

# **The Role of Emission Data Sharing for Decarbonizing Road Freight Transport**

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## Motivation:

To limit global warming and to reach climate targets set by the Paris Agreement, the European Union is implementing a handful of measures to achieve climate neutrality by 2050 as well as a reduction of CO<sub>2</sub> emissions by 55% until 2030 as an intermediate target (European Commission 2021a). Logistics operations play a crucial role in achieving the necessary emissions reductions as their business activities account for 11% of global CO<sub>2</sub> emissions (McKinnon 2022). Of these, road freight transport accounts for the largest share and is responsible for 6% of European CO<sub>2</sub> emissions (European Commission 2021b). Due to high growth rates and continued dependence on fossil fuels, the decarbonisation of road freight transport is particularly challenging (ITF 2019).

In recent years, an increase in the publication of sustainability and CSR reports by large companies can be observed (Carter und Rogers 2008). There is also a political push for disclosure and transparency of social and environmental impacts of corporate activities. For example, the EU Green Deal includes the Corporate Sustainability Reporting Directive (CSRD) that requires larger companies to publish their CO<sub>2</sub> footprint as well as concrete reduction targets. Under this scheme, emissions from upstream and downstream activities in the supply chain are also subject to the CO<sub>2</sub> balance sheet of the reporting company, so that small and medium-sized enterprises are indirectly affected by this directive as well. Consequently, the environmental performance of outsourced activities is receiving increasing attention in reporting companies. Logistics activities are of particular importance here, as they are characterised by a high degree of outsourcing causing a lack of control over these CO<sub>2</sub> emissions as well as the large volume of these emissions. Therefore, sustainability efforts of logistics service providers are both crucial for achieving climate goals and particularly challenging, also due to the existing market characteristics.

Road freight transport is characterised by a high degree of fragmentation with many small and medium-sized companies as well as high price pressures (Toelke und McKinnon 2021, Lammgård und Andersson 2014). Increasing reporting and reduction obligations as well as rising customer demand for sustainability-related data increase the need for accurate calculation and reporting of transport-related CO<sub>2</sub> emissions, even for small and medium-sized logistics service providers. Currently, the widespread use of standard emission factors is leading to a lack of accuracy, preventing the visibility of CO<sub>2</sub> reduction measures (McKinnon 2023). To increase the accuracy of determining transport-related CO<sub>2</sub> emissions, the importance of primary data is growing which in turn requires the exchange of data.

In general, SMEs are at a disadvantage in adopting green practices due to their limited resources (Cantele und Zardini 2020). Nevertheless, there is a lack of research focusing on transport SMEs, which often act as subcontractors for larger LSPs, although they are responsible for carrying out most of the environmentally damaging activities (Nilsson et al. 2017). Therefore, this study investigates the role of transport SMEs regarding carbon disclosure.

## Research Objective:

In order to improve understanding of role of emission data sharing, the aim of the study is to identify factors that influence the behaviour of transport SMEs regarding the calculation and reporting of their transport-related CO<sub>2</sub> emissions and to investigate how transport SMEs can align strategically. Therefore, the first research question directly addresses the identification of internal and external factors influencing transport SMEs in their behaviour regarding this topic:

**RQ1:** What factors influence the (order-related) calculation and reporting of emissions at transport SMEs?

Based on the results from RQ1, the question of the strategic alignment of transport SMEs arises. Therefore, the second research question investigates the role of sharing sustainability-related data in view of gaining a competitive advantage:

**RQ2:** What influence does the (order-related) calculation and reporting of emissions have on the competitiveness of transport SMEs?

#### Research Design:

This research follows a mixed-methods approach with a qualitative study followed by a quantitative study. To answer the research questions, we are conducting an (as of now) ongoing qualitative study based on semi-structured interviews (currently n = 30) with different stakeholders from the logistics industry. The interview sample focuses on small- and medium-sized enterprises carrying out the transport to investigate their behaviour. The interview data is analysed by using qualitative content analysis following Mayring (2015) to answer RQ1. The interview study is followed by a quantitative study in the form of a large-scale survey with primary German logistics service providers to confirm and validate results of the interview study. Therefore, we formulate a series of hypotheses derived from literature and results of the interviews. We are focusing the study on emission information sharing and its impact on competitiveness (RQ2).

#### Preliminary Results:

Although the qualitative as well as the quantitative study is not finished yet, we were already able to identify important factors influencing the calculation and reporting of transport-related CO<sub>2</sub> emissions and thus were able to gain some insights regarding RQ1:

- We identified different strategic orientations on this topic among companies in the interview sample. Carriers that have proactively embedded sustainability in their strategy perceive an opportunity in disclosing CO<sub>2</sub> emissions to their customers to differentiate themselves from competitors. Initial attempts at exchanging emissions data are also usually tried out by shippers on a project basis with individual carriers. Marketing aspects play a central role in the motivation for this.
- We also recognize different perceptions on sharing emissions data in terms of opportunities and risks. Companies with a proactive strategy tend to emphasize the opportunities, whereas laggards seem to have trust issues leading to a low willingness to share sustainability-related data.

Since the survey has not been conducted yet, we cannot at this time present preliminary results regarding RQ2. Nevertheless, the analysis of the survey data should be finished until the date of the workshop.

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