e.g., 97%).

[60] Viable Cities & Sweden–US Green Transition Initiative. (2024, October 28). Mobilizing aggregated purchasing power for climate-neutral and smart cities – towards a new framework [White paper]. Viable Cities. https://viablecities.se/mobilizing-aggregated-purchasing-power/

[61] Argentine Network of Municipalities Facing Climate Change (RAMCC). (2023, May). Municipal pooled procurement blueprint for climate-smart technologies [Report annex]. In *Financial Aggregation Blueprints for Urban Climate Infrastructure*. Climate Policy Initiative. https://www.climatepolicyinitiative.org/wp-content/uploads/2023/06/Annex-1-Municipal-Pooled-Procurement-Blueprints.pdf

[62] Brown, C. (2025, July 17). Understanding maintenance: EVs vs. ICE vehicles. *Automotive Fleet*. https://www.automotive-fleet.com/10244084/understanding-maintenance-visits-evs-vs-ice-vehicles/

[63] CDK Global. (2024, March 28). CDK survey: EV service visits might be sooner, more frequent. *Automotive News*. https://www.autonews.com/service-and-parts/cdk-survey-ev-service-visits-might-be-sooner-more-frequent

Example: India offers numerous EV technician training programs through institutions like skyyskillmumbai.com, L&T EduTech, DIYguru, and Indian Institute of Skills Ahmedabad. These courses cover diagnostics, battery management, charging infrastructure, and maintenance, providing hands-on training and certification to meet the growing demand for skilled EV technicians.

C. Infrastructure Actions

These policies expand and regulate the charging infrastructure, such as public and private charging networks. These policies may include funding for station installation, setting technical standards, or mandating charger availability in new developments to ensure convenient and reliable access for EV drivers. Charging availability and cost are key barriers to ridehail electrification—particularly public fast charge stations and stations near multi-unit dwellings.

C.1. Tariff Reform

Introduce demand based, time-of-use, EV charging rates

Implementer: State-level utility service providers

How: Collaborate with SERC to introduce time-of-use tariffs for EV charging, offering lower rates during off-peak hours and higher rates during peak hours. Ensure tariffs are transparently published and competitively set, reflecting actual supply costs.

Why: Approximately 50% of states have tariffs above 7 Rs./kWh (Figure 12), although most states now have EV-specific tariffs between 4-6 Rs./kWh. Flat electricity tariffs for EV charging can lead to grid stress during peak demand periods and missed opportunities to utilize excess capacity during off-peak hours. Time-of-use pricing incentivizes drivers and fleet operators to charge when electricity is cheaper, reducing the load on the grid and lowering operational costs.

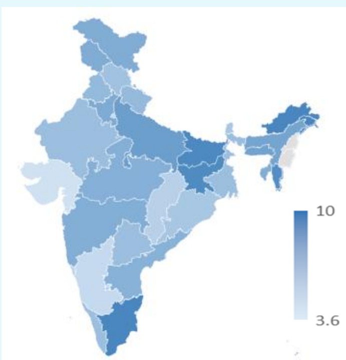


Figure 12. Notified tariff rates in Rs./kWh

For fleet owners, off-peak charging lowers operational costs and improves profitability. Charging during low-demand periods contributes to grid stability and maximizes existing capacity use ensuring efficient use of electricity. Regular updates and clear communication of tariffs would ensure market transparency and enable better planning.

Example: Delhi allows installation of EV meters for charging EVs in residential and commercial properties, where price of charging an EV is capped at Rs. 4.5 per kWh instead of the commercial rate of Rs. 7.5. Delhi also allows time of day tariff on residential and commercial real estate that brings down the tariff during off peak hours by 20%, but in absence of the special concession on EVs in many states, it can tend to be comparatively higher commercially**.**

In Germany, utilities offer EV-specific TOU rates that significantly lower electricity costs during nighttime hours, helping drivers save money while aligning charging with renewable energy availability. Similarly, Japan's TEPCO (Tokyo Electric Power Company) provides discounted nighttime rates for EV owners, incentivizing off-peak charging and integrating EVs into broader energy management strategies. These programs not only reduce operating costs for EV users but also support grid stability and the transition to cleaner energy systems.

C.2. Public Charging

Install chargers at public parking areas

Implementers: National and state governments and utilities

How: Develop a publicly funded fast charge network to serve the ridehail industry. This could entail public-private partnerships (e.g., with the national government, automakers, and charge point operators) to share the cost burden of the infrastructure, while promoting range confidence, reliability, and interoperability. The charging infrastructure could be charging pedestals or battery swapping stations for electric 2w and 3w vehicles. Incentives for public charging should be tied to reliability and uptime requirements (e.g., 97% uptime) to avoid poorly maintained and / or inoperable stations which can have major impacts consumer confidence.

Why: As illustrated in the Introduction Section, public charge points are sparse in India compared to other nations. Yet, apartments or condominiums account for a large share of the housing stock meaning overnight charging is limited. Studies suggest that it can be more efficient for governments to subsidize the charging market rather than to stimulate EV sales through subsidies.[64,65]Other studies show a positive, causal impact of public EV charging on nearby EV

[64] Greaker, M. (2021). Optimal regulatory policies for charging of electric vehicles [Working paper]. Oslo Metropolitan University. https://hdl.handle.net/20.500.12199/6421

[65] Springel, K. (2021). Network externality and subsidy structure in two-sided markets: Evidence from electric vehicle incentives. *American Economic Journal: Economic Policy, 13*(4), 393–432. https://doi.org/10.1257/pol.20190131

adoption.[66] Battery swapping stations at public parking spaces would enable easy access and save charging time for 2w and 3w ride-hailing vehicles.

Example: Many national governments are subsidizing a standardized fast charge network. For example, in the U.S. the National Electric Vehicle Initiative (NEVI) is establishing a national fast-charging at 50-mile intervals along major highways. This $7.5 billion effort is funded by the national government but managed by individual states.

C.3. Fast-Track Infrastructure

Improve turn-around-time (TAT) of installing EV charging stations

Implementers: State government and utility service providers

How: Streamline the regulatory approval process of installing EV charging stations by creating a single-window clearance system for coordinating with all the relevant government bodies. Create a government-led charging priority maps that links areas of suitable electrical infrastructure supply with demand. Collaborate with app-based ridehail aggregators to identify high-priority sites that minimize trip detours for fueling. Digitize applications for permits for charging, integrate inter-departmental approvals, and set fixed approval processing timelines with automatic escalation for delays. Standardize documentation requirements and provide information on pre-approved site categories to ease the process.

Why: Delays arise from a wide number of factors which have been under-studied in India. These factors include delays in accessing power substations, overcoming power outages, addressing land availability title deed verification, internet connectivity issues, and identifying suitable land for charging stations in urban areas. For example, in Chennai city residents have recently expressed frustration over the prolonged delays in establishing charging stations, with the city government citing difficulty in identifying suitable land. [67]

The Ministry of Housing and Urban Affairs (MoHUA) amended the building byelaws to require 20% of parking spaces in buildings for EV charging. However, the city municipal corporations across the country are yet to amend and adopt these byelaws at a city-level. Therefore, lack of

[66] Ledna, C., Muratori, M., Brooker, A., Wood, E., & Greene, D. (2022). How to support EV adoption: Trade-offs between charging infrastructure investments and vehicle subsidies in California. *Energy Policy, 165*, Article 112931. https://doi.org/10.1016/j.enpol.2022.112931

[67] Singh, A. (2025, May 28). Chennai residents frustrated by delays in EV charging. *Auto EV Times*. https://autoevtimes.com/chennai-residents-frustrated-by-delays-in-ev-charging/

proper byelaws and guidelines are causing challenges for installation of chargers in residential and commercial buildings.

Another major cause for delays is that upgrading the grid by the distribution companies (DISCOMs) takes time and in most cases the grid upgradation is initiated after the DISCOM receive the request/application from the CPOs. DISCOMs need to be proactive and factor EV charging demand into their forecasting methods and integrate charging demand for the next five to 15 years. Studies shows that a mix of proactive and sequential planning methods, determined on a case-by-case basis, is the lowest cost approach to preparing the grid for EVs.[68]

Reducing approval timelines and simplifying procedures will speed up EV charger deployment, improving accessibility and reliability for users. Faster installations time would lower costs for operators, boost adoption, and increase charger visibility in public and commercial spaces, encouraging the shift from ICE vehicles to EVs.

Example: The International Renewable Energy Agency (IRENA) has tools and resources to help develop a "one-stop-shop" for EV fast charging permitting.[69] Other jurisdictions, like California, have developed regional maps scoring each individual city and/or county on how streamlined its building codes and permitting processes are.[70]

C.4. Risk Sharing

Develop risk sharing mechanism on land leasing to avoid transfer of cost to users

Implementers: National, state, or local government

How: Implement a financial risk-sharing model between government bodies, landowners, and CPOs for leasing land for EV charging stations. This could include partial subsidies, revenue-sharing agreements, or reduced lease rates for strategic charging locations to lower operational costs for CPOs.

Why: In India, the high cost of land for EV charging installations increases the overall expenses for charge point operators. To remain profitable, CPOs often transfer these costs to end users, making charging more expensive and reducing affordability of EVs. A structured financial mechanism to share land leasing risks can control these costs, preventing excess charges from

[68] Environmental Defense Fund (EDF). (2025). *Pro-Active Grid Investment Assessment Medium- and Heavy-Duty Vehicle Transportation Electrification*. https://library.edf.org/AssetLink/1sf1n64na1m7b636rs127w4wqvs11d4e.pdf?_gl=

[69] International Renewable Energy Agency (IRENA). (n.d.). Streamlining permitting procedures for charging infrastructure. In *Innovation landscape for smart electrification*. Retrieved from https://www.irena.org/Innovation-landscape-for-smart-electrification/o-mobility/

[70] California Governor's Office of Business and Economic Development. (n.d.). GoBiz EV Readiness Map. Retrieved from https://business.ca.gov/industries/zero-emission-vehicles/plug-in-readiness/

being passed on to consumers. This, in turn, encourages wider EV adoption by keeping charging prices competitive.

Example: In India, at the sub-national and state-level, some entities offer land to private agencies for public EV charging stations through a bidding process, starting with a floor price of ₹1 per kWh.[71] Key features include a revenue sharing model or land-owning agencies receive a fixed rate per unit of electricity used for charging.

D. Financing Actions

Financing-related policies to support EVs aim to reduce financial barriers for lower income drivers seeking to convert to EV by offering low-interest loans, leasing programs, or guarantees for EV purchases and infrastructure investments. Drivers on ridehail platforms tend to be low income and cannot often afford the higher upfront cost of an EV relative to an ICE vehicle. Financing helps unlock EVs for these drivers.

D.1. EV Loans at Lower Cost

Improve access to affordable financing through interest rate subvention and loan tenure parity

Implementer: Institutional lenders, multilateral development banks (MDBs), commercial banks, Non-Banking Financial Company (NBFCs)

How: Implement a government-backed interest subvention scheme for EV loans for commercial EVs, in partnership with public and private sector banks and Non-Banking Financial Companies (NBFCs), to offer loans at reduced interest rates. The government or multilateral development banks can be a partner to de-risk the program. Introduce provisions, such that bulk fleet procurement strategies could further lower the interest rate and associated asset risks. Ensure the scheme is time-bound with clear eligibility criteria, prioritizing fleet operators, small businesses, and first-time EV buyers. At the same time, financial institutions must adopt uniform lending norms for EVs at par with ICE vehicles to ensure competitive EV financing.

Why: A 2024 survey of 1,700 Uber drivers in India showed that, for non-EV drivers considering switching to an EV, financing and bank loans were by far (more than twice) the most favored methods to pay the upfront cost of the EV. Interest rate subvention lowers borrowing costs,

[71] Economic Times of India. (2022, January 15). Govt allows PSUs to offer land to set up EV public charging stations. *The Economic Times*. Retrieved from https://economictimes.indiatimes.com/industry/renewables/govt-allows-psus-to-offer-land-to-set-up-ev-public-charging-stations/articleshow/88921849.cms

making EV ownership financially more attractive, and accelerating the transition from ICE to EV. Meanwhile, while ICE vehicles typically have loan tenures of four to five years, EVs typically have 3 years—a shorter repayment period increasing the burden on the purchaser, especially for smaller, cost-sensitive fleet owners. Aligning both the cost of credit (via subvention) and loan terms (via tenure parity) will make EV adoption financially viable and directly comparable to ICE vehicle alternatives.

Example: Under the Delhi EV policy, the Delhi Government allowed a 5% interest subvention for interest on loans taken to finance small EVs. While the purchase incentives were provided to reduce upfront cost, the subvention was meant to reduce the interest burden for consumers through a waiver on the loan interest rate. The scheme is anticipated to be expanded to other vehicle categories.

California's Clean Vehicle Assistance Program, supported by the Greenlining Institute, offers interest rate buy-downs and loan loss guarantees to financial institutions, making it easier for low-income individuals to secure loans for EV purchases. Additionally, the program partners with credit unions and community lenders provide flexible financing tailored to underserved communities. These mechanisms reduce the cost of borrowing and extend loan terms to match those of conventional vehicles, helping ensure parity and affordability.

D.2. Bankability and Residual Value of EVs

Strengthen bankability of EVs by ensuring residual value with improved insurance and warranty products

Implementer: National government

How: Develop insurance plans and extended warranty programs to enhance the bankability of EVs. For example, a program could mandate OEMs to provide minimum warranty terms for batteries and key components, with options for extended coverage. The national government could provide a guaranteed backstop to the program if they are unprofitable. These measures could be integrated into financing contracts to improve lender's confidence.

Why: Clear residual value benchmarks create a predictable resale market, making financing easier and encouraging more commercial operators to adopt EVs. This alignment between OEMs, financiers, and insurers builds long-term industry confidence and supports adoption in commercial fleet segment.

The absence of reliable insurance terms, extended warranties, and predictable residual values makes EVs less attractive to lenders, investors, and fleet operators. These gaps increase perceived financial risk, limit access to affordable financing, limit contract tenures, and slow adoption. By establishing clear contractual and warranty frameworks with government backing, the bankability of EVs will improve, enabling more competitive financing and broader market uptake.

Improved bankability of EVs would lead to lower interest rates and better loan terms, improving access to low-cost financing for fleet owners. Extended warranties reduce repair and replacement costs and lowers ownership risks.

Example: In India, insurers are offering comprehensive EV policies that include essential add-ons like battery coverage, motor protector, and zero-depreciation options—features that are often excluded from standard policies**.** In markets like China and Brazil, insurers are proactively developing EV insurance policies that allow for real-time data collection on EV performance.

E. Preferred Access Actions

Preferred access programs include any hyper local program that allows EVs to access better lanes, closer parking spots, or different areas of the city than ICE vehicles and can exempt EVs from road tolls and taxes. Ridehail drivers benefit from these programs because they have the potential to increase a driver's daily revenue by reducing travel times and increasing the number of trips.

E.1. Preferential Access and Exemptions for EVs

Establish preferential access and exemption programs for EVs on ridehail platforms

Implementer: City government

How: Designate Low Emission Zones (LEZs), congestion pricing with waivers for EVs, special on-street parking for EVs, special lane access at airports for EVs, and toll/road tax exemptions for EVs. These programs should be phased in over time and include exemptions and waivers for certain vehicle types to avoid economic disruptions. These programs could be paired with EV purchase incentives to ease the transition to EVs.

Why: These programs provide a strong, non-monetary incentive for drivers and fleets to electrify since they have the opportunity for more daily revenue. These programs are low cost to implement since there is no financial incentive offered to drivers. LEZs in particular, improve air quality and promote healthy lifestyles in dense urban areas, encourage the use of public transport, and improve walkability and accessibility (through fewer vehicles).

Example: Cities like London have implemented Ultra Low Emission Zones (ULEZ), where only vehicles meeting strict emissions standards can enter without paying a fee—encouraging drivers to switch to EVs. In Amsterdam, the city government plans to phase out fossil fuel vehicles entirely from the city's urban core center by 2030, promoting EV use through exemptions and infrastructure investment. Similarly, Santa Monica in the U.S. piloted a zero-emissions delivery zone, giving priority to electric delivery vehicles and showcasing how targeted LEZs can drive commercial EV adoption.

Conclusion

India is embracing EVs as a solution to improving air quality, lowering greenhouse gases, and gaining more energy independence. To date, the country has implemented a series of programs to grow the EV market, addressing key barriers in technology, infrastructure, and consumer confidence. These programs aim to create a synergistic ecosystem for India's transition to EVs. Yet, more is needed.

This white paper brings together data, policy analysis, and stakeholder insights to spotlight how ridehailing is a catalyst for India's EV transition. Vehicles on ridehail platforms have high vehicle turnover rates, travel relatively long daily distances, and provide a unique opportunity to showcase EVs to dozens of riders per day—often for the first time. The paper helps further unlock the EV transition for India's ridehail industry, through a suite of 16 actions validated by contributors from industry, government, and academia, which align policy with the aims of industry.

Each of the 16 actions presented above has a clear rationale. High Impact actions are those that directly incentivize EV sales among consumers and fleets and that directly deter ICE vehicle sales. These include actions like binding EV sales requirements, emission standards, performance incentives, and road fee waivers. A second set of actions—Enablers—help create confidence among drivers and fleets that the decision to switch to a new vehicle and fuel technology is a sound one, building an efficient, collaborative, and reliable EV ecosystem. Enablers include actions like battery supply chain development, EV service network development, and fast-tracking infrastructure. Perhaps the most important Enabler in India is a reliable public charging network. As discussed above, the ratio of EVs to public chargers in India is far higher than other countries, creating congestion at charging stations and deterring individuals and fleets from adoption EVs. This can change with new public charging programs.

We recognize that new programs like road fee waivers and performance incentives bring administrative costs. When targeted to the ridehail industry, these programs will help mitigate administrative costs and maximize impact. As discussed, high daily travel and fast turnover of vehicles on ridehail platforms means ridehailing provides more EV adoption per dollar spent than similar spending on the general population. Some actions above—like the preferred access programs—provide a strong signal to electrify but have low to no cost. These types of policies should be implemented without delay.

We have taken the first step with this white paper in outlining urgent actions. The next step is to design programs behind these actions. This takes active, intentional, and continuous engagement between government, manufacturers, consumers, ridehail fleets, and utilities. This white paper is a call to action to create a unified coalition of stakeholders to drive ridehail electrification through smart, complimentary actions – and active communication and coordination to ensure that policy, industry, and public awareness align.

Appendix

Total Cost of Ownership

A Total Cost of Ownership (TCO) analysis is a common technique for comparing similar products across all costs (and revenues) across their lifecycle. For EVs, TCO analyses are useful since EVs tend to have higher upfront costs but lower ownership costs than ICE vehicles.

The TCO analysis in the Introduction Section highlights the net present value (NPV) across the most popular electric and ICE models on the Uber platform for 2w, 3w, and 4w vehicles. The TCO analysis includes both capital expenditures and operational expenditures. Key assumptions include:

- Four-year vehicle life
- Residual value at the end of the four-year ownership period is 25% and 10% of original price for ICE vehicles and EVs, respectively
- Battery replacement costs not considered
- 12% interest rate is not easily available for most fleets (market estimates are at 14-15% for most operators if bank financed, rates in the range of 18-20% if leased). DCOs get loans in the range of 14-18% for ICE vehicles today
- Current loan tenures are four years
- Annual distance travelled is 60K km for 4w vehicles, 45K km for 3w vehicles, and 35K km for 2w vehicles.
- Insurance costs are based on industry averages and are 2 to 3 times higher for EV options than ICE options, depending on the form factor
- Annual maintenance costs are 10-19% higher for EVs compared to ICE vehicles based on evidence that EV maintenance takes longer than ICE vehicle maintenance, on average, decreasing ridehail vehicle revenue generation (see Action B.6.).
- The cost of electricity is 15 Rs./kWh and the cost of petrol is 94.77 Rs./liter[72]
- The cost of CNG is 77.09 Rs./kg based on the fuel price in NCT of Delhi.[73]

[72] Indian Oil Corporation. (2025). *Petrol and diesel price: Indian Oil Corporation | Petrol price in India*. Retrieved October 15, 2025, from https://iocl.com/petrol-diesel-price
[73] Indraprastha Gas Limited. (2025). *CNG and PNG prices* [Webpage]. Retrieved October 15, 2025, but prices reflective of 9 June 2025, from https://www.iglonline.net/cng-png-prices