SUMMARY REPORT

WORKSHOP ON ACCELERATING THE SHIFT: TRANSITION TO ZERO-EMISSION TRUCKS

October 24, 2024, Marriott Hotel, Indore

WORKSHOP OVERVIEW

'Accelerating the Shift: Transition to Zero Emission Trucks,' the Zero Emission Truck (ZET) Enablement Workshop, aimed at enhancing the regional ecosystem readiness with curated knowledge sharing and deliberations on Zero Emission Trucks. Organized by Smart Freight Centre (SFC) India and supported by the Indore Management Association.

This workshop is part of a pan-India campaign under Niti Aayog's e-FAST initiative aimed at enhancing regional ecosystem readiness with curated knowledge sharing and deliberations on Zero-Emission Trucks. Topics include technological and operational aspects, global ecosystem developments, Government of India e-truck initiatives, city-level ZET adoption opportunities, operational risks, and deployment SOPs.

The workshop's objectives were threefold:

- Introduce ZETs and the Medium and Heavy-Duty Truck (MHDT) freight sector to the audience.
- Identify the current challenges in the adoption of ZETs.
- Gather insights on the awareness levels and barriers faced by ecosystem stakeholders.

Enablement Layer – Stakeholders

Regional/ City Public Offices
- District Collectors Office
- Regional Transport Authorities
- Traffic Police Department
- Municipal Corporation
- Pollution Control Board
- Environment Dept officials
- Town Planning department
- Department of Industrial policy and investment

Public Infrastructure Offices
- PWD
- Regional NHAI Offices
- DISCOM(s) & Electricity Boards

First Responders
- Hospitals and Emergency health Services
- Fire Department
- Police Department

Regional Industry Representatives
- Shippers, LSPs, Larger fleet operators and OEM representatives
- Energy Infra Companies (Fuel stations-Gasoline, CNG, LNG)
- Charge Point Operators
- eMaaS* & CaaS Providers**
- Regional Transport Associations

Ecosystem Partners
- Banks, NBFCs
- Real Estate Sector representative
- Civil Society organisations

Public and Private Institutional Buyers
- Public Utilities (Power, Waste, Water)
- Local Industries

SPEAKER SUMMARIES

Welcome Address by Vijay Jaiswal, SFC India

The workshop commenced with an opening speech by Vijay Jaiswal, Director of Smart Freight Centre (SFC) India. He underscored the importance of a collaborative, multi-stakeholder strategy to tackle the challenges facing the transition to electric freight trucks. While acknowledging the existing barriers due to the emerging nature of this ecosystem, he noted that solutions would not come swiftly but rather require time and effort to ensure all stakeholders are aligned, laying a solid foundation for the growth of a greener freight system in India.

The address further highlighted the crucial role of government support in expediting the adoption of zero-emission trucks (ZETs) and the necessity for industry partners to foster a resilient ecosystem capable of sustaining large-scale ZET deployment. This ecosystem encompasses Original Equipment Manufacturers (OEMs), fleet operators, energy providers, and developers of charging infrastructure, all of whom are essential to advancing sustainable logistics.

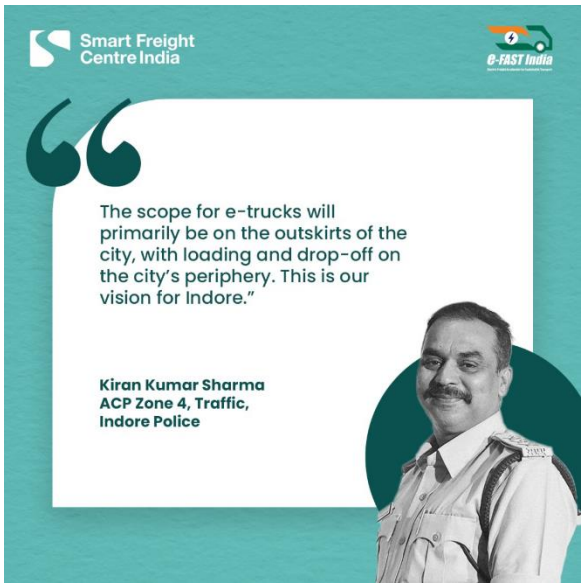
Special Address by Gaurav Benal, Additional Collector, Indore District, MP

Gaurav Benal, Additional Collector, Indore District delivered the keynote address. He highlighted the city's commitment to environmental sustainability through various innovative projects. Gaurav emphasized Indore's efforts in developing initiatives such as bio-CNG, electric buses, e-bike programs, and solar rooftop installations, all aimed at promoting a clean and green environment. These achievements are credited to strong commitment and active citizen participation, which have transformed challenges into opportunities for progress. The city's dedication to adopting eco-friendly technologies has established it as a leader in sustainability initiatives.

The dialogue centred around zero-emission trucks is expected to benefit the city and the broader ecosystem stakeholders from various sectors, including municipal authorities, transport departments, and industry representatives. Gaurav also pointed out the importance of addressing the technological, operational, regulatory, and economic aspects of implementing zero-emission trucks to ensure they are competitive. Ultimately, the conference aims to foster meaningful conversations that will contribute to successfully integrating zero-emission trucks into the transportation system.

Panel discussion by Pradeep Kumar Sharma, RTO Indore, M.P Transport Dept.

Pradeep Kumar Sharma, RTO Indore, M.P Transport Dept, highlighted the challenges and potential of electric trucks in the current market. While the concept of zero-emission vehicles is promising, financial constraints often hinder their widespread adoption, as many operators cannot afford the higher upfront costs compared to traditional trucks. He pointed out that while electric trucks may initially face issues with reliability and operational costs, competition is increasing, leading to a gradual improvement in success rates. They noted the importance of government support and streamlined processes, such as online licensing, to facilitate operations. To encourage adoption, it's crucial to showcase significant price reductions for electric trucks to make them more appealing in the retail market. Overall, he emphasized that electric trucks represent a vital step toward a sustainable future, but achieving widespread acceptance requires addressing economic viability and operational challenges.



Panel discussion by Kiran Kumar Sharma ACP Zone 4, Traffic Indore Police.

Shri Kiran Kumar emphasized that the focus for electric trucks should go beyond the switch from diesel to electric, considering factors like traffic congestion and urban infrastructure in Indore. They pointed out that commercial activity is dense, even within residential areas, creating high traffic and logistical challenges. He argued that easing tax burdens on electric trucks, like reducing e-way bill taxes and RTO

registration costs, could encourage their adoption. Additionally, they highlighted the need for better regulation to avoid penalizing drivers and trucking companies for accidents when they comply with safety standards, suggesting that policy support and incentives for electric trucks would make them a more practical and attractive option in urban logistics.

Presentation by Barsha Paul , e-Mobility Hydrogen and ZET specialist, pManifold

Barsha Paul from pManifold introduced the ZET Policy Advisory, launched under e-fast India at the Office of the Principal Scientific Advisor. Zero-emission trucks are essential for lowering fuel imports and greenhouse gas emissions, and within the next decade, they are expected to become more economical than diesel or CNG options. However, the shift to zero-emission trucking faces obstacles like high initial costs, limited vehicle models, range anxiety, and uncertainties in the resale market. With INR 500 crore designated for the PM E-DRIVE scheme, swift action from industry, government, and financial institutions is crucial to ensure large-scale deployment. Several state governments are also showing interest in creating green corridors and advancing heavy-duty freight electrification, offering a promising chance to align state policies with national objectives. The Bharat ZET policy advisory is an adaptable document designed to incorporate stakeholder feedback, with its ongoing dissemination intended to gather insights for refining future versions of the policy.

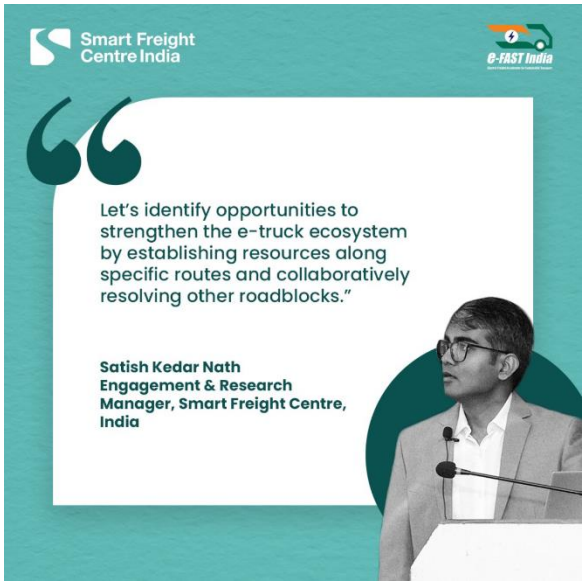
Remarks by Dr. Manish Jaiswal, NATRAX

Dr. Manish Jaiswal mentioned that Zero-emission trucking in India is still in its early stages, with high vehicle costs presenting a barrier to widespread adoption. Subsidies will be essential to encourage uptake, as e-trucks currently have a higher purchase price compared to fuel-based trucks. Despite the initial investment, e-trucks offer significant long-term benefits, including lower operational costs and reduced maintenance requirements, making them more efficient over their lifecycle than traditional vehicles. To support this transition, upcoming highway projects are being designed with dedicated e-trucking lanes, and a hybrid fuel-electric system could provide a backup in case of power failure. Additionally, depot-based fleet management systems would allow trucks to charge while drivers rest, further enhancing operational efficiency. As e-truck technology matures, costs are expected to decrease, much like what has been observed in the smartphone

industry, and battery-powered trucking will play a critical role in reducing CO_2 emissions on the path to achieving zero emissions.

The National Automotive Test Tracks (NATRAX) facility is contributing to this shift by providing comprehensive testing grounds for both conventional and high-speed electric vehicles. With over 100 certifications issued, NATRAX evaluates electric trucks, ambulances, and two-wheelers, ensuring they meet safety and performance standards. In October 2024, the Government of India announced a ₹10,000 crore investment for additional test tracks, underlining the commitment to support electric vehicle certification and safety, including crash barrier testing. This infrastructure will be crucial for the safe and efficient adoption of zero-emission trucking in India.

Context-Setting Presentation by SFC India

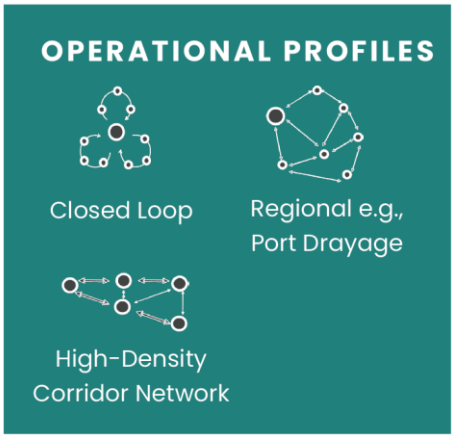


SFC India's presentation focused on the environmental and economic challenges posed by the freight sector in India. While MHDTs account for only 3% of the vehicle population, they contribute 53% of particulate matter emissions. The presentation underscored the urgent need to address these emissions by adopting ZETs, which can significantly reduce air and noise pollution. Battery electric ZETs bought today correspond to GHG emission savings of 65% or more over their life cycle compared to conventional ICE. The presentation also highlighted the environmental and socio-economic impact. At the current technology maturity, ZETs have higher upfront costs than diesel trucks, but the operating costs per ton-km of ZETs are significantly lower.

Value Framework & Messaging

Stakeholders	Key Value Driver	Messaging
Regional Public Offices • State Govt. and City Administration officials • Regional Transport Authorities • Traffic Police Department • Environment Dept officials	• Environmental • Social, • Economic	Environmental Benefits and Social Impact (quality of life, livelihood, public health and welfare)
Public Infrastructure Offices • PWD • Regional NHAI Offices • DISCOM(s) & State Electricity Boards	• Operational	Operational Challenges and Opportunities
First Responders • Hospitals and Emergency health Services • Fire Department • Police Department	• Operational	Operational Challenges and Opportunities**, Safety Protocols**
Regional Industry Representatives • Shippers, LSPs, Larger fleet operators and OEM representatives • Energy Infra Companies (Fuel stations-Gasoline, CNG, LNG) • Charge Point Operators • eMaaS* & CaaS Providers** • Regional Transport Associations	• Operational • Technological • Business	Business, **Technological,** and Operational Challenges and Opportunities
Ecosystem Partners • Banks, NBFCs • Real Estate Sector representative • Civil Society organisations	• Technological • Environmental • Social	Market Perspective (size, scale, opportunity, present state, future prospects), Environmental Benefits and **Social Impact** (quality of life, livelihood, public health and welfare)
Public and Private Institutional Buyers • Municipal Corporations • Public Utilities (Power, Waste, Water) • Local Industries	• Technological • Operational • Business	Environmental Benefits, **Technological**, and Operational Challenges and Opportunities

The latter half of the presentation focused on the Ecosystem barriers for ZETs, including Technology, Operations, Finance, and Policy. The participants also got a glimpse into the playbook for ZET deployment, a step-by-step walkthrough into the operations, TCO metrics, Charging infrastructure assessment, financing, implementation, and KPIs.



Finally, the presentation was concluded with two informative videos: one on the Safety aspects of Battery Electric Trucks for Drivers and the other on the Safety aspects for First Responders. The Centre of Excellence for Zero Emission Trucking (CoEZET), IIT Madras, shared these video materials.

Key Takeaways of the discussions and questions raised

1. Critical Training for First Responders: Specialized training for first responders is essential to effectively manage emergencies involving electric vehicles, ensuring rapid and safe responses to incidents in a green-energy future.

2. Supporting Driver Welfare to Enhance Safety: Well-equipped rest areas for truck drivers can significantly reduce fatigue-related accidents and other risks, including fuel theft, promoting a safer, more efficient transport environment.

3. Innovative Financing Solutions for Fleet Owners: Robust financing models are needed to support fleet owners in managing initial costs and scaling operations, helping to accelerate the transition to electric trucks.

4. Addressing Battery and Vehicle Import Dependency: Currently, India's reliance on imported batteries and electric trucks leads to higher direct costs from shipping, insurance, and potential geo-political risks. Reducing these dependencies can minimize both costs and risks.

5. Boosting Local Production to Cut Costs and Risks: The “Make in India” initiative, supported by Production Linked Incentives (PLI), can drive local manufacturing of batteries and electric trucks, reducing import dependency and fostering a sustainable domestic EV ecosystem.

6. Battery Weight and Load Allowances: Electric truck batteries are significantly heavier than conventional vehicle fuel systems, limiting freight load capacity per trip. Government consideration for weight allowance relaxations could improve e-truck viability and operational efficiency.

7. Financial Incentives for Early Adoption: Electric trucks remain at a nascent stage in India, with higher upfront costs than conventional trucks. Government subsidies and rebates are critical to incentivize fleet owners and catalyze e-truck adoption.

8. Key Considerations for Fleet Owners: Fleet owners evaluate lifecycle costs, permits, maintenance, and other operational expenses when choosing vehicles. Electric trucks offer long-term savings, but awareness around their lifecycle benefits is needed.

9. Long-Term Cost Efficiency of Electric Trucks: Despite higher initial costs, electric trucks offer lower lifecycle and maintenance costs, unlike conventional trucks that require frequent servicing. This cost advantage grows over time, making e-trucks an attractive investment.

10. Policy Support for E-Vehicle Adoption: The government is receptive to easing electric vehicle adoption through policy deliberations and subsidies, underscoring its commitment to a greener transport sector.

11. Reserve Charge Options for Breakdown Resilience: Implementing a reserve charge option in electric trucks could enable stranded vehicles to be moved from high-traffic areas during breakdowns, reducing congestion and inconvenience to the public.

12. Green Hydrogen Production and Emission Reductions: Until green hydrogen is widely available, electric trucks provide up to 65% lower lifecycle emissions, contributing significantly to sustainable transport with reduced cradle-to-grave emissions.

13. Declining Battery Costs and TCO Parity: As battery prices continue to fall, total cost of ownership (TCO) parity between electric and conventional trucks will further tip in favour of electric trucks, making them increasingly competitive.

14. Traffic Challenges in Cities Like Indore: With approximately 12,000 trucks entering Indore daily, narrow streets and pervasive commercial activity create congestion. Transitioning to electric trucks can alleviate emissions and improve air quality, but the challenges to traffic remain

15. Advisory Body for Zero Emission Transition: Establishing a dedicated advisory body would provide policy guidance and support for trucking industry stakeholders, facilitating a smoother transition to zero-emission fleets.

16. Coordinated National and State Policies: Both central and state governments have implemented supportive policies for EV adoption, yet close collaboration is needed to ensure cohesive, effective measures for widespread electric truck adoption.

17. Collaborative Policy Implementation for State Success: National policies require seamless coordination with state governments to drive successful, large-scale adoption of zero-emission trucks across India.

ANNEXURE I – Glimpses from the Workshop

ANNEXURE II – List of Participating Organisations

1. AIC π-Hub, RRCAT, Department of Atomic Energy, Indore
2. AVTEC limited
3. CNH India
4. CUBENZ POWER PVT LTD
5. Estrel AI Pvt. Ltd.
6. Gantavya Engineering Services Pvt Ltd
7. Hindustan Unilever
8. Indore Police
9. M.P. Transport Department
10. MSLGROUP
11. NATRAX
12. pManifold Business Solutions
13. SAFEXPRESS PRIVATE LIMITED
14. Smart City, Indore
15. Techforce Composites Pvt ltd Indore
16. Traffic Police Department, Indore
17. VE Commercial Vehicles Ltd
18. Zeta Innovation Labs

ANNEXURE III – Media Coverage of the Event

पर्यावरण अनुकूल हो परिवहन

दिव्यांक सिंह
आईएएस, सीईओ,
स्मार्ट सिटी, इंदौर

भारत का परिवहन क्षेत्र देश की अर्थव्यवस्था का एक अहम हिस्सा है, जो व्यापार और औद्योगिक विकास में बड़ी भूमिका निभाता की गुणवत्ता में सुधार होता है और लोगों के स्वास्थ्य पर भी अच्छा असर पड़ता है. इससे देश में परिवहन को अधिक स्थिर और पर्यावरण के अनुकूल बनाने में मदद मिलेगी और साथ ही, जीवाश्म ईंधनों पर हमारी निर्भरता भी घटेगी.

डिजिटल तकनीक का उपयोग : डिजिटल तकनीक परिवहन को और अधिक कुशल और टिकाऊ बनाने में बड़ी भूमिका निभा सकती है. रूट

ई-ट्रक से लॉजिस्टिक 17% सस्ता, कार्बन उत्सर्जन 46% तक घटेगा

स्मार्ट फ्रेट सेंटर इंडिया व आईएमए की वर्कशॉप

भास्कर संवाददाता | इंदौर

माल परिवहन के लिए जल्द ही बैटरी इलेक्ट्रिक ट्रक (बीईटी) सड़कों पर नजर आएंगे। स्मार्ट फ्रेट के तहत सरकार ने इसकी तैयारी शुरू कर दी है। अनुमान है कि जीरो इमीशन ट्रक-बीईटी अपनाने से देश में डीजल की खपत में भारी मात्रा में कमी आएगी। लॉजिस्टिक 17 फीसदी सस्ता होगा और 46 फीसदी ग्रीन हाउस गैसेस कम होंगी। जलवायु परिवर्तन को रोकने की दिशा में यह बड़ा कदम होगा।

यह जानकारी स्मार्ट फ्रेट सेंटर

ईको सिस्टम बनाने के लिए सुझाव

- नियम-कानून, इन्फ्रास्ट्रक्चर, बिजनेस और फाइनेंसिंग के लिए सिस्टम बनाना होगा।
- चार्जिंग स्टेशन और मैकेनिक्स को प्रशिक्षित करने की जरूरत है।
- सुविधाओं के लिए सरकार भी एक सिस्टम बनाए, जिससे अपनाने वालों को मदद मिल सके।

COVERAGE UPDATE			
Sr. No	**Date**	**Publication**	**Headline**
Article			
1	27.10.2024	Nava Bharat	पर्यावरण अनुकूल हो परिवहन
			(Snapshot attached)
Press Release			
Print			
1	25.10.2024	Peoples Samachar	स्मार्ट फ्रेट सेंटर इंडिया ने किया इंदौर में वर्कशॉप का आयोजन
			(Snapshot Attached)
2	25.10.2024	Free Press	Admin open to reducing carbon emissions in logistics space
			(Snapshot Attached)
3	25.10.2024	Dabang Dunia	स्मार्ट फ्रेट सेंटर इंडिया ने परिवहन में बेहतर बदलाव लाने के उद्देश्य से इंदौर में जीरो एमिशन ट्रक्स वर्कशॉप का आयोजन किया
			(Snapshot Attached)
4	25.10.2024	Dastak	परिवहन में बेहतर बदलाव लाने के उद्देश्य से इंदौर में जीरो एमिशन ट्रक्स वर्कशॉप का आयोजन
			(Snapshot Attached)
5	25.10.2024	Indore Samachar	जीरो एमिशन ट्रक्स वर्कशाप का आयोजन
			(Snapshot Attached)
6	25.10.2024	Dainik Chirantan	स्मार्ट फ्रेट सेंटर इंडिया ने इंदौर में जीरो एमिशन ट्रक्स वर्कशॉप का आयोजन किया
			(Snapshot Attached)
7	25.10.2024	Agniban	स्मार्ट फ्रेट सेंटर इंडिया ने किया इंदौर में वर्कशॉप का आयोजन
			(Snapshot Attached)
8	25.10.2024	Apni Dunia	स्मार्ट फ्रेट सेंटर इंडिया ने किया इंदौर में वर्कशॉप का आयोजन
			(Snapshot Attached)
9	26.10.2024	Dainik Bhaskar	स्मार्ट फ्रेट सेंटर इंडिया ने किया इंदौर में वर्कशॉप का आयोजन
			(Snapshot Attached)
10	26.10.2024	Patrika	स्मार्ट फ्रेट सेंटर इंडिया ने किया इंदौर में वर्कशॉप का आयोजन
			(Snapshot Attached)

11	27.10.2024	Nava Bharat	स्मार्ट फ्रेट सेंटर इंडिया ने किया इंदौर में वर्कशॉप का आयोजन (Snapshot Attached)
Online			
1	24.10.2024	Nai Dunia	परिवहन में बेहतर बदलाव लाने के उद्देश्य से इंदौर में वर्कशॉप का आयोजन
2	24.10.2024	Amar Ujala	कार्बन उत्सर्जन को कम करने के लिए नई तकनीकें लाएगा इंदौर, प्रकृति संरक्षण में बनेगा नंबर वन
3	24.10.2024	Front News Today	स्मार्ट फ्रेट सेंटर इंडिया ने परिवहन में बेहतर बदलाव लाने के उद्देश्य से इंदौर में जीरो एमिशन ट्रक्स (जेडईटी) वर्कशॉप का आयोजन किया
4	24.10.2024	Daily Hunt	स्मार्ट फ्रेट सेंटर इंडिया ने परिवहन में बेहतर बदलाव लाने के उद्देश्य से इंदौर में जीरो एमिशन ट्रक्स (जेडईटी) वर्कशॉप का आयोजन किया
5	24.10.2024	NN Express	स्मार्ट फ्रेट सेंटर इंडिया ने परिवहन में बेहतर बदलाव लाने के उद्देश्य से इंदौर में जीरो एमिशन ट्रक्स (जेडईटी) वर्कशॉप का आयोजन किया
6	24.10.2024	Vendant Samachar	स्मार्ट फ्रेट सेंटर इंडिया द्वारा इंदौर में जीरो एमिशन ट्रक्स वर्कशॉप का आयोजन
7	24.10.2024	Khabar Khulasa	स्मार्ट फ्रेट सेंटर इंडिया ने परिवहन में बेहतर बदलाव लाने के उद्देश्य से इंदौर में जीरो एमिशन ट्रक्स (जेडईटी) वर्कशॉप का आयोजन किया
8	24.10.2024	Prabhat Lahar	स्मार्ट फ्रेट सेंटर इंडिया ने परिवहन में बेहतर बदलाव लाने के उद्देश्य से इंदौर में जीरो एमिशन ट्रक्स (जेडईटी) वर्कशॉप का आयोजन किया
9	25.10.2024	Vision News	स्मार्ट फ्रेट सेंटर इंडिया ने आयोजित की 'जीरो एमिशन ट्रक्स' वर्कशॉप
10	25.10.2024	Aazad bol	स्मार्ट फ्रेट सेंटर इंडिया ने परिवहन में बेहतर बदलाव लाने के उद्देश्य से इंदौर में जीरो एमिशन ट्रक्स (जेडईटी) वर्कशॉप का आयोजन किया
11	25.10.2024	Ghamasan	स्मार्ट फ्रेट सेंटर इंडिया ने परिवहन में बेहतर बदलाव लाने के उद्देश्य से इंदौर में जीरो एमिशन ट्रक्स (ZET) वर्कशॉप का आयोजन किया
12	25.10.2024	Samacharnama	Indore में बैटरी इलेक्ट्रिक ट्रक पर ध्यान केंद्रित करते हुए, जीरो एमिशन ट्रक्स वर्कशॉप का आयोजन

ABOUT SMART FREIGHT CENTRE

WHO WE ARE

Smart Freight Centre is dedicated to promoting sustainable freight and logistics practices globally. Our mission is to reduce greenhouse gas emissions and improve the efficiency of freight transport, contributing to a low-carbon economy.

CURRENT MARKET SITUATION

India has the world's fourth-largest trucking industry, presenting significant opportunities for sustainable transportation. A shift towards Zero-Emission Trucks is essential for a greener future.

OUR VISION

We envision an efficient, sustainable global freight system with low carbon emissions.

OUR MISSION

To facilitate the adoption of sustainable practices in the freight sector, driving collaboration among businesses, governments, and stakeholders.

Disclaimer

The views expressed in this summary report are those of SFC workshop attendees, staff, consultants, and ecosystem players and do not necessarily reflect the views of the Board of Trustees of Smart Freight Centre. Smart Freight Centre does not guarantee the accuracy of the data included in this publication and does not accept responsibility for the consequences of their use.

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About Smart Freight Centre

Smart Freight Centre (SFC) is a global non-profit organization dedicated to an efficient and zero-emissions freight sector. We cover all freight and only freight. SFC works with the Global Logistics Emissions Council (GLEC) and other stakeholders to drive transparency and industry action – contributing to Paris Climate Agreement targets and Sustainable Development Goals. Our role is to guide companies on their journey to zero emissions logistics, advocate for supportive policy and programs, and raise awareness. Our goal is that 100+ multinationals reduce at least 30% of their logistics emissions by 2030 compared to 2015 and reach net-zero emissions by 2050.

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