Electrifying India's Long-Haul Trucking

forvis mazars

India’s long-haul trucking electrification will not scale through vehicle subsidies alone. It needs corridor-led pilots where fleet demand, charging infrastructure, parking, financing, batteries and OEM support are designed as one investable system. The business case is emerging, but the operating model must change.

India’s long-haul vehicle (LHV) transition focused on medium- and heavy-duty freight trucks moving goods across inter-city and industrial corridors; is not a niche sustainability story. It sits at the centre of logistics cost, energy security, freight reliability and industrial decarbonisation. It is no news that India’s vehicle electrification story is still emerging and far from being global. The domestic demand for electric vehicles (EVs) is huge and there is enough room for investment and scaling up. According to government data, India had 56.75 lakh registered electric vehicles as of February 2025, supported by demand incentives, charging infrastructure programmes and domestic manufacturing efforts[1]. However, electrification in long-haul trucking remains limited and faces distinct operational and financing constraints.

Road freight is the backbone of India’s goods movement. According to estimates from NITI Aayog and RMI about 70% of India’s freight transport is road-based, with an average freight lead distance in India of about 550 km, making long-distance trucking central to freight movement. Heavy-duty trucks carry the largest share of this road freight: in NITI Aayog’s zero-emission trucking report, heavy-duty trucks account for 76% of road freight demand, while medium-duty trucks account for another 21%. The same report estimates that India’s truck stock could grow from about 4 million trucks in 2022 to roughly 17 million by 2050 if current freight demand trends continue.[2, 3]

That scale creates a clear business and environmental “so what”.

Freight is essential to GDP growth, but today’s diesel-heavy model is expensive and emissions-intensive. NITI Aayog and RMI estimates that fuel costs can account for about 70% of the total cost of ownership of a diesel heavy-duty truck, while medium and heavy-duty trucks contribute 41% of vehicular CO_2 emissions and 53% of PM emissions - a disproportionate footprint compared with their share of vehicle population. The Ministry of Heavy Industries estimates that diesel trucks, while only around 3% of total vehicle population, contribute 42% of transport-related greenhouse gas emissions. Dependence on imported diesel also exposes India to oil price shocks, adding pressure on the balance of payments, foreign exchange reserves and inflation. Given that LHVs are central to moving fast-moving consumer goods (FMCG), including food products, disruptions in freight costs or fleet operations can directly affect supply chains and contribute to higher consumer and food prices.[2, 4]

Market overview: large base, limited electrification

India's commercial vehicle market is large, but electrification remains limited.

The Society of Indian Automobile Manufacturers (SIAM) reported domestic commercial vehicle sales of 9.56 lakh units in FY2024–25, despite a marginal 1.2% decline from the previous year, with demand shifting toward higher gross vehicle weight trucks as improved highways increased payload efficiency. Recent FADA data also indicates continued freight demand, with commercial vehicle retail sales growing 15.02% year-on-year in April 2026.

EV adoption, however, remains low. Federation of Automobile Dealers Associations (FADA) data shows electric vehicles accounted for only 1.55% of commercial vehicle retail registrations in CY2025, rising to 2.35% by December 2025. The gap is sharper in heavy trucks: WRI India estimates that electric truck deployment remained limited to just over 1,000 vehicles on Indian roads by 2025, while RMI notes that only around 5% of chargers could support truck-level charging requirements.[5, 6, 7, 8]

Why EV-fication is ripe now

First, the policy signal has changed. In July 2025, the Government of India launched its first direct incentive scheme for electric trucks under PM E-DRIVE, covering N2 trucks above 3.5 tonnes and up to 12 tonnes and N3 trucks above 12 tonnes and up to 55 tonnes, with incentives positioned to support 5,600 e-trucks and reduce freight emissions.[4]

Second, the operating economics are starting to matter more than the purchase price alone. Diesel volatility, high utilisation and fixed-route movement make long-haul trucking a strong candidate for total-cost-of-ownership (TCO) optimisation. RMI’s 2026 analysis notes that electricity costs alone can account for 30–50% of an electric truck’s seven-year total cost of ownership (TCO). At the same time, without additional subsidies, electric trucks remain 14–22% more expensive than diesel trucks in India. The economics therefore depend on lowering operating costs and improving utilisation: cheaper charging, higher vehicle utilisation and better financing structures are critical to narrowing the cost gap and making electric LHVs commercially viable.[8]

Third, India has natural corridor advantages. According to Niti Aayog's Transforming Trucking in India report, 50% of India’s vehicle freight traffic travels along seven major corridors connecting Delhi, Mumbai, Chennai, Kandla, Kochi and Kolkata. Dense, repeatable freight lanes are exactly where charging infrastructure, anchor fleet demand and maintenance support can be deployed with higher utilisation and lower risk.[3]

But the system is not yet bankable: Adoption challenges

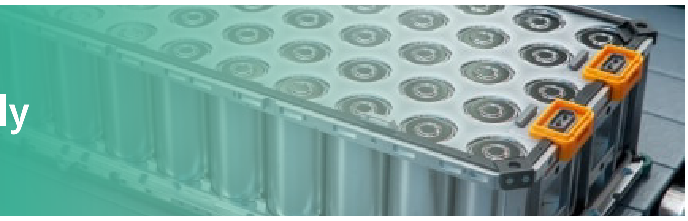
The first barrier is financing

Electric trucks have higher upfront costs, uncertain residual values and limited performance history. Many lenders continue to assess e-trucks using risk frameworks designed for internal combustion engine (ICE) vehicles, contributing to conservative loan-to-value ratios and limited product innovation. Studies identify credit guarantees, residual value guarantees, leasing and targeted tax incentives as high-impact early-market mechanisms. In practice, the sector needs longer-tenure financing, 7-10 year lease-style structures where viable, usage-linked repayment, battery leasing and OEM-backed residual value guarantees. Without this, a transporter may see lower running cost on paper but still reject the asset because monthly EMI does not match route cash flow.[7]

The second barrier is infrastructure

Long-haul EVs need more than chargers; they need truck-compatible charging, grid capacity, safe parking, driver rest facilities, service bays and holding areas. RMI notes that India's truck-charging infrastructure has not kept pace with e-truck growth, and WRI highlights that e-freight requires reliable high-power charging along highways, logistics hubs and rest stops. For LHVs, charging downtime is lost revenue. This increases the importance of integrated charging and parking hubs at major freight nodes rather than isolated highway charging points.[8, 9]

The third barrier is battery supply



India remains dependent on imported lithium-ion cells. According to a 2024 analysis from International Institute for Sustainable Development, India largely imports lithium-ion cells, which account for roughly 75-80% of the total cost of lithium-ion batteries, while domestic activity is still concentrated largely in battery module assembly and pack integration. WRI also notes that India's lithium-ion battery manufacturing focus remains primarily on assembling packs using imported cells, although 40 GWh of a targeted 50 GWh has been allocated under the ACC PLI scheme. The latter scheme aims to establish domestic manufacturing of 50 GWh battery cells. For heavy trucks, where battery size is materially larger than two-wheelers or cars, battery availability, warranty confidence and localisation will directly influence vehicle economics.[7, 10]

Corridor-led pilots should come before national rollout

The right adoption pathway is corridor-led, not national rollout-led. India should start with high-volume lanes where freight is predictable, demand can be aggregated and chargers can be commercially viable. Closed-network pilots - anchored by large shippers, fleet operators, OEMs, financiers and charging players - can generate the data lenders need: utilisation, range, battery degradation, downtime, maintenance cost, resale assumptions and driver behaviour. And it is possible to develop a first-of-its-kind zero-emission truck corridor that can build market confidence and create learnings to electrify India's major freight corridors.[3]

What businesses should do next

For businesses, the message is clear. Lenders need to move from vehicle loans to structured freight-finance products but this will need policy incentives for the lenders . Government should prioritise corridor-based charging incentives, logistics parks, truck terminals and viability-gap support for early deployments. OEMs and battery players must localise supply, provide warranties, service assurance and buyback or residual-value support. Fleet operators should begin with fixed-route pilots and share operating data to improve lender confidence. Charging players should prioritise high-traffic freight corridors, not just urban EV clusters.

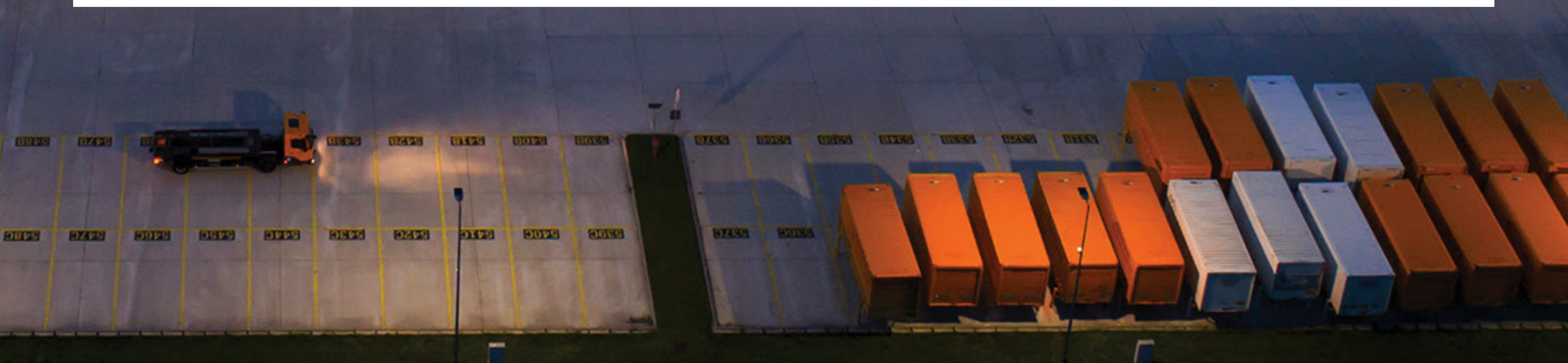
A steering committee under MHI or MORTH should be established to coordinate actions across stakeholders, align policy implementation, monitor corridor pilots and address cross-sector bottlenecks in financing, charging infrastructure and vehicle deployment.

India's long-haul trucking transition will not be won by subsidy alone. It will be won by designing investable corridors where vehicle, battery, charger, parking, finance and freight demand work as one system.

That is the business case: lower operating cost, lower emissions and a more resilient freight network - provided the ecosystem solves for utilisation and bankability first.

Stakeholder actions at a glance

Stakeholder	Priority action
Lenders / banks / NBFCs With well designed policy incentives	Develop long-tenure products, lease-based models, usage-linked repayment and risk-sharing tools that reduce affordability barriers.
Government / policymakers	Incentivise corridor charging, truck terminals, parking hubs, logistics parks, VGF support and domestic battery manufacturing.
OEMs / battery players	Localise battery supply, develop fit-for-purpose electric truck models, and provide warranties, service assurance and residual-value support.
Fleet operators / logistics players	Run fixed-route pilots, participate in closed networks and share utilisation data to improve financing confidence.
Charging infrastructure players	Prioritise high-traffic freight corridors and build fast-charging infrastructure designed for truck parking, dwell time and turnaround needs.



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Contacts

Bharat Dhawan
Managing Partner
bharat.dhawan@mazars.co.in

Rohit Chaturvedi
Partner, Government, Infrastructure and Development Advisory Services
rohit.chaturvedi@mazars.co.in

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