Centre of Excellence for Zero Emission Trucking
CoEZET

IIT MADRAS
Indian Institute of Technology Madras

GET ZET
SHIFTING GEARS TO ZERO EMISSION TRUCKING

January 2026

Generating Awareness About Zero Emission Trucking Amongst the User-Layer of Trucking Community

NAYI SOCH KI SAWAARI

PURPOSE

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Context

India's transport sector is the fastest-growing source of carbon emissions, with road transport responsible for the majority of energy use and emissions. Within this sector, commercial trucking contributes nearly one-third of transport-related CO_2 emissions, making freight electrification, particularly in the medium and heavy-duty segments, critical amid rapid urbanisation and the growth of e-commerce.

Medium and heavy-duty trucks account for a disproportionately high share of fuel consumption and emissions relative to their numbers, with direct implications for air quality, public health, and climate outcomes, particularly along major freight corridors and industrial clusters. As India's freight demand continues to grow, the environmental, economic, and energy security benefits of transitioning to zero-emission freight technologies are expected to increase correspondingly.

Trucks represent just 3% of the total vehicle fleet yet are responsible for 53% of particulate matter emissions and one-third of transport-related CO_2 emissions in India.

The transition to Zero Emission Trucks presents a significant opportunity

01
Potential to eliminate up to 838 billion litres of diesel consumption

02
Reduce oil import expenditures by ₹116 Lakh Crore by 2050

03
Delivering cumulative savings of 2.8-3.8 gigatonnes of carbon dioxide.

Realising this potential will require addressing challenges across the trucking ecosystem, particularly those faced by the user layer that plays a central role in day-to-day operations. Ensuring inclusion of drivers, mechanics and fleet operators who are responsible for operation and maintenance of trucks is essential for effective and sustained utilisation of Zero Emission Trucks in real-world conditions.

Source: Transforming Trucking In India - Niti Ayog (2022)

Problem Statement

There is a critical need to build awareness and understanding of electric trucks among the end-users in the trucking ecosystem, which includes small fleet operators, truck drivers, mechanics, and allied stakeholders.

Despite being directly impacted by the transition to zero-emission trucks, these groups remain largely at the periphery of the transition process with limited inclusion in the mainstream conversations on electric mobility

In this context, the Centre of Excellence for Zero Emission Trucking, an initiative by IIT Madras, partnered with Purpose to generate awareness about electric trucks among the user layer of the trucking community.

The collaboration sought to bridge information gaps between technical knowledge systems and ground-level users by enabling access to credible and context-specific information that supports informed engagement with Zero Emission Truck technologies.

Project Outcomes

Built a holistic communications infrastructure

Through this project, we have built a holistic communication infrastructure that brings together multiple awareness channels supported by continuous feedback loops. This multi-pronged approach allows the system to remain flexible and responsive to evolving knowledge on ZETs, while effectively reaching a fragmented, mobile, and largely informal end-user audience.

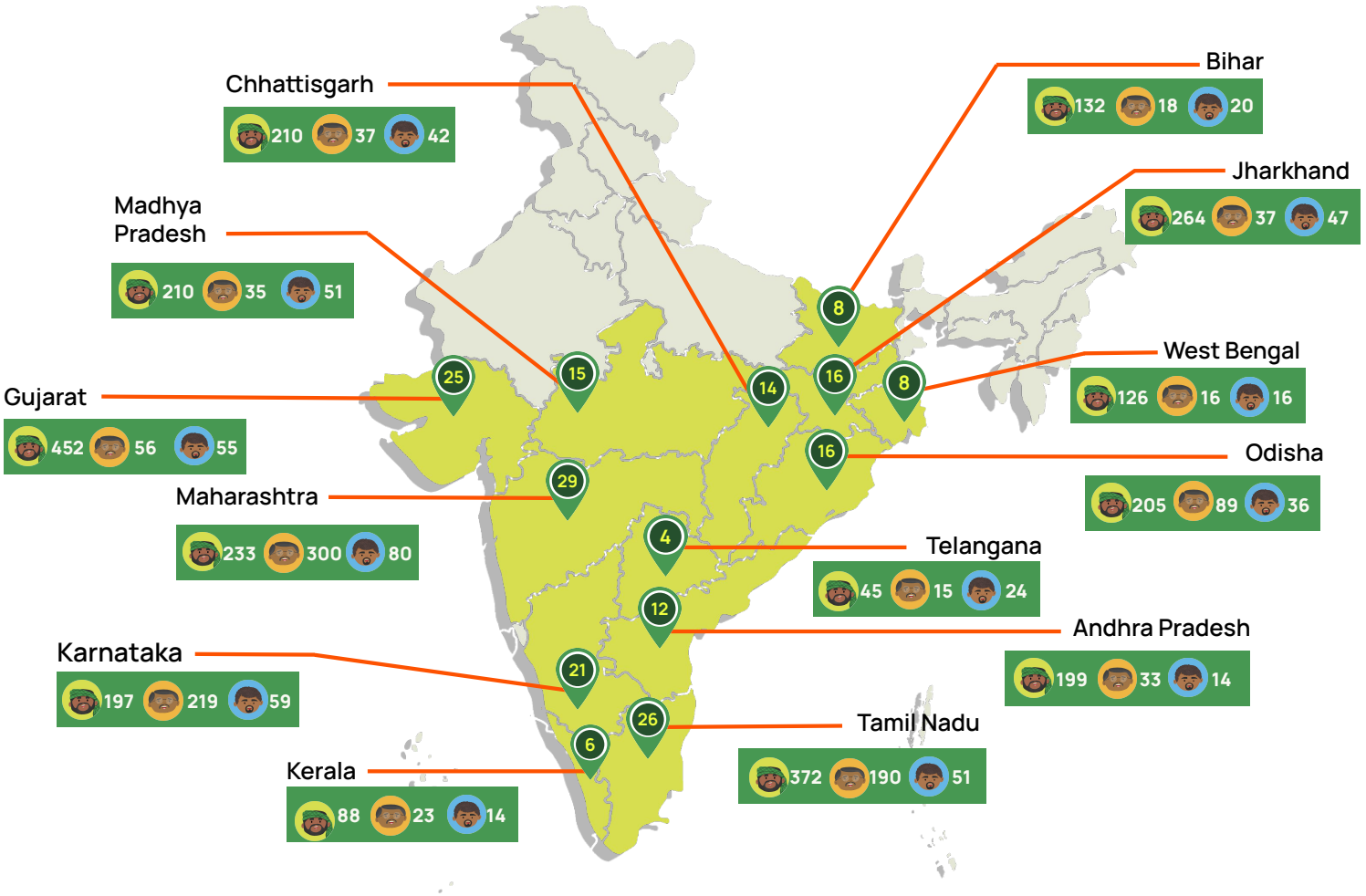
Created user-centric awareness and engagement tools

Guided by behavioural insights, the project developed user-friendly engagement tools that prioritise dialogue over one-way training. Offline formats used gamified and informal setups to encourage honest two-way conversations, supported by simple, multilingual audio-visual content that breaks down technical jargon and grounds information in everyday operational contexts

Bridged the gap between subject matter experts and end-users

The initiative created a two-way platform connecting end users and experts. On-ground feedback captured real questions from fleet operators and drivers, which were taken to experts and addressed through content and interactions allowing the programme to stay responsive to the evolving ZET technology and policy landscape.

Geographical Coverage



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- Total events in the state
- Drivers
- Fleet Owners
- Mechanics

Total Events: 200

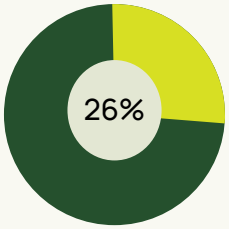
Total Participants: 4362

2799	1068	495

Perception Survey

As part of the engagement plan, a survey was included to gauge the awareness levels and perceptions of key stakeholders about electric trucks. A total of **1202 respondents** took part in the survey, making up around **28% of the stakeholders** engaged during the awareness sessions, in 61 cities in 13 states. Survey participants were randomly selected from among actively engaged stakeholders attending these sessions.

THESE INCLUDED



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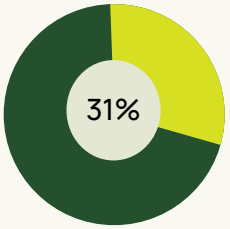
DRIVERS



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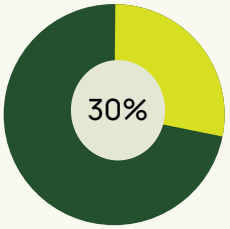
FLEET OPERATORS



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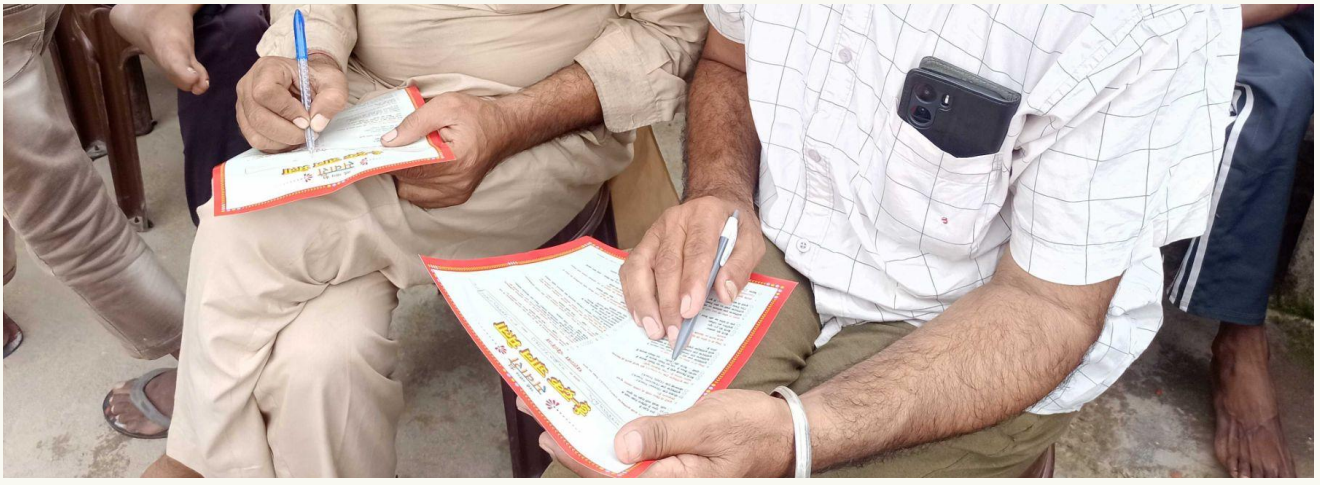
MECHANICS



Perception Survey - Key Results

58% Participants got introduced to electric trucks during the awareness sessions

90% Truck drivers expressed interest in trying electric trucks.

64% Participants reported increased confidence in the feasibility of electric trucks

97% Mechanics expressed willingness to upskill

State-wise Overview

Awareness and Willingness

Emerging Markets

Well-positioned for targeted confidence-building interventions before adoption


Kerala


Gujarat


Andhra Pradesh


Telangana

Potential Early Adopters

Ready for engage in conversations about adoption


Maharashtra


Karnataka


Tamil Nadu

Structurally Constrained

Requires long-term engagement on foundational awareness and confidence-building before adoption


Bihar


Madhya Pradesh

Use Case Based Adopters

Willing to engage, but feasibility limits adoption to specific use cases.


Odisha


Chattisgarh


West Bengal


Jharkhand

Perceived Feasibility

State-wise Overview

Emerging Markets

Gujarat I Telangana I Andhra Pradesh I Kerala

- Awareness and willingness are high, particularly among drivers and mechanics.
- EVs are perceived as suitable for short- and medium-haul operations.
- Feasibility is constrained by gaps in charging infrastructure, servicing networks, and battery lifecycle clarity.
- Fleet operators are open but highly sensitive to downtime and ROI risks.

Potential Early Adopters

Maharashtra I Tamil Nadu I Karnataka

- Drivers show high willingness to try EVs and confidence in their operational capability.
- Fleet operators have the organisational capacity and financial bandwidth to experiment.
- Logistics routes are predictable, corridor-based, or depot-led, making EV integration more feasible.

Structurally Constrained

Bihar I Madhya Pradesh

- Limited baseline awareness; most stakeholders encounter EVs for the first time during interventions.
- Freight operations are informal, cost-sensitive, and heavily dependent on diesel economics.
- Overloading, unreliable power supply, and small fleet sizes amplify risk perceptions.
- Willingness exists, but confidence in feasibility is low.

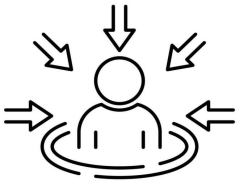
Use Case Based Adopters

Odisha I Jharkhand I West Bengal I Chhattisgarh

- Awareness is high, often driven by peer exposure (mines, ports, industrial clusters) or direct engagement.
- Willingness to try EVs is strong, especially among drivers.
- However, real-world constraints—terrain, overloading practices, long routes, or safety concerns—limit broader feasibility.
- Fleet operators remain cautious, preferring pilots tied to specific use cases.

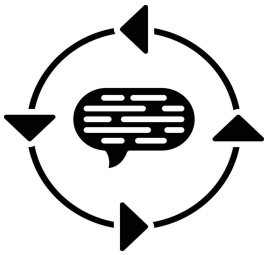
Our Approach

User-Centric and Evidence-Led Design



All project activities were grounded in an extensive insights-gathering phase that included stakeholder mapping, focus group discussions, in-depth interviews, and co-creation workshops. These insights were further validated through field immersion visits, ensuring that engagement formats and messaging strategies were rooted in real operational contexts and user realities.

Adaptive and Feedback-Responsive Implementation

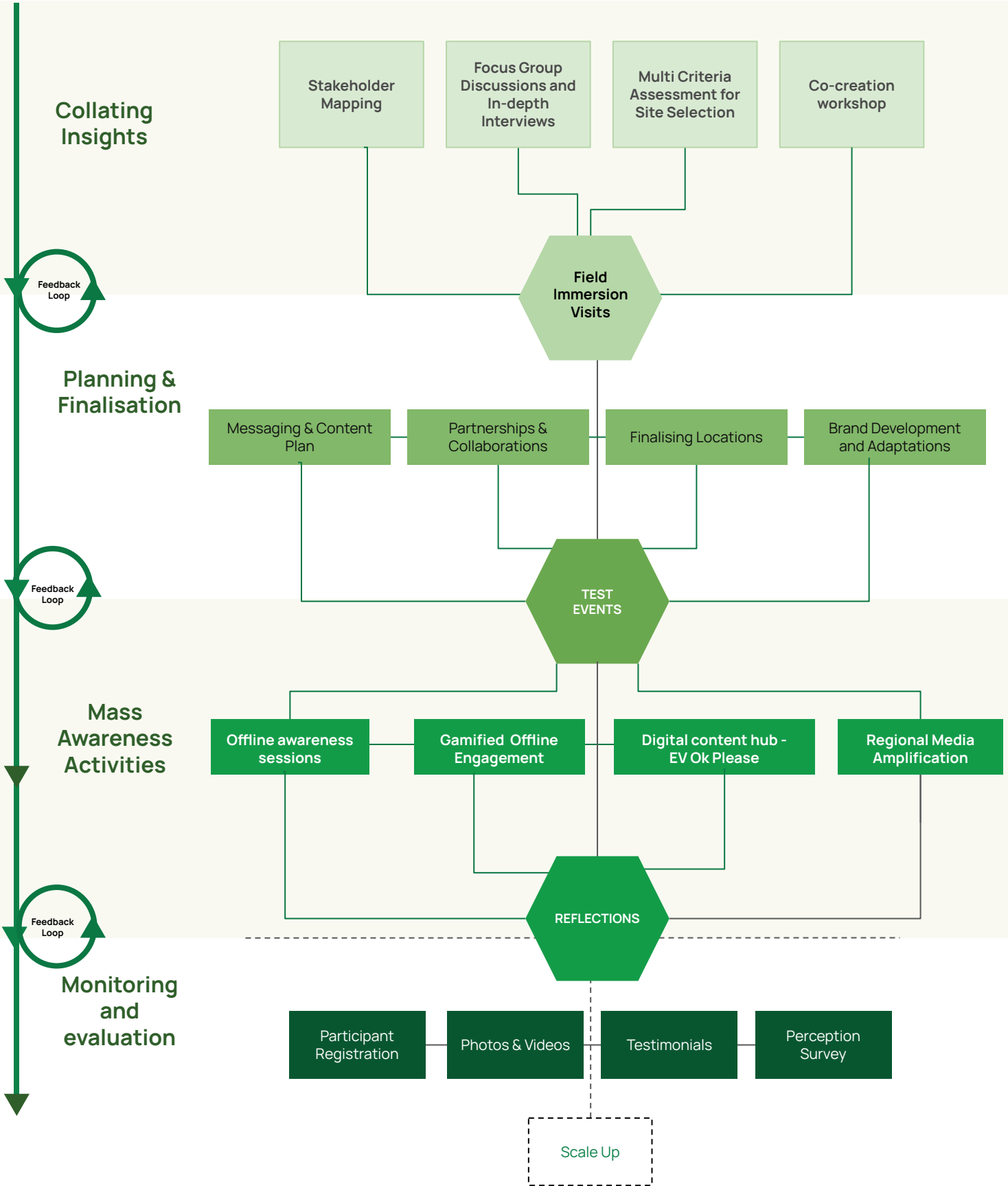


The content and engagement plan remained dynamic throughout the project, informed by continuous monitoring of on-ground interactions. Perception surveys, qualitative observations, and participant testimonials were used to track emerging questions and concerns, which were systematically addressed in subsequent events—allowing the programme to remain relevant, responsive, and accountable.

Trust-Building Visuals and Messaging Framework

A distinct visual identity and messaging framework was developed early in the project, informed by the socio-cultural and emotional context of end-users. This ensured communication remained relatable, transparent, and aspirational, positioning the initiative as an independent, trustworthy platform rather than a commercial or vested-interest narrative, and fostering credibility across all engagements.

Approach Overview



Key Audience Insights Guiding the Approach

Trust Is Built Through Local and Familiar Communication

End-users consistently prefer communication that is simple, locally grounded, and free of technical jargon. Familiar language and culturally recognisable framing are essential for information to be trusted, understood, and acted upon.

Aspiration, Dignity, and Family Well-Being Drive Early Adoption Intent

Aspirational narratives that link electric trucks to improved family security, dignity of work, and community progress resonate more strongly than environmental or technical messaging alone. When EVs are framed as a symbol of professional advancement, intent to engage increases significantly.

Professional Identity and Pride Are Powerful Engagement Anchors

There is a deep emotional connection to traditional truck art, symbols, and visual expressions, which function as markers of identity and pride. Communication that respects and reflects this cultural identity is more likely to create resonance and acceptance.

Modernisation Is Seen as a Pathway to Recognition and Respect

Many drivers and operators feel economically indispensable yet socially invisible, despite their critical role in national supply chains. Sectoral modernisation—particularly through electric trucks—is viewed as a means to elevate the profession's status and restore social respect.

Strong Support Exists for Clean Freight and National Transition

End-users demonstrate a strong willingness to support cleaner freight systems, driven by national sentiment, energy independence, and concern for the health and future of their families and communities. While economic realities remain important, there is a clear desire among participants to be part of a positive, forward-looking transition for the sector.

Learnings and Opportunities

1 Fleet Operators Are the Critical Gatekeepers and Require Risk-Mitigated Pathways to Adoption

Engagement with fleet operators reveals a pragmatic, risk-first approach to electric truck adoption. While awareness levels are relatively high and interest exists, decision-making is strongly shaped by concerns around capital cost, downtime, battery life cycle, resale value, insurance, and service reliability. Fleet operators consistently expressed a preference for **evidence-based assurance**, including real-world pilots, demonstrations, and transparent Total Cost of Ownership (TCO) comparisons, rather than aspirational messaging alone.

2 High Willingness Among Drivers Presents an Opportunity for Deeper Engagement

While **90% of drivers expressed willingness to try electric trucks**, skepticism around performance persists. Over half of the drivers (**52%**) remain unconvinced that electric trucks can fully replace diesel vehicles, and **51%** continue to believe that diesel trucks offer superior power and torque. This gap between willingness and confidence indicates a clear opportunity for **strategic, knowledge-led engagement**—including demonstrations, pilots, and peer learning—to convert openness into informed advocacy and long-term adoption.

Learnings and Opportunities

3 Environmental Support Is Strong, Creating an Opportunity for Science-Based Engagement

There is broad recognition of the environmental potential of electric trucks, with **91% of participants agreeing that they can help reduce air pollution**. At the same time, varying interpretations emerged—ranging from perceptions that BS6 diesel trucks are equivalent due to reduced visible emissions, to questions around well-to-wheel impacts beyond zero tailpipe emissions. These perspectives highlight the need for **accurate, science-based communication** that clearly explains emissions across the vehicle lifecycle. Importantly, the findings also reveal a strong willingness among participants to be part of the solution, presenting a clear opportunity to channel this positive sentiment through credible information and practical pathways for action.

4 Direct, On-Ground Engagement Is Critical for Building Confidence

The project demonstrates that direct engagement is irreplaceable in shaping awareness and confidence. While **58% of participants reported hearing about electric trucks for the first time during the awareness sessions**, baseline confidence remained low prior to engagement—only **16% of participants initially considered electric trucks to be viable alternatives to diesel vehicles**. Following the sessions, this figure increased substantially, with **64% of participants viewing electric trucks as a feasible option**, highlighting the effectiveness of targeted, in-person interventions in shifting perceptions.

Fleet Operators

Challenges to overcome:

- High upfront costs and limited access to affordable financing
- Smaller fleet owners don't find electric trucks financially viable
- Gaps in charging infrastructure, grid reliability, and long charging durations
- Reduced payload efficiency due to heavy battery packs
- Safety concerns for coal and hazardous-cargo operations
- Expectations of charging points every 30–40 km and a range of 1,000–1,200 km for certain use-cases
- Pricing expectations linked to vehicle lifespan and regional usage policies
- Uncertainty around resale value and toll or tax exemptions

Motivations to leverage

Anticipated long-term savings from reduced fuel and maintenance costs

Alignment with environmental goals and fleet modernisation

Openness to pilot projects once financing, charging, and service ecosystems stabilise

Frequently Asked Questions To Be Answered

What is the realistic range under full load, hilly routes, and extreme weather?

What charging time can be relied upon, and where will fast-charging corridors be located?

What is the battery lifespan, replacement cost, and warranty or recycling coverage?

Can local mechanics be trained and supplied with spare parts?

What subsidies, green loans, or tax incentives are available?

How will insurance and regulatory frameworks adapt for electric fleets?

Drivers

Challenges to overcome:

- Economic insecurity due to loss of diesel-linked side earnings; existing wages viewed as unsustainable
- Demand for revised salaries in the **₹30–40K range**
- 91% concerned about limited charging points and long charging downtime affecting delivery schedules
- Battery safety concerns, particularly for hazardous-cargo and mining operations
- Range limitations of approximately 200–250 km per charge for long-haul trips
- Concerns about future electricity price increases affecting cost benefits

Motivations to leverage

- Preference for smoother, quieter, and more comfortable driving experience
- Recognition of pollution reduction and environmental benefits
- Interest in innovations such as solar-powered or overhead highway charging
- Belief that strong torque and comfort can drive acceptance if infrastructure and wages align
- Perception of charging breaks as rest periods improving safety

Frequently Asked Questions To Be Answered

What **range** can be achieved with full cargo, steep gradients, and heavy use?

How long does a complete charge take in real-world conditions?

Are roadside fast chargers and assistance **available on highways?**

What **safety measures** prevent short circuits, fires, or cabin hazards?

Will battery life and warranty match **vehicle lifespan?**

How will **wage structures** change once diesel-related income disappears?

Will **electricity prices** stay stable over time?

Mechanics

Challenges to overcome:

- Fear of job displacement among traditional engine and gearbox specialists
- Hesitation among senior mechanics to retrain due to limited formal education
- High cost of diagnostic tools and uncertain access to EV components
- Limited availability of EV-ready service centres and safety infrastructure

Motivations to leverage

Strong interest among younger mechanics in learning new skills

Recognition of upskilling as essential for long-term livelihood security

Willingness to participate in government or manufacturer-led skilling programmes if accessible

Frequently Asked Questions To Be Answered

What training or certification programmes are available for EV repair and maintenance?

Will workshops receive support for diagnostic tools and safety equipment?

How can small garages access high-voltage repair tools affordably?

What safety standards apply to electric trucks in hazardous-cargo operations?

Will spare parts and repair data be accessible to independent workshops?

Tools and Resources

Shared tools and resources to support collective action across the clean freight ecosystem

1 EV OK Please - Digital Information Hub

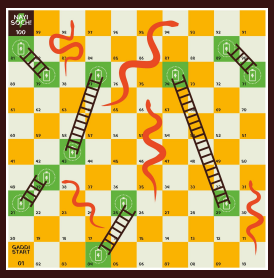
A central digital information hub was created to aggregate science-based accurate information with diverse perspectives on electric trucks. The YouTube channel featuring multiple Indian languages brings together experts, fleet operators, drivers, and mechanics. With more than **100 videos** ,**3.5 million views, 900+ subscribers**, the content library is open for reuse by ecosystem partners, and the platform can also host externally developed, end-user-relevant content to extend its reach and utility

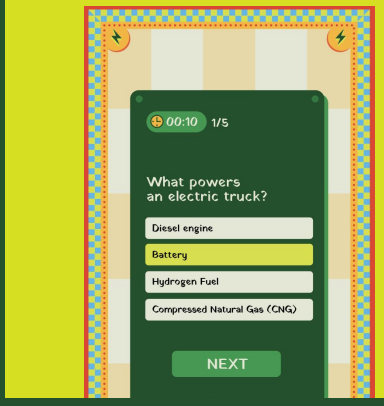
2 Neutral brand identity, creative assets and messaging guidelines .

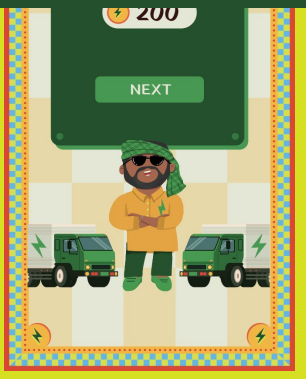
The *Nayi Soch Ki Sawaari* identity, meaning "a vehicle for a new way of thinking", was developed using the everyday language, aspirations, and feedback of drivers, mechanics, and fleet operators. The name and visual system frame electric trucks not merely as a technological change, but as a symbol of progress, dignity, and future opportunity within the trucking profession. This identity and its design elements can be adopted by ecosystem organisations to create communication assets that feel independent, relatable, and trusted by end-users.

3 Gamified engagement tools.

Adaptations of familiar games were designed to create a safe, informal space for end-users to express their understanding, concerns, and assumptions about electric trucks. Offline formats such as a customised snakes-and-ladders game prompted participants to articulate perceived benefits and limitations, while a digital, level-based game integrated knowledge checks in place of advertisements. These tools enabled two-way engagement, helped surface misconceptions organically, and can be readily replicated or customised for similar awareness and confidence-building interventions..







4 Offline engagement templates

A set of offline engagement templates was developed and refined through over 300 direct interactions with end-user**s** across diverse contexts. These formats were designed to reflect on-ground realities such as limited time availability, preferred meeting locations, and varying literacy levels. By accounting for practical constraints faced by drivers, mechanics, and fleet operators, the templates enable efficient, respectful, and repeatable engagement and can be readily adopted by other organisations working in similar field conditions.

- Offline Awareness Sessions
- Gamified Offline Engagement
- Digital Content Hub – EV OK PLEASE
- Regional Media Amplification

Key Challenges

Fragmented and hard-to-reach user ecosystem

The trucking ecosystem is highly mobile and dispersed, with no fixed institutional touchpoints. Limited access to information in consumable and user-relevant formats results in heavy reliance on peer networks and informal sources, increasing the risk of misinformation and reinforcing existing misconceptions.

Lack of access to credible information about ZETs

Learnings and technology insights generated by academic organisations, think tanks, and industry actors are often inaccessible for drivers and small fleet operators. This is primarily due to the use of technical jargon, limited audio visual and locally relevant content.

Rapidly evolving ZET Ecosystem

Beyond limited access to information, the nascent and fast-evolving nature of ZET technology poses as a challenge for awareness efforts. Standards, cost structures, and performance insights are still emerging, with research findings and pilot results being updated continuously. In such a dynamic context, building awareness is not about sharing static information, but about helping stakeholders navigate an evolving knowledge landscape with clarity and confidence.

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PURPOSE