

ANALYST VIEWPOINT

Factoring CO₂ Emissions in Transportation



Tracking CO₂ Emissions in Logistics: Challenges and Progress

A survey by logistics expert Adrian Gonzalez, Adelante SCM, explored supply chain professionals' challenges in tracking CO₂ emissions in logistics operations. The findings reveal incremental progress in addressing this significant issue of greenhouse gas emissions.

Among various modes of freight transportation, trucking is a significant contributor to CO₂ emissions for most companies.* On average, it produces more CO₂ emissions per ton-mile than other modes (except for air cargo). This raises questions regarding the measurement of CO₂ emissions per shipment, the motivation behind calculating such emissions, and whether transportation management systems should account for CO₂ emissions in mode, carrier, and equipment selection.

To understand the industry's stance on this pressing issue, Gonzalez sought insights from the [Indago supply chain research community](#), comprising supply chain and logistics executives from manufacturing, retail, and distribution companies. Additionally, members of Manhattan Associates' transportation management system (TMS) product council provided valuable input.

The findings indicate that very few companies currently measure the CO₂ emissions of their shipments, with cost being the primary driver for mode, carrier, and equipment selection. The absence of CO₂ emissions data and standards poses another challenge, and many TMSs lack sustainability-related capabilities.

While the findings may not be overly optimistic, there are reasons to be hopeful that the industry is slowly moving in the right direction. This research report aims to shed light on the hurdles and progress in this area.



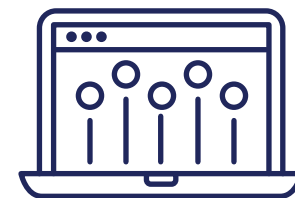
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The Current State and Future Potential

When tracking CO₂ emissions in mode/carrier/equipment selection, most companies are yet to prioritize this aspect. The United States, where many survey respondents are located, is still an early adopter. Only 12% of the executives surveyed currently measure CO₂ emissions per shipment, although 24% plan to start within the next year.

Do you currently measure CO₂ emissions per shipment?



12%

Yes



24%

No, but we plan to start within the next 12 months



55%

No, and we have no plans to do so in the next 12 months

Source: Indago, July 2023 survey (n=33)



Survey Participants Shed Light on the Reasons Behind this Current State

Despite the current low prioritization of CO₂ emission tracking, there is potential for change in the future. As sustainability becomes a more prominent aspect of business operations and government regulations tighten, companies may be compelled to reevaluate their approach to transportation and consider the environmental impact of their supply chain activities.

“I am not willing to pay a higher rate to select a carrier with lower CO₂ emissions. The only thing that will change that is a mandate from my company’s C-suite or the government.”

“We are currently not prepared to pay higher rates. ESG regulations will likely force us to do it at some point.”

“I think rates will ultimately be the deciding factor in selecting transportation mode and carrier, and if reduced emissions carry a higher price tag, then I think those options will be considered secondary for overall spend. If the government mandates measuring CO₂ emissions for shipments, then that would change things.”



The Role of Sustainability Goals and Regulation

The measurement of CO₂ emissions per shipment is expected to be driven by companies' overall sustainability goals. Currently, most respondents (55%) are not measuring CO₂ emissions and have yet to make plans to start within the next year. However, when they do decide to measure emissions, 59% of respondents stated that it would primarily be to support their company's sustainability goals. Additionally, 17% mentioned that customer requirements would drive the need for emissions reporting.

If/When you start measuring the CO₂ emissions of your shipment, what will be the primary driving force?



59%

To support our company's overall sustainability goals



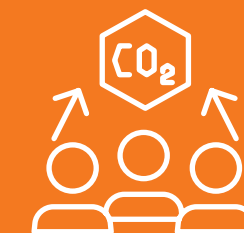
17%

Our customers will require us to report this data



10%

To comply with government regulations



7%

Our investors/ shareholders will require us to report this data



It is worth noting that the response option “To support our company’s overall sustainability goals” likely encompasses some of the other factors too, such as compliance with government regulations and customer demands. This is evident from the comments the survey respondents provided.

“We do not measure the CO₂ emissions of shipments today because we don’t need to. If/when our customers and/or government regulations require it, we will.”

“Increasing regulations will drive wide adoption of supply chain CO₂ emissions measurements.”

“CO₂ reporting for both internal sustainability goals and customer-specific requirements have pushed the necessity of this capability forward. While it is not yet influencing mode determination, I can see this happening in the near future.”





Notably, government regulations and customer demands are already impacting this field. For instance, the [European Union's parliament recently approved legislation to tax imports based on their greenhouse gas emissions](#), marking a significant step towards integrating climate regulation into global trade rules. This demonstrates the influence of regulations on driving action in CO₂ emissions tracking. Additionally, [Apple's announcement in October 2022](#) emphasizes the company's commitment to decarbonizing its production and partnering with suppliers to achieve measurable progress in emissions reductions.

Overall, the convergence of an enterprise's sustainability goals, government regulations, and customer requirements is expected to accelerate the adoption of CO₂ emissions measurement in the transportation industry. This highlights the growing importance of addressing the environmental impact and implementing sustainable practices throughout the supply chain.



Balancing Cost and Sustainability

The transportation industry faces the ongoing challenge of balancing profitability and sustainability. When it comes to trucking, companies tend to prioritize cost over sustainability. Most companies prioritize the lower rate carrier if given a choice between a lower CO₂ emissions carrier and a lower rate carrier. The cost factor remains dominant in decision-making. Executives emphasize that cost is always a significant concern, and companies will likely only become more committed to reducing CO₂ emissions when external factors force them to do so.

This mindset is not surprising, considering the recent challenging market conditions and high rates experienced in the aftermath of the pandemic. The focus on cost reduction has been further reinforced during this time despite prevailing more favorable market conditions. With razor-thin margins and ongoing inflationary pressures, companies are reluctant to absorb additional costs as manufacturers. The availability of hybrid equipment and advancements in emissions reduction technologies are crucial in addressing the emissions hurdle.

However, it is worth noting that there are exceptions. While cost considerations currently overshadow sustainability goals for most companies, some view sustainability as a way to stand out in the market. Some companies, although in the minority, see being a leader in sustainability as a potential competitive differentiator. They are willing to pay a higher rate for lower CO₂ emissions and have already invested in carbon-neutral shipping. These companies believe that the ability to offer carbon-positive shipments to customers is worth the additional costs.

As external pressures and customer expectations evolve, more companies may shift towards prioritizing CO₂ emissions reduction and investing in sustainable transportation practices. Finding the right balance between profitability and sustainability will continue to be crucial for the industry.



Absence of Standards for CO₂ Emission Tracking

One of the significant hurdles in CO₂ emission tracking is the lack of universal standards. Respondents in the survey highlighted the absence of CO₂ emissions data and standardized measurements as a critical challenge. They expressed difficulties in accessing real-time data that could be applied across different modes of transportation and ensuring the accuracy of measurements over time.

Developing and establishing global standards is a complex and time-consuming process. However, progress is being made with the emergence of standards such as [ISO/DIS 14083](#), which focuses on quantifying and reporting greenhouse gas emissions in transport chain operations. The [GLEC Framework](#),

developed by the [Global Logistics Emissions Council \(GLEC\)](#), serves as a guideline for implementing ISO 14083 within the industry. The United States Environmental Protection Agency (EPA) SmartWay program also publishes [sustainability accounting and reporting data, offering valuable insights](#).

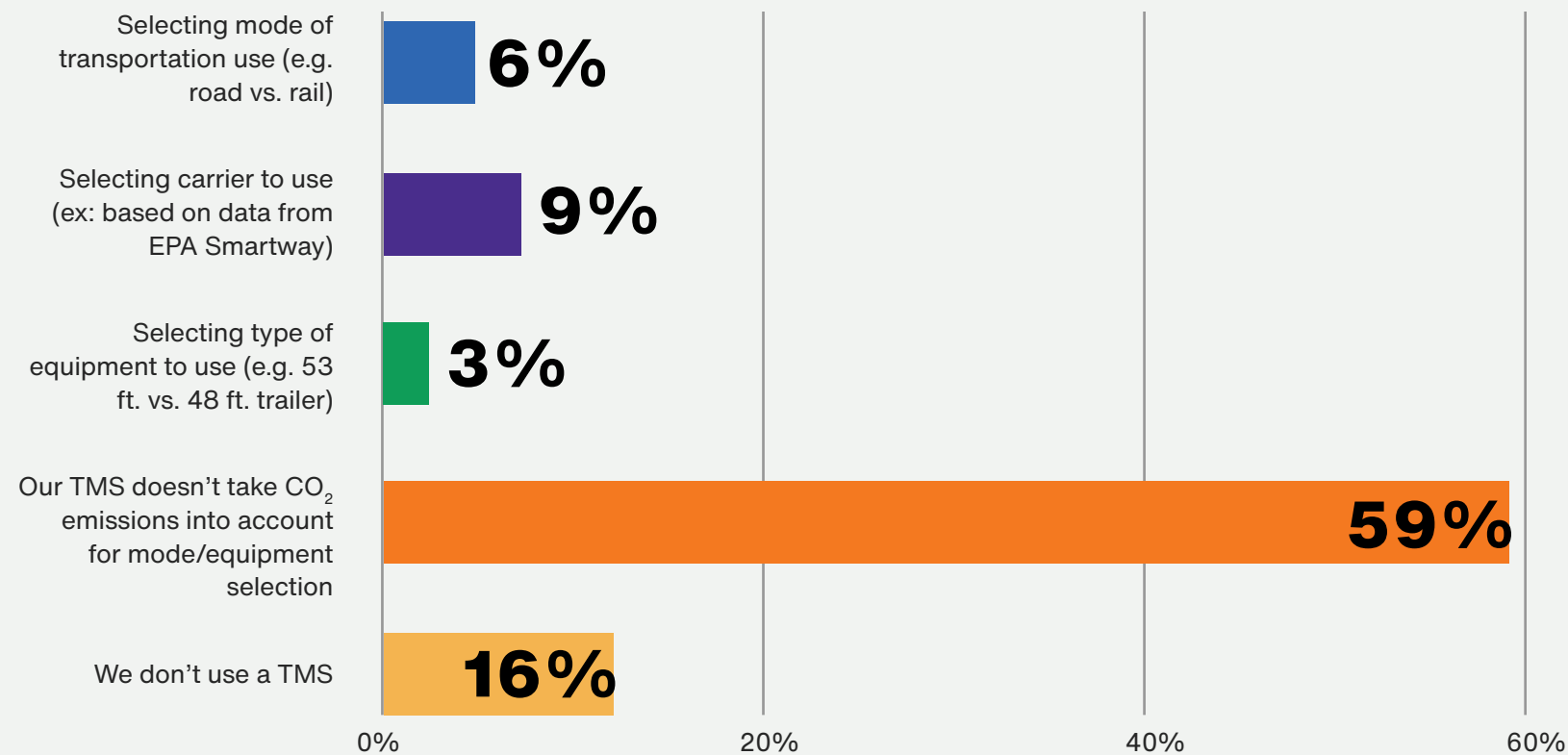
While these standards and frameworks are steps in the right direction, more efforts are needed to achieve comprehensive and widely accepted global standards for CO₂ emission tracking in the transportation industry. The establishment of such standards would not only provide transparency but also enable businesses to make more informed decisions regarding their environmental impact.



Importance of Sustainable Transportation Management Systems

Surprisingly, more than half of the respondents (59%) stated that their TMS does not consider CO₂ emissions when optimizing mode, carrier, and equipment selection. Additionally, 16% admitted not using a TMS at all. This indicates a significant gap in the industry's ability to incorporate CO₂ emissions into transportation decision-making processes efficiently and automatically.

Our transportation management system (TMS) takes CO₂ emissions into consideration when...



Source: Indago, July 2023 survey (n=32)

% of Respondents

Nevertheless, progress is being made. One example is Manhattan Associates, which showcased how its TMS utilizes emissions data from EPA SmartWay as a consideration factor for mode, carrier, and equipment selection at its user conference. This development highlights the potential of integrating sustainability measures into TMSs and signifies a step towards addressing CO₂ emissions in transportation operations.



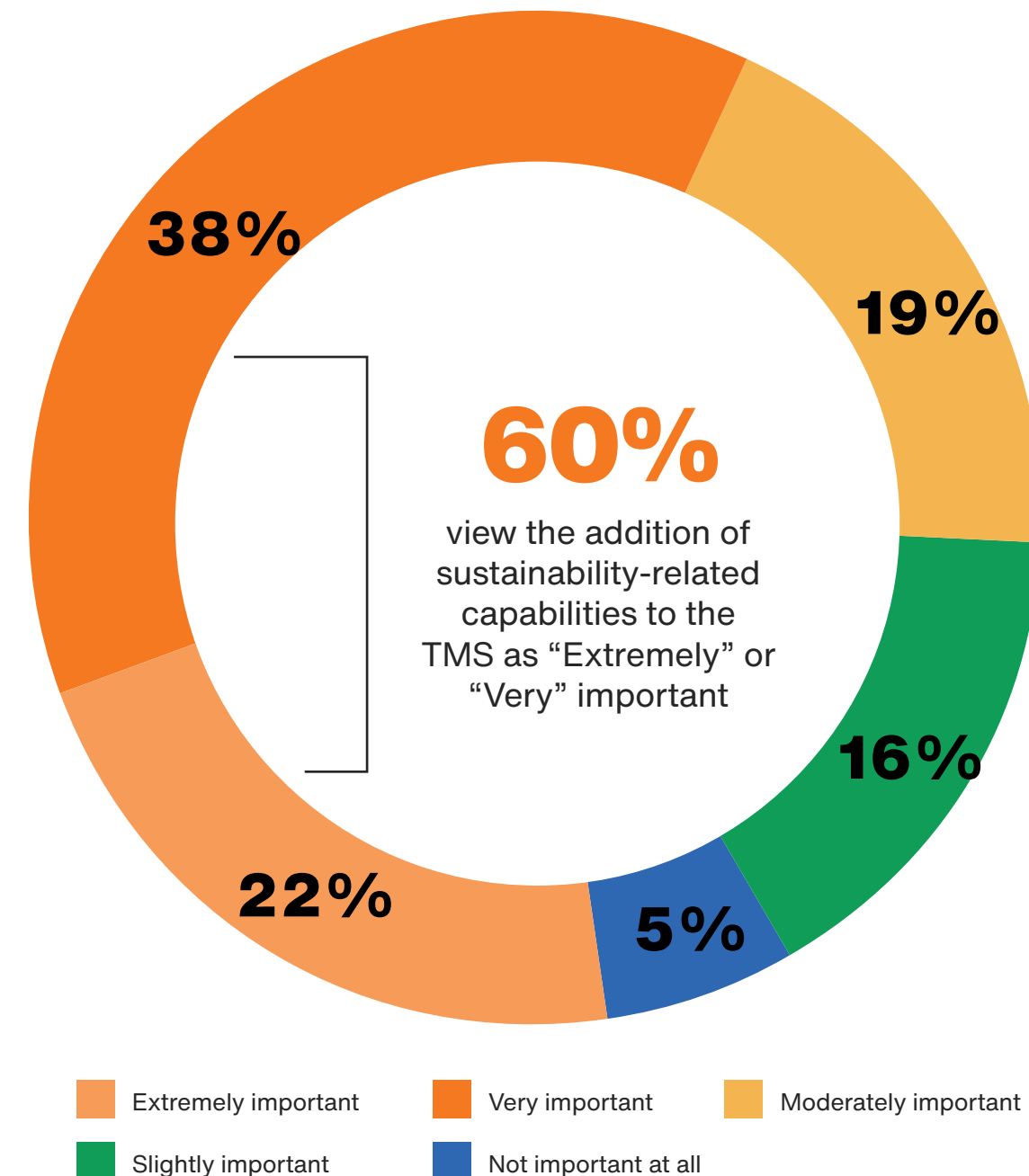
The Bottom Line: The Need for Sustainable Transportation Practices

Although many enterprises are currently not factoring CO₂ emissions into their transportation operations, the data and feedback from the survey indicate a growing expectation that measuring CO₂ emissions of shipments will become necessary soon. This shift is driven by the sustainability goals of companies, as well as increasing government regulations and customer requirements.

The survey highlights that the majority of respondents (60%) view the addition of sustainability-related capabilities to the TMS as “Extremely” or “Very” important. This signifies the recognition of the importance of incorporating CO₂ emission tracking into transportation decision-making processes. As a result, it is becoming increasingly clear that TMS solutions need sustainability-related capabilities to support these evolving requirements.

Enterprises must start preparing for the impending need to factor in CO₂ emissions. By embracing TMS solutions with sustainability-related capabilities, companies can proactively support their sustainability goals while meeting the upcoming government regulations and customer demands.

In the next few years, how important will it be for transportation management systems to have sustainability-related capabilities such as considering CO₂ emissions in mode/carrier selection?



About Adrian Gonzalez

Adrian Gonzalez, founder and president of Adelante SCM, is a trusted advisor and leading industry analyst with more than 24 years of research experience in transportation management, logistics outsourcing, global trade management, social media, and other supply chain and logistics topics.

In addition to launching Talking Logistics, Adrian established Adelante SCM, a peer-to-peer learning and networking community for supply chain and logistics executives and young professionals. He is also the founder of Indago, a market research service that brings together a community of supply chain and logistics practitioners who share practical knowledge and advice with each other while giving back to charitable causes.

Gonzalez held various leadership positions at ARC Advisory Group, Motorola, Polaroid, and Clare. He is also a member of the Council of Supply Chain Management Professionals and is a LinkedIn influencer.

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