

23 January 2025

Financing the electrification of heavy-duty vehicles

Setting the context

On 23 January 2025, the ITF organised an expert workshop to feed into a new Corporate Partnership Board (CPB) project *"Financing the electrification of heavy-duty vehicles"*.

Over 45 experts from international organisations, the public and private sector – including public transport and logistics operators – as well as non-profit organisations and academia participated in-person or virtually to provide insights and participate in the discussions.

The workshop outcomes are summarised here; further research and expert consultations will provide additional inputs for an ITF/CPB report to be published in the summer of 2025.



Project background

Electrification offers the most promising route to decarbonise heavy-duty vehicles (HDVs), such as trucks or buses. However, electric HDVs (e-HDVs) are capital-intensive, costing two to three times more to purchase than conventional diesel vehicles. They also require the installation of charging infrastructure, which creates additional expenses. This poses a challenge for many private operators who are capital-constrained. As a result, financing solutions are needed to spread the upfront cost over the vehicle's lifetime.

This project aims to understand the financial needs for truck and bus electrification. It explores the financial requirements for bus operators and logistics companies transitioning to electric vehicles in different contexts across the globe. Learning from past successes in urban public bus electrification and exploring future challenges to private buses and freight trucks, the project examines various financing solutions to bridge the ownership cost gap, including subsidies, loans, de-risking guarantees, and public-private partnerships.

The project's scope is limited to battery electric vehicles with stationary charging. The focus is also limited to purchasing the vehicle and depot charging. It does not extend to public charging infrastructure.



Workshop objectives

The workshop aimed at encouraging a collaborative exchange of expertise and best practices for financing e-HDVs. It served as a platform for discussing current market challenges and exploring potential solutions, enriching global transport policy discussion with views from international organisations, academia, and the private sector.

The conversations focused on the challenges of financing electric buses and trucks from the perspectives of both the public and private sectors. Central topics included the total cost of ownership (TCO), upfront expenses, and uncertainties related to technology, operational requirements, and financial options. Participants paid special attention to the varying adoption of e-HDVs across different regions, considering the unique needs of different economies.

Furthermore, participants shared strategies for financing e-HDVs and proposed financial solutions to address the identified challenges faced by both small and medium-sized enterprises, as well as large fleet operators across various regions. The discussions highlighted the roles of governments, commercial banks, and multilateral development banks as essential players in closing existing financing gaps and promoting the adoption of e-HDVs.



Workshop summary

Electrification is one of the most promising solutions to decarbonise the heavy-duty vehicle segment, including both buses and trucks. However, the speed of adoption varies by vehicle segment and region. Electric city buses are already deployed at scale, accounting for, e.g. 40% of new sales in Europe and more than 95% in China.

The deployment of electric trucks is now gaining momentum. There are an increasing number of use cases where the total cost of ownership (TCO) of electric trucks is similar to diesel models. However, even in such cases, these vehicles still have higher upfront costs, posing formidable challenges, particularly for small- and medium-sized enterprises (SMEs) with limited financial flexibility that dominate the trucking sector and non-urban bus markets.

Achieving TCO parity across all vehicle segments is crucial for accelerating deployment. Government subsidies, such as purchase subsidies or road toll exemptions, are very effective in reducing the TCO gap, but at the same time, are very burdensome on government budgets. Additional financing mechanisms are needed to unlock private investments to support the transition in the long term.

The residual value (RV) of a vehicle is the estimated value at the end of its financing term, representing a key parameter in vehicle financing. Few electric trucks have been resold, resulting in high uncertainty and low residual value (RV) assumptions, which hinders financing. Residual value guarantees can provide significant certainty to the market and financiers and are usually inferior to upfront purchase subsidies and, therefore, less straining for government budgets.



Workshop summary

The trucking market is highly fragmented, relying on small and medium-sized enterprises (SMEs) in many markets worldwide. SMEs face significant challenges in their efforts to adopt electric heavy-duty vehicles. These challenges mainly arise from limited financial capabilities and bounded creditworthiness, a lack of tailored incentives, as well as limited institutional capacity to access funding opportunities. Particularly in emerging economies, SMEs are subject to very high interest rates, which limit their access to finance for more expensive vehicles.

New business models based on collaborative approaches have emerged as alternatives for risk sharing in the e-HDV, market. Alternative models, such as trucking-as-a-service and vehicle-as-a-service, offer flexible solutions for businesses that rely on commercial vehicles but may lack the financial means to own an electric truck and the associated charging infrastructure.

Policy makers may want to consider:

1. Developing a government-backed residual value guarantees (RVG);
2. Designing tailored support schemes for small and medium-sized enterprises (SMEs);
3. Promoting the second-hand market to increase its long-term viability in the private sector; and
4. Enabling service-based business models, such as trucking-as-a-service and battery-as-a-service.

These and further recommendations will be further developed for the final project report.

Overall, the workshop provided valuable insights into the complexities of financing the electrification of the HDV sector, providing context across different markets, and unveiling financing mechanisms to facilitate the transition to e-HDVs.



Workshop insights

TCO parity between diesel and electric HDVs already exists for certain applications and regions

Uncertainties impede private financing on eHDVs

Government measures are needed to reduce market and technology uncertainties

Residual value guarantees: A potential solution to unlock financing for e-HDVs

SMEs, key players in the coach and logistics sectors, face more challenges to transitioning to e-HDVs

Collaborative and service-based models can foster e-HDV adoption as they might be more attractive for investors.

What's next?

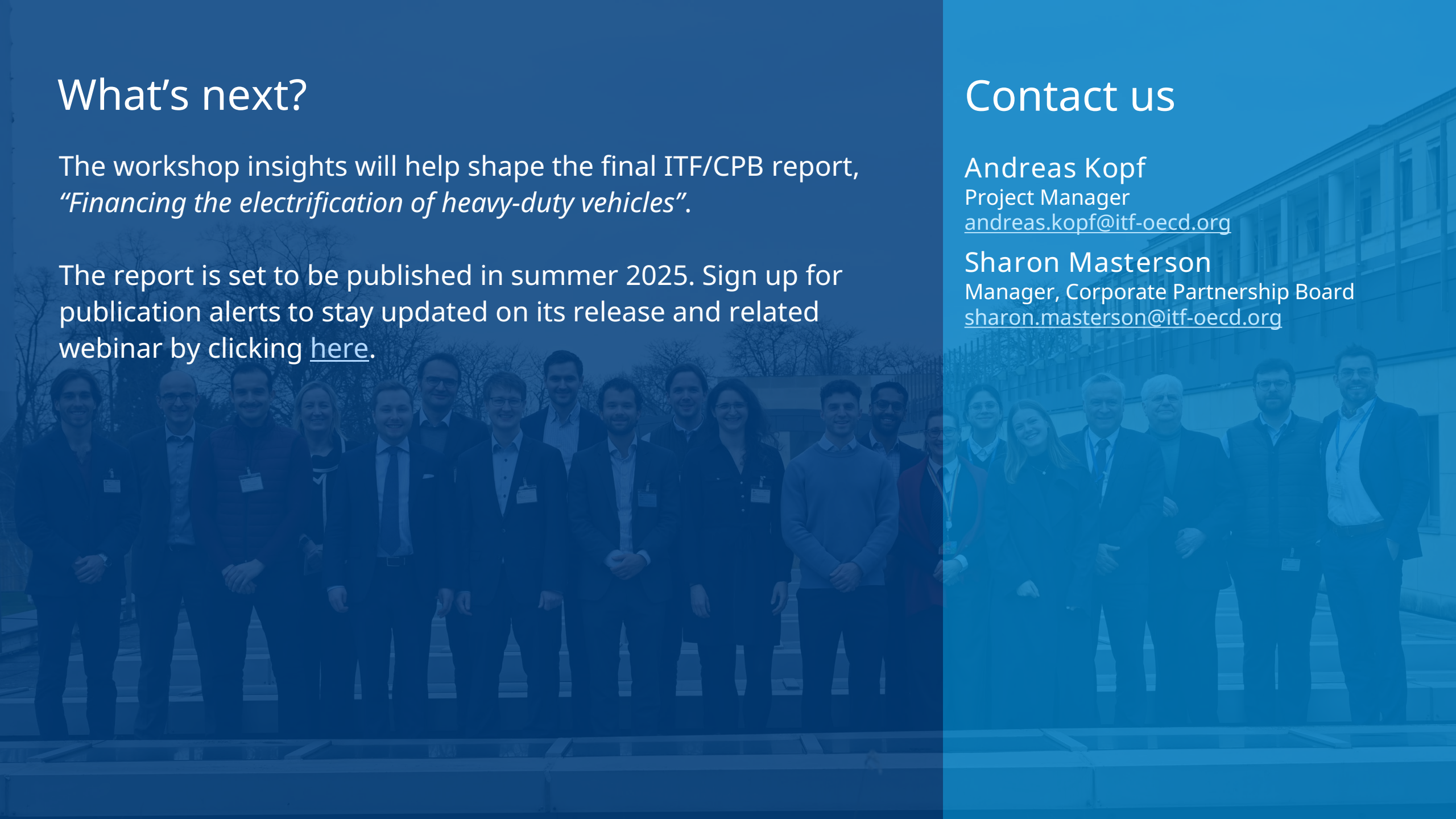
The workshop insights will help shape the final ITF/CPB report, *"Financing the electrification of heavy-duty vehicles"*.

The report is set to be published in summer 2025. Sign up for publication alerts to stay updated on its release and related webinar by clicking [here](#).

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