

Policy Brief

India's Electric Vehicle Shift: A Landscape Analysis

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The Policy Framework: Anchoring the Shift

A robust and multi-faceted policy framework is the primary catalyst for cultivating a nascent industry like electric mobility. In India, government initiatives serve as the strategic blueprint, designed to stimulate both supply-side manufacturing capabilities and demand-side consumer adoption. These policies provide the financial incentives, regulatory clarity, and market signals necessary to de-risk investments, encourage innovation, and accelerate the nationwide shift from internal combustion engine (ICE) vehicles to electric alternatives.

FAME Scheme

The Faster Adoption and Manufacturing of Electric Vehicles (FAME) India scheme has been the cornerstone of the government's EV promotion strategy. Its evolution from Phase I (2015–2019) to the more ambitious Phase II (2019–2024) marked a significant scaling of both intent and investment.

- **Scale of Investment:** FAME II was launched with a total budget of ₹11,500 crore, primarily focused on driving demand through upfront purchase subsidies.
- **Vehicles Supported:** The scheme successfully supported over 1.62 million electric vehicles as of June 2025 including 1.43 million electric two-wheelers and 1,65,000 three-wheelers which form the backbone of the Indian EV market.
- **Localisation Linkage:** A key component of FAME II was the Phased Manufacturing Programme (PMP), which tied incentives to domestic component localisation, thereby catalysing Indian manufacturing capabilities.

PM E-Drive

Positioned as the successor to FAME II, the PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE) Scheme continues this momentum with a sharper focus on infrastructure.

The scheme carries a total outlay of ₹10,900 crore and runs from 1 October 2024 to 31 March 2026, this was a subtle shift in the government's approach to the EV puzzle, with a higher emphasis on adoption through supporting 24.79 Lakh E-2Ws, 3.16 lakh E-3Ws and 14,028 buses while doubling down on the infrastructural aspects of the market by allocating Rs. 2000 Crs on creating public chargers.

Supporting Fiscal and Strategic Initiatives

Beyond the flagship schemes, the government has deployed a range of complementary fiscal and strategic instruments to complete the ecosystem:

- **GST Rationalisation:** GST on electric vehicles has been reduced from 12% to 5%, while chargers and charging stations have seen a reduction from 18% to 5%.
- **Production Linked Incentive (PLI) Scheme:** Enhanced PLI allocations for automobiles and auto components specifically incentivise domestic manufacturing of advanced EV technologies.

- **Power Tariffs:** To encourage adoption, ministry of power has issued guidelines where fast charging service station are capped between Rs. 11 and Rs. 13 while also formulating a revenue sharing model for public land use of Rs. 1 KWH of electricity used.
- **National Electric Mobility Mission Plan (NEMMP):** This overarching mission anchors the national 2030 target of 30% EV penetration across all vehicle sales.
- **PM-eBus Sewa Scheme:** With a budget of ₹20,000 crore, this scheme targets the deployment of 10,000 electric buses under a Public-Private Partnership (PPP) model. Subsidies are disbursed on a per-kilometre-of-service basis rather than for asset procurement, embedding an operational efficiency incentive into the design.
- **Go Electric Campaign:** A national consumer awareness initiative to educate the public on the environmental benefits and long-term Total Cost of Ownership (TCO) advantages of electric mobility.

State-Level EV Policy Landscape

As of 2026, 26 States and Union Territories have notified EV policies, creating a multi-layered ecosystem of incentives that complements national schemes. These policies operate across four broad dimensions:

Policy Dimension	Description	State Examples
Consumer-Demand Incentives	Purchase subsidies, tax exemptions, operational incentives to reduce upfront EV acquisition costs.	Telangana: 100% road tax exemption; Bihar: toll-free waivers; Madhya Pradesh: parking charge exemptions.
ICE Disincentives	Fiscal measures that penalise continued use of internal combustion engine vehicles.	Delhi and Andaman & Nicobar Islands: clean fuel and pollution cess on ICE vehicles.
Charging Infrastructure Incentives	Capital subsidies for private and commercial charger installation; concessional EV charging tariffs; legislative mandates for EV-ready buildings.	Chandigarh: ₹6,000 per private charger; Chandigarh ₹3.6/unit & Gujarat ₹4.1/unit tariffs; Delhi mandates 20% EV-ready parking; Rajasthan subsidises renewable-energy charging.
Industry & R&D Incentives	Capital subsidies for manufacturing investment; land and energy concessions to attract EV industry.	Haryana, Andhra Pradesh, Kerala, Telangana: capital subsidies linked to fixed capital investment in MSMEs; Karnataka: 100% energy duty exemption.

While this comprehensive policy framework is ambitious and well-structured, its ultimate success must be measured by tangible market outcomes and progress

Alternative Regulations

Regulation	Description	Key Details / Examples
Emissions & Decarbonisation Targets	Sets India's overarching climate targets for road transport and the regulatory tools to achieve them.	Net zero by 2070; 100% ZEV by 2040; Road transport = 12%+ of CO ₂ ; CAFÉ norms expansion; ZEV mandates recommended by NITI Aayog.
Battery Waste & Extended Producer Responsibility (EPR)	Mandates safe end-of-life battery management through producer responsibility.	Battery Waste Management Rules, 2022; EPR framework requires producers to collect and recycle used batteries.
Fleet Electrification, Commercial	Voluntary corporate commitments driving private fleet electrification.	Amazon: 10,000 EVs by 2025; Zomato: 100% EV fleet by 2030; Uber: 25,000 EVs by 2026.
Fleet Electrification, Government & Municipal	Mandatory saturation programs targeting full electrification of public sector fleets.	100% electrification of municipal/state fleets in select cities within 5 years; PM E-DRIVE: 100% subsidy for EVSE on government premises.
Fleet Electrification Schools & Employee Transport	Deployment of electric buses for institutional and employee commute services.	High-range batteries and rapid charging; optimised for school and employee transport routes.
Fleet Electrification Goods Transport & Paratransit	Mandated EV transition for urban goods and waste management vehicles.	GNCTD Delhi EV 2.0: All 4W goods transport and garbage collection vehicles to transition to EVs by December 2027.
Mandatory Charging Infrastructure in Public Spaces	Requires public-facing establishments to provide EV charging as part of parking provision.	Malls, hospitals, offices, large parking complexes: 10–20% of slots must be EV charger-equipped; mandated under state building bye-laws and NITI Aayog guidelines.
Institutional Architecture: National Ministries	Defines inter-ministerial coordination for EV policy delivery.	MHI: FAME II & PM E-DRIVE; MoP: charging & tariff guidelines; MoHUA: PM-eBus Sewa; NITI Aayog: policy roadmaps & e-AMRIT portal.
Institutional Architecture Implementing Agencies	Designates agencies responsible for procurement, certification, and infrastructure.	CESL: national e-bus aggregator & PSM; BHEL: PM E-DRIVE PIA & National Unified Hub app; ARAI: homologation & safety certification.

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Institutional Architecture: State Coordination	Encourages states to establish dedicated EV nodal agencies.	Modelled on Singapore's EVe agency; to coordinate charging station approvals and power connections.
Market Frameworks Gross Cost Contract (GCC)	Per-kilometre subsidy model improving bankability of e-bus operations.	'Wet lease' structure; subsidy tied to service delivery, not asset purchase; makes OEM-led bus operations commercially viable.
Market Frameworks Payment Security Mechanism (PSM)	Dedicated fund to mitigate payment delay risk for private e-bus operators.	Administered by CESL; ensures financial sustainability for private participants in the e-bus ecosystem.
Market Frameworks Battery-as-a-Service (BaaS) & Leasing	Decouples battery from vehicle to reduce upfront EV purchase costs.	Battery leasing reduces commercial vehicle upfront cost by 30–40%; addresses high capital expenditure barrier.
Market Frameworks Carbon Credit Trading Scheme (CCTS)	Market-based mechanism enabling EV operators to monetise emission reductions.	Fleet operators earn tradable carbon credits; directly lowers Total Cost of Ownership (TCO).
Market Frameworks Public-Private Partnerships (PPP)	Leverages private sector capacity to scale EV deployment with government viability gap support.	PM-eBus Sewa: 10,000 buses deployed via PPP; government assistance bridges operator viability gap.

Comparative Market Overview: Progress versus Projection

This section provides a data-driven assessment of India's EV market, evaluating current performance against national ambitions and benchmarking the country's standing within the global electric mobility transition.

Current State of India's EV Market

India's EV market is characterised by explosive growth, albeit from a modest base while being heavily dominated by two-wheeler and three-wheelers.

- **Market Valuation:** The Indian EV market was valued at approximately US \$2.36 billion (₹19,588 crore) in 2024. It is projected to reach US \$164.42 billion (₹14.92 lakh crore) by 2033, representing a remarkable Compound Annual Growth Rate (CAGR) of 57.23%.
- **Overall Penetration:** Total EV sales penetration reached approximately 5% to 7.6% of all vehicle sales in FY2023–24. While this represents meaningful growth, it underscores the significant distance remaining before national targets are met.
- **Segment Dominance:** The market is overwhelmingly driven by two-wheelers (E2W) and three-wheelers (E3W), which together account for over 90% of total EV sales. The passenger car (E4W) segment remains nascent. Key players include Tata Motors (E4W), Ola Electric (E2W), and Mahindra (E3W).

Figure 1: Source Vahaan Dashboard, April 2026

EV and Hybrid EV Vehicle Registrations

Chart comparing EV and Hybrid EV vehicle registrations against fossil fuel categories across two-wheeler, three-wheeler, and four-wheeler segments in India



Figure 1

Source: Vahaan Dashboard, April 2026

If we isolate the commercial vehicles, we get the following disparity.

Commercial Vehicle Class — Fuel Type Summary (All States, Till Today)						
Vehicle Class	Petrol	Diesel	CNG	Electric (EV)	Hybrid EV	Total
AMBULANCE	75,247	133,837	107	11	0	209,202
BUS	14,932	1,249,977	84,660	16,229	9	1,365,807
EDUCATIONAL INSTITUTION BUS	6,696	338,122	12,762	48	0	357,628
GOODS CARRIER	439,774	14,080,940	640,336	28,862	0	15,189,912
OMNI BUS	14,563	144,188	1,982	274	0	161,007
OMNI BUS (PRIVATE USE)	224,669	449,111	553	60	1,501	675,894
SCHOOL BUS	6	644	48	0	0	698
SEMI-TRAILER (COMMERCIAL)	0	32	0	0	0	32
TOWER WAGON	63	604	1	3	0	671
TOW TRUCK	162	4,627	57	0	0	4,846
GRAND TOTAL	776,112	16,402,082	740,506	45,487	1,510	17,965,697

For trucks, as of April 2026, EV sales are 0.20% of Diesel while for buses EVs are 1.3% of all diesel sales.

Fossil Fuels and EV Registrations

Side-by-side chart comparing fossil fuel and EV registrations in crores across commercial vehicle classes in India

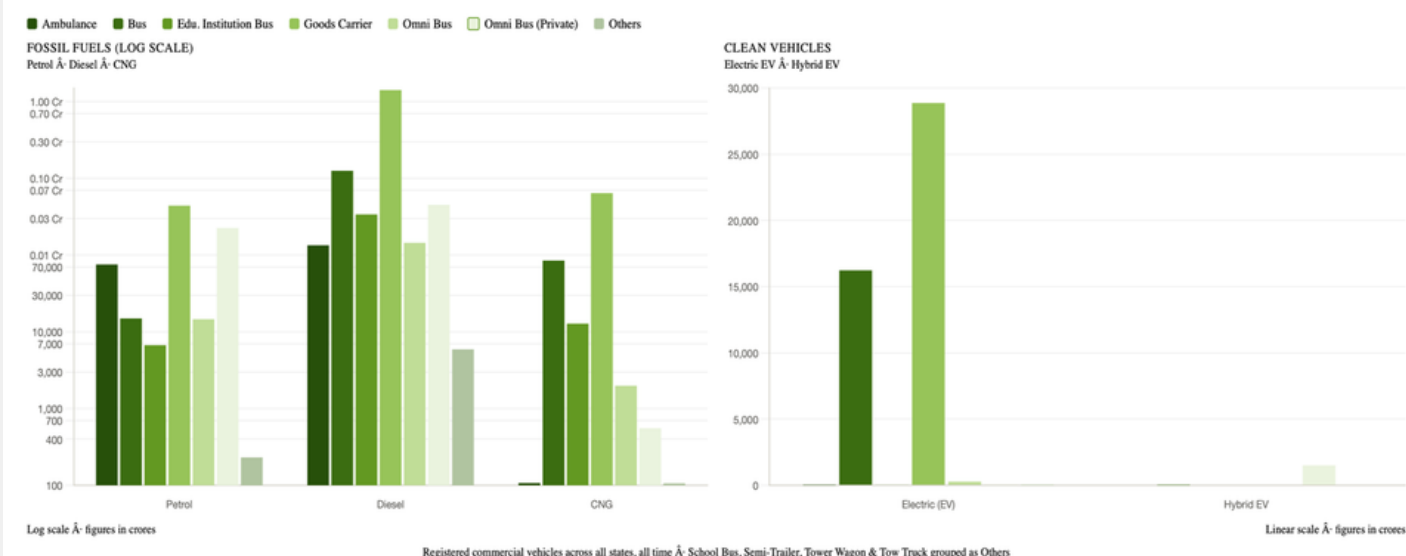


Figure 2

Source: Vahaan Dashboard, April 2026

Benchmarking Against National Goals

A direct comparison between India's 2030 ambitions and its current performance reveals a significant gap, particularly in the four-wheeler segment.

After nearly a decade of policy support, India has achieved EV penetration of approximately 7.6%. Reaching the 30% target by 2030 requires an increase of over 22 percentage points in just five years. This acceleration is most critical in the mass-market two-wheeler and entry-level car segments, where achieving price parity with ICE vehicles remains the single largest volume barrier — a challenge compounded by the infrastructural gaps examined below.

Global Context and Competitive Standing

While India's absolute growth figures are impressive, its relative global standing reveals a more sobering picture.

- **Global Ranking:** India currently ranks 11th or 12th globally in EV market share, trailing not only established leaders such as China, the United States, and key European nations, but also emerging markets like Thailand and Vietnam. Notably, however, India is the fastest-growing major large market.
- **Market Share Disparity:** India's EV share of 2–3% in new car sales remains well below the 5% average of the top 10 nations. China, by comparison, has achieved over 35% penetration in the passenger car segment alone.

- **Supply Chain Vulnerability:** A critical strategic risk is India's near-total reliance (95–100%) on China and other East Asian nations for essential battery materials and cells. This dependency poses both economic and national security risks that must be addressed through domestic capability building.

Systemic Infrastructure Analysis: The four pillars for EV adoption

The success of India's EV transition is fundamentally contingent on the development of a robust and supportive ecosystem. Drawing on the holistic framework proposed by the Confederation of Indian Industry (CII), this section examines readiness and challenges across four critical and interconnected pillars: Physical, Power, Economic, and Social infrastructure.

Physical Infrastructure: Charging and Recycling

The tangible assets that directly support EV operations are charging stations and battery management facilities. These form the backbone of any EV-ready infrastructure.

- **Charging Network:** India had over 29,277 public charging stations as of July 2025. However, deployment remains geographically concentrated in a handful of major cities. Expansion is constrained by several structural challenges:
- **Unfavourable Unit Economics:** Low utilisation rates in the early stages of adoption make profitability difficult for Charge Point Operators (CPOs).
- **Lack of Standardisation:** The presence of at least six distinct charger connector types; including CCS, CHAdeMO, Type-2 AC, and Bharat DC-001 which creates hardware incompatibility and consumer confusion, undermining true interoperability.
- **Deployment Hurdles:** CPOs face significant challenges in land acquisition and securing timely upstream power connections from utilities.
- **Low uptime:** Government Charging station face low uptime which is essential for the relevance of the charging station.
- **Battery Swapping:** The battery swapping model, whereby a depleted battery is exchanged for a fully charged one within minutes, offers a viable mechanism to lower upfront vehicle costs and reduce downtime. It is particularly promising for commercial applications involving two- and three-wheelers, which require high daily utilisation rates.
- **Battery Recycling:** As early-generation EVs approach end-of-life, India faces a looming battery waste challenge. Projections indicate that 11–15 GWh of batteries will be retired by 2030, far exceeding the current national recycling capacity of just 2 GWh. While the government's Battery Waste Management Rules, which mandate Extended Producer Responsibility (EPR) represent a critical first step, a massive and urgent capacity build-up is required to create a circular economy for battery minerals.

Power Infrastructure: Grid Readiness and Green Energy Integration

The integration of millions of EVs will place new demands on India's power grid, requiring careful management and strategic network upgrades.

- **Grid Capacity:** While total electricity demand from EVs is projected to remain manageable accounting for only 1–2% of total demand by 2030, the primary challenge lies within local distribution networks.
- **Distribution Challenges:** Simultaneous fast charging of multiple vehicles in concentrated areas can create significant stress on distribution assets, risking phase imbalances, voltage fluctuations, and harmonic distortions.
- **Mitigation Strategies:** Addressing these risks will require augmenting distribution transformers, implementing smart charging solutions such as Time of Day (TOD) pricing to shift load to off-peak hours, and promoting green energy integration through on-grid solar-powered charging stations.

Economic Infrastructure: Financing the Transition

The financial ecosystem supporting the EV transition remains underdeveloped, posing a significant barrier for both consumers and manufacturers.

- **Consumer Financing Barriers:** Consumers face elevated upfront vehicle costs and frequently encounter less favourable loan terms compared to ICE vehicle financing. Financiers perceive higher risks due to uncertainty over battery longevity and resale values, resulting in higher interest rates and lower loan-to-value (LTV) ratios.
- **OEM Financial Strain:** The inverted GST structure where taxes on components and batteries (18–28%) are significantly higher than on the finished vehicle (5%) creates substantial working capital blockages for Original Equipment Manufacturers (OEMs). This financial burden directly impedes their capacity to achieve the price parity required for mass-market competitiveness.
- **Need for Innovative Financial Models:** There is an urgent need for innovative financial products, including Battery-as-a-Service (BaaS) leasing and vehicle leasing arrangements, to reduce the effective acquisition cost for end consumers.

Social Infrastructure: Building Skills and Public Awareness

The human dimension of the transition, encompassing consumer mindset and workforce capabilities is a critical, yet often overlooked, pillar of the EV ecosystem.

- **Consumer Awareness:** Widespread adoption continues to be held back by persistent misconceptions, including:
- **Range Anxiety:** The fear of running out of charge before reaching a destination, particularly in the absence of a visible and reliable charging network.
- **Safety and Reliability Concerns:** Misconceptions about battery fire risk and long-term degradation continue to dampen consumer confidence.
- **TCO Illiteracy:** Limited public understanding of the Total Cost of Ownership (TCO) advantage of EVs, which often substantially outweighs the higher initial purchase price over the vehicle's lifetime.

Skill Development: The shift to electric mobility demands a significant workforce transformation. This includes reskilling traditional ICE mechanics to service complex EV drivetrain and battery systems, alongside revamping engineering curricula to produce R&D talent in critical areas such as battery chemistry and power electronics.

Consolidated Recommendations

The preceding analysis reveals a clear structural disconnect: while policy has successfully catalysed initial demand, deep-seated infrastructure deficits spanning physical, power, economic, and social dimensions now serve as the primary binding constraint to achieving India's 2030 vision. The following recommendations are divided into three parts, one are the recommendations drawn from the leading industry and policy reports provided by NITI Aayog, Bain and Company and IIC; the second part are some short term recommendations and the third part contains recommendations that require long term inter-ministerial recommendations.

Area	Recommended Action	Recommending Body
Policy & Regulation	Shift from incentives to mandates and disincentives for Zero Emission Vehicle (ZEV) adoption; establish clear ICE phase-out timelines in specific segments.	NITI Aayog
Product & Market Strategy	Develop customer-centric products, particularly mid-segment scooters and entry-level motorcycles, to achieve price parity with ICE models.	Bain & Company
Product & Market Strategy	Prioritise B2B and fleet segments to generate near-term momentum and scale through customised products and dedicated support.	Bain & Company
Geographic Focus	Pursue saturation strategies in a limited number of geographies such as a '5 Cities over 5 Years' programme – to create visible impact and generate scalable learnings.	NITI Aayog
Physical Infrastructure	Strategically scale charging infrastructure aligned to usage patterns; establish common connector standards to ensure full interoperability.	NITI Aayog, CII
Physical Infrastructure	Establish state-level nodal agencies (modelled on Singapore's EVs) to coordinate charging station deployment and provide single-window clearance.	NITI Aayog, CII
Economic & Financial	Create a pooled or blended finance fund to provide concessional loans for e-buses and e-trucks.	NITI Aayog

Economic & Financial	Develop a Battery-as-a-Service (BaaS) leasing industry alongside a battery passport system to reduce upfront vehicle costs and de-risk consumer financing.	NITI Aayog, Bain
Economic & Financial	Rectify the inverted GST structure to ensure tax parity across EV components, batteries, and finished vehicles.	CII
Technology & R&D	Establish academia-industry-government partnerships to accelerate R&D in new battery chemistries and reduce import dependence.	NITI Aayog
Technology & R&D	Leverage software as a strategic differentiator for battery management optimisation and new OEM revenue streams.	Bain & Company
Social & Human Capital	Launch sustained public awareness campaigns to address consumer misconceptions and educate the public on Total Cost of Ownership (TCO) benefits.	NITI Aayog, CII
Social & Human Capital	Invest in skill development programmes – including reskilling of ICE mechanics and updating engineering curricula – to build an EV-ready national workforce.	CII

5.2 Short-Term Recommendations: A PPP-Led Infrastructure Push

The current public charging network has two major issues, the lack of uptime and the reliance predominantly on older, slow DC chargers at a pace of improvement that has not kept up with the rapidly advancing standards being deployed by private EV manufacturers in their proprietary networks. A PPP framework should be established to allow private manufacturers to install fast-charging stations in public spaces, with the government providing subsidy or concession support in exchange.

A relevant model is Ather's AtherGrid programme, which enables consumers to install private fast chargers at offices and residences. Adapting this approach for public distribution with manufacturer backed chargers deployed in common areas, would yield two distinct benefits:

1. Consumer Trust: Manufacturer-branded chargers carry an inherent trust premium, increasing the likelihood that EV owners will use them confidently.
2. Adoption Velocity: Faster charging speeds directly address range anxiety and improve the overall user experience, accelerating uptake

Recommendation 2: EV Charger Integration at Petrol Pumps

1. One of the most practical and immediate responses to range anxiety is the integration of EV charging infrastructure at existing petrol pump locations. This approach solves two challenges simultaneously: acquiring land for charger deployment and placing chargers where motorists already expect to refuel.
2. This initiative gained significant traction in late 2025, when Oil Marketing Companies (OMCs) led a drive resulting in over 18,000 charging stations being installed at petrol pumps in Delhi alone. This programme must be scaled nationally and with urgency, extending it to petrol pumps across highways and Tier-2 and Tier-3 cities would provide the most direct and cost-effective short-term solution to range anxiety, while leveraging existing consumer behaviour and infrastructure footprints.

Recommendation 3: Buyback of EVs

Asset buyback programs are where an OEM or financial institution guarantees the repurchase of a vehicle or battery at a predetermined residual value (typically around 20% after three to four years) these programs are emerging as a vital but underdeveloped instrument to accelerate EV adoption. These programs directly address consumer anxiety around resale uncertainty, battery degradation, and technological obsolescence, which remain significant barriers to purchase. While niche NBFC players such as Ecofy have begun integrating buyback components into EV financing products, and NITI Aayog has recommended that OEMs develop structured residual value management programs, the market lacks the scale and standardisation needed for broad impact. International precedents, including Volkswagen's guaranteed buybacks in the EU and CATL's battery health certification model in China offer actionable templates. There needs to be a push in the regulations around guaranteed buybacks until there is a creation for a secondary market that can ease both the economic and social impact of purchasing an EV.

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