

Summary Report
Roundtable on Freight Decarbonization in India
29th November 2023, Mumbai

SESSION SUMMARY

1. The roundtable was opened by **Christoph Wolff, CEO, Smart Freight Centre (SFC)**, who presented SFC work to the audience, **expanding upon its global credentials on Emissions Accounting and ZET (Zero Emission Trucks) adoption under Freight Electrification Coalition initiative**. Christoph emphasized the close collaboration that SFC has established with the freight industry comprising of some of largest shippers, LSPs and Carriers across the globe on its activities. He also presented on the SFC India program, particularly on the Niti Aayog's e-FAST platform, and the defined process to translate the aggregated demand of 7750 trucks into fundable ZET pilots on select corridors.
2. **Ms Sumita Dawra, Special Secretary, DPIIT, Govt. of India**, made a presentation on the **green infrastructure encompassing green warehousing, green ports, and highlighted the GIS-enabled platform for the PM Gati Shakti initiative**, in addition to the role of the National Logistics Policy in promoting sustainability. The discussion included strategies for eco-friendly warehousing and green port development, aligning with the commitment to sustainable practices.
3. The session was further enriched by a **virtual address by Shri Sudhendu J. Sinha, Advisor, NITI Aayog**, who talked about the need for immediate action on ZET adoption as a logical pathway to a net zero future for India, with the same being undertaken with a strategic approach under e-FAST (Electric Freight Accelerator for Sustainable Transport – India). He also commended the work done by SFC along with other knowledge partners on e-FAST implementation, emphasizing upon the need for Industry collaboration and ecosystem support on translating the e-FAST vision into measurable impact with ZET pilot rollout.
4. A following session by **Ms Chandana K. and Mr Pravin C. from WRI** presented the progress on **e-FAST**, including a view on the aggregated demand with further elaboration on the three strategy pillars for further implementation of E-FAST. The presentation also highlighted the integral role of multiple stakeholders in achieving desired outcomes with a timebound exercise and provided a view on upcoming ZET pilots with a case study on Freight Corridor Electrification, focused on Gujarat and Rajasthan. The case study provided insights on freight volume along primary corridor and emphasized upon proximity of specific industries as pertinent to regional considerations.
5. Another session facilitated by the **Mr Ashish Saraswat and Mr Nitant Kumar from Climate Group**, **outlined the challenges within the E-Trucks ecosystem**, encompassing limited financing options with high interest rates, Logistic Service Providers' (LSPs) need for risk mitigation assurance in e-

truck adoption, and the absence of Total Cost of Ownership (TCO) parity between e-MHDT and diesel trucks. The session further shed light on the MHDT landscape in India, delineating use cases and segment application matrices. It identified prioritized use cases for diverse freight commodities based on various variables, with a detailed focus on three major segments: Parcel, perishable goods, and minerals. Additionally, the session presented a prospective adoption timeline for e-Trucking in India up to 2030.

6. A study presented by **Mr Tattaiyya Bhattacharjee and Mr Rihul Ladha from UC Davis highlighted upon the technology considerations for Zero Emission Transport (ZET) adoption**, providing a nuanced understanding of various components of vehicle technology costs, including Total Cost of Ownership (TCO) estimation. The session also delved into different types of charging infrastructure services, highlighting key considerations. These insights are crucial for informed decision-making in embracing ZET, and potential implications for future initiatives.
7. **Mr. Aaran Patel spoke on behalf of The Nand and Jeet Khemka foundation** expanded on foundation present focus on supporting climate initiatives and how the foundation supported CESL on the world's largest e-bus tender for 5,450 e-buses in September 2022, under the NEBP, which has a target of deploying 50,000 e-buses by 2030. Aaran further expressed interest to explore areas that the foundation would support on the e-truck pilots, based upon the learnings and success from the e-BUS support program.
8. An insightful online session conducted by **Mr. Rajat Kumar Saini, IAS, CEO & MD, NICDC**, provided a **comprehensive overview of the Unified Logistics Interface Platform (ULIP)**. He elaborated on ULIP's role and functionality within the logistics domain. The session also explored the Logistics Data Bank utilizing the FOIS (Freight Operations Information System) system. Additionally, discussions with stakeholders highlighted the challenges in obtaining real-time emission data and concerns related to data privacy. The discussion shed light on innovative solutions and integrations within the logistics sector, with these considerations as vital for strategic freight planning.
9. A dynamic session led by **Mr. Deepak Suri, Senior Sector Expert from the Bureau of Energy Efficiency (Ministry of Power)** provided valuable insights into **incentivizing and monetizing emission reduction efforts**. Mr. Suri's presentation covered a comprehensive view of the freight landscape in India, encompassing freight growth projections, the evolution of zero-emission trucks, and the economic and environmental impact of road freight dominance. Furthermore, Mr. Suri outlined various Indian government initiatives for the decarbonization of the freight sector, including policies such as FAME1 and FAME2, the development of Zero Emission Transport (ZET) corridors, deployment of electric vehicle charging infrastructure, introduction of hydrogen-powered public buses, and the establishment of dedicated freight corridors. The session delved into the regulatory framework of the Carbon Credit Trading Scheme (CCTS), highlighting key

elements, and presenting a compliance mechanism with a three-stage model for future implementation: Baseline scenario, Exceeding the target, and Shortfall in the target. Additionally, Mr. Suri detailed a seven-stage project cycle offset mechanism. These strategic insights are crucial for freight sustainability initiatives. BEE further emphasized on following questions that would be key to defining the way forward for emissions accounting for Indian freight sector.

10. How to prepare a baseline scenario with limited data availability in the freight sector?
11. Who are the target groups in CCTS?
12. How to obtain exact CO2 emissions?

10. **Mr. Ankit Singhvi from NZT** led an interactive session on what does Financing mean for the stakeholders in the ecosystem deciphering the financing perspective from lens of Shippers, Logistics Service Providers (transport & asset owners), OEM (vehicle, charging) and Financial Institutions (Banks, NBFC, PE, DFI, philanthropy etc.). Learnings from the E-bus market was presented as a nudge for a similar exercise in the E-truck sector and how specific commitments can lead to larger transitions. The need for operationalizing ZET pilots was also highlighted as the industry would believe in transition more effectively when it sees the ZETs operate in their ecosystems and geography on ground. Catalyzing adoption at scale through First loss guarantee program was also deliberated upon.

11. A presentation by **Ms Avni Mehta from GIZ** addressed the crucial topic of **Digitization for Freight Efficiency Improvements**. Ms. Mehta presented her ongoing work focused on achieving climate-friendly and efficient logistics with four key objectives: Strategic & Institutional framework, Measures for Implementation, Capacity Building, and Methods for measuring GHG emissions. The discussion emphasized the significance of addressing inefficiencies in the freight sector, covering various aspects such as low truck productivity and fuel efficiency, components of logistics costs for different vehicle types, and loading time and cost, specifically for perishable commodities. Ms. Mehta presented a case study of the Textile market in Gandhi Nagar, highlighting loading and unloading inefficiencies. Furthermore, the session explored high turnaround times for heavy-duty and light-duty freight vehicles at four wholesale agri markets (Mandis) in Delhi, discussing load factors for different modes in both textile and fruits & vegetable commodities. Ms. Mehta showcased a comprehensive supply chain of the textile freight market, detailing various characteristics such as cost, average trip length, and load factor. Solutions for improvement in fuel economy, freight optimization, and monitoring emissions were also presented, including fuel economy standards for HDVs, Light & Commercial Vehicles, and the development of a Computer-Based Simulation tool provisionally named Bharat Energy Efficiency Tool (BEET) for assessing vehicle fuel efficiency. These strategic insights are pertinent for the roadmap of freight decarbonization strategies in India.

12. **Mr Joseph Teja from CALSTART** shared with stakeholders a policy framework for **unlocking capital investments for zero emission trucks in India**, which aims to deploy more than 8000 electric trucks

by 2030, creating a \$2 billion investment opportunity. The framework recognizes that the required transformative scale cannot rely solely on public funds and suggests leveraging commercial capital to fill the gap. The framework also recommends creating a seamless legal framework for blending different sources of capital, resolving concerns about expensive and time-consuming structures, developing a strategic view on blending as an investment approach, developing a pipeline of bankable projects, and creating capacity around impact measurement, especially for commercial investors.

13. The discussion was also joined by **Shri Abhijit B Ghorpade, Director, State Climate Action Cell, Department of Environment and Climate Action, Government of Maharashtra**, who presented a **wider view on why sustainability is a pertinent question for any growth-oriented economy, with Maharashtra being an apt case study** for the same. He provided the audience with a view on wide-ranging initiatives by Maharashtra, particularly the one with a Green Infrastructure Development orientation. He also presented the leadership position taken by Maharashtra on e-Mobility ecosystem development, with the ambition and scale of e-BUS deployment and charging infra development in the state being a fitting testimony to the same. He concluded by the need to decarbonize the freight sector, more so with the freight volume and sector (both demand and supply side) concentration in the state and invited the industry stakeholders to come forward on this important topic with a clearly expressed intent to discuss on required state support.

14. A session on freight digitization for efficiency improvements by **Mr Aviral Yadav of ICCT** provided critical insights into the **current state of the freight sector in India, specifically focusing on CO2 emissions**. The presentation was particularly intriguing as it delved into and compared the Total Cost of Ownership (TCO) perspective of seven different fuel-based technologies. This comprehensive analysis is crucial for evaluating the economic implications of various fuel technologies in the freight sector. Additionally, the session shed light on India's Zero Emission Transport (ZET) roadmap, presenting a strategic vision for the country's transition toward sustainable and zero-emission freight.

15. An engaging online session by **Prof. Aditya Gupta from IIM Bangalore** provided valuable insights into emission accounting through the utilization of an online tool called **TEMT (Transportation Emission Measurement Tool)**. The tool is designed to measure emissions across all modes of transportation, providing a holistic approach to emission accounting. It incorporates India-specific emission factors to the extent possible, ensuring relevance and accuracy in the context of our region. It offers two types of access - carrier and shipper access - facilitating collaborative engagement and transparency between stakeholders. Additionally, the tool provides output in the form of a CSV report, enabling further analysis and insights for informed decision-making. These features make TENT a robust tool for emission accounting in the transportation sector.

16. **Mr. Piyush Saxena from TERI** presented on **Clean Freight Programme: Learnings & Adoption in India**, which aims to reduce the GHG emissions and air pollution from the road freight sector,

which is projected to grow significantly by 2030. TERI compared the global best practices and frameworks for clean freight programs and developed a methodology and a tool for estimating the baseline emissions from the road freight sector in India. TERI also conducted a baseline study for the non-urban road freight sector in India and identified the state-wise and vehicle-wise variations in fuel efficiency and emission intensity. TERI proposed a way forward for implementing the clean freight program in India, involving a multi-stakeholder platform, a recognition scheme, and a policy framework. TERI also suggested a responsibility matrix for the key partners of the clean freight program in India.

17. A presentation was made by **Mr. Mehul Khandelwal, Technical Manager at SFC Europe office**, on the **GLEC (Global Logistics Council framework)**, covering the background on its development in consultation with the Global Freight Community, its widespread adoption by the global logistics industry, its salient features and also global recognition of GLEC as a part of the ISO14083 standard. Mehul further expanded upon the ongoing work on GLEC alignment with the Indian freight emission factors and the collaboration with TERI, IIMB and GIZ on the same.
18. **Mr. Rohit Pathania form OMI Foundation** emphasized on the need for Transport sector decarbonization and highlighted Road Freight emissions in India and the significant contributors to Transport related GHG emissions. A global comparative overview of the work being done in various countries through multiple measures was presented indicating the direction of the initiatives in each region. Insights on decarbonization through Market based Mechanisms and how Article 6 can help achieve NDC's were made available along with case examples from California's Zero Emission Vehicle program and China's New Energy Vehicle (NEV) program. OMI foundation drew the focus on Market Based Initiatives in India and where they stand indicating the scope for carbon markets in India.
19. Special remark by **Shri OP Agrawal** towards the end of the program highlighted the need for such discussions at regular intervals to leverage the vast knowledge base with the knowledge partners for addressing the capacity gaps for advancing the freight decarbonization in India, with the same being a critical need of the hour, not just towards NDC commitments by India but also towards a more sustainable future for Indian Freight Sector.
20. Closing remarks to the event were made by **Mr Narayankumar Sreekumar, Shakti Sustainable Energy Foundation and Mr Sean Cooke, UNEP** thanking the participants for their insightful studies and research and the active participation by the industry which paves the way to move aggressively towards electrifying road freight ecosystem and the need for standardizing emissions accounting. Mr Sean Cooke also gave an overview of UNEPs Global Electric Mobility Program inviting ideas and collaboration for future endeavors from the participants of the roundtable through SFC India.

KEY TAKEAWAYS

- Government of India vision of Freight Efficiency improvement under the Gati Shakti Master Plan is an opportunity for pro-active action on freight decarbonization, built upon new age technologies, to deliver against the set goal of reduced logistics cost in proportion to the GDP.
- Energy efficiency improvements are critical to improve upon freight economics in consideration of the energy (fuel) cost as the largest component in the overall freight activity cost.
- Clean Fuel and Vehicle technologies hold huge impact potential, particularly in the medium and heavy-duty segments in cognizance of their present GHG contribution to overall freight emissions.
- BEV (Battery Electric Vehicles) hold maximum emission reduction potential across its entire product life cycle when powered by renewable energy sources, as compared to other vehicle powertrain technologies, including Fuel Cell Electric Vehicles with Green H2 as energy source.
- BEVs offer the best TCO scenario across various truck segments, to the tune of 20-25% as compared to Fuel Cell Vehicles for heavy duty segments, with 2030 as baseline year.
- Industry supported initiatives on freight decarbonization, including e-FAST, is a showcase opportunity to establish India's leadership position in development of a global ecosystem for Green Freight, more so for the scale and volume of Indian logistics sector and the potential impact.
- Investments in green logistics infrastructure will have an enhanced business case for high volume freight corridors as a future proofing strategy with sustainability alignment.
- ULIP as a government of India platform addresses the key challenge of data availability for freight efficiency improvement and to also build case for collaborative freight decarbonization programs.
- Emissions accounting is a key step towards analyzing the BAU scenario for emissions footprint from an enterprise operation and there is a visible interest from Industry to identify efficient and effective methods for the same. Government guidance on the same with standardization of the available frameworks will be an important step in this direction.
- A national carbon market can help level the playing field between ZETs and ICE Trucks by offering a financial avenue to monetize the emission reductions and integrate into the business case for enhanced viability of ZET deployment initiatives for India.
- The service industry is also bracing up well to provide solutions towards awareness on emissions accounting from freight operations, with a good number of the same basing their methodologies on SFC's GLEC framework. Many multinational corporations in India are already using GLEC for measuring freight emissions under their sustainable supply chain initiatives.
- While support in Finance for ZET pilots under e-FAST is an expectation from some Shippers and LSP's, there are certain LSPs and shippers who are ready to manage the finance aspect at their own end, with product availability being the single largest concern for transition of Medium and Heavy-Duty trucks towards electric.
- For the organizations seeking clarity on philanthropic and development finance for ZET pilots, the potential scenario as presented in the discussion, is positive, with only expectation from the funds is the deployment scale, as the same will determine the scale of impact to justify the investments. Blended finance is poised to be the way ahead and learnings from the e-BUS deployment in India would offer an adequate baseline framework to build upon for financing the ZET pilots.
- Demand aggregation would prove to be an effective approach to define ZET deployment pilots of good scale, under e-FAST, overcoming the financing challenges of fragmented demand linked

pilots with individual shippers. The aggregated numbers will help engage effectively with the philanthropic and private sector funds on their interest for supporting the ZET pilots.

- A potential scenario, similar to e-Buses, of ZETs being profitable with the present policy considerations at a per km basis at a certain scale of deployment in certain sectoral use cases may exist, and the same needs to be detailed further to test the adoption potential.
- With product pipeline visibility as another critical barrier for ZET adoption, convening the product OEMs and Shippers/LSPs together for a focused dialogue on the technology roadmap the product segments relevant to the planned ZET pilots is an important immediate next step towards ZET adoption in the mid-mile and first mile categories.
- Collaboration between key stakeholders is key to success for ZET initiatives in India, with transparency on individual plans and actions and availability of collaboration platforms as two important enablers for the same.

Note: Some of the takeaways are based upon the research presented by various knowledge partners and sets a ground for further discussion and investigation on the topic.

 For further connect and collaboration kindly reach out to

- [Pramod Rajendran \(pramod.rajendran@smartfreightcentre.org\)](mailto:pramod.rajendran@smartfreightcentre.org)
- [Vijay Jaiswal \(vijay.jaiswal@smartfreightcentre.org\)](mailto:vijay.jaiswal@smartfreightcentre.org)