



# **Sustainability in Logistics: Simultaneously Reducing Driving Costs and Carbon Footprint**

## Introduction

As pressure to reduce environmental impact grows, bulk and break-bulk commodity producers are increasingly viewing sustainability as a business imperative. The transportation sector, which accounts for about 8% of global greenhouse gas (GHG) emissions, plays a pivotal role in these efforts.

With proper utilization of their Transportation Management System (TMS) and associated analytics, shippers can not only reduce their carbon footprint but also drive significant cost savings by optimizing their logistics operations.

In an environment where every efficiency counts, leveraging technology to streamline freight transportation processes offers a direct path to achieving both sustainability goals and seeing ROI.

## The Challenge

For bulk and break-bulk shippers, transportation represents a substantial portion of total deliverable cost. These industries face pressure from shareholders and regulators to reduce their environmental impact while maintaining profitability. Additionally, they must overcome challenges related to talent attraction and retention, operational complexity, and rising transportation costs.

For example, a typical truck shipment would weigh 24 tons and travel 350 miles, emitting approximately 2,606 pounds of CO<sub>2</sub>. A rail shipment, by contrast, can weigh 90 tons and travel 1,000 miles, resulting in about 4,286 pounds of CO<sub>2</sub> emissions.



- 24 tons
- travel 350 miles
- emits approximately 2,606 pounds



- 90 tons
- travel 1,000 miles
- 4,286 pounds of CO<sub>2</sub> emissions

### Results:

An average truck shipment emits **140.7** grams of CO<sub>2</sub> per ton-mile, and an average rail shipment emits **21.6** grams per ton-mile.

*With the sheer volume of shipments involved, even small changes in transportation efficiency can yield significant reductions in both emissions and costs.*

## Companies need to address several key questions:

- ❓ What can be done to achieve short-term, measurable impact?
  - ❓ How can this be done without decreasing financial performance?
  - ❓ How can this be accomplished with the challenges faced in talent attraction and retention?
- 

## A Practical Path to Sustainability

By leveraging a robust TMS and associated analytics, companies can take several actionable steps to simultaneously reduce GHG emissions and costs. Automation and data-driven insights provide the foundation for continuous improvement, enabling teams to move tactical shipment management to strategic initiatives that improve overall efficiency.



*GreenHaul, a (fictional) bulk commodity transportation company, faced mounting pressure from stakeholders to reduce its environmental footprint without sacrificing profitability. Using a Transportation Management System (TMS), GreenHaul discovered how sustainability initiatives could translate directly into cost savings.*

### 1. Optimizing Transportation Planning

In many bulk industries, multiple facilities across a region or continent produce the same product. Aligning production schedules with customer demand and transportation planning can reduce unnecessary shipments and optimize modal choices. Customer order patterns often don't align with production schedules, requiring manufacturers to ship from an origin that isn't the closest to the customer.

By using a multimodal TMS, shippers can identify how many shipments were made from non-primary origins or use non-primary modes. Analyzing this data to identify origins or customers with higher-than-desired ratios allows for pinpointing areas for improvement—such as working with customers to increase order lead time or adjusting inventory levels that trigger reorders. Additionally, collaborating with plants to improve sales, production, and inventory planning can help better align shipments with customer demand.



***GreenHaul ships 60,000 truckloads annually and managed to reduce the average haul length by just 5 miles by realigning shipments with nearby production facilities. This small adjustment cut CO2 emissions by 2.2 million pounds. With freight rates at approximately \$2 per mile, GreenHaul saved \$600,000 in annual freight costs..***

## **2. Shifting from Truck to Rail**

Rail transportation produces significantly fewer emissions than trucking—about 21.6 grams of CO2 per ton-mile for rail versus 140.7 grams for trucking. By analyzing shipment data, shippers can identify opportunities to switch from truck to rail on certain lanes, particularly for longer hauls.

This pattern can often be identified because shipments will have been made using both modes. If the order pattern is significant enough (e.g., one truck per week), there may be an opportunity to convert from truck to rail.



***By shifting just 1% of its 60,000 truckloads—about 600 shipments annually—to rail, GreenHaul reduced its CO2 emissions by 2.8 million pounds. This shift allowed GreenHaul to achieve cost savings or, at minimum, cost parity with traditional trucking on specific routes.***

## **3. Reducing Empty Miles**

A common challenge in freight transportation is reducing empty miles—both those driven to pick up a shipment and those driven after delivery before the next load. This inefficiency, known as network misalignment between shippers and carriers, not only adds unnecessary costs but also increases GHG emissions.

Shippers can use their TMS to analyze carrier performance, including how many empty miles are incurred and how much tendering lead time is provided to carriers.



***By increasing tender lead times and enhancing network alignment with its carriers, GreenHaul significantly reduced empty miles. With just 5% of its shipments seeing a 50-mile reduction in empty travel, GreenHaul saved \$200,000 in costs and cut CO2 emissions by 750,000 pounds annually.***



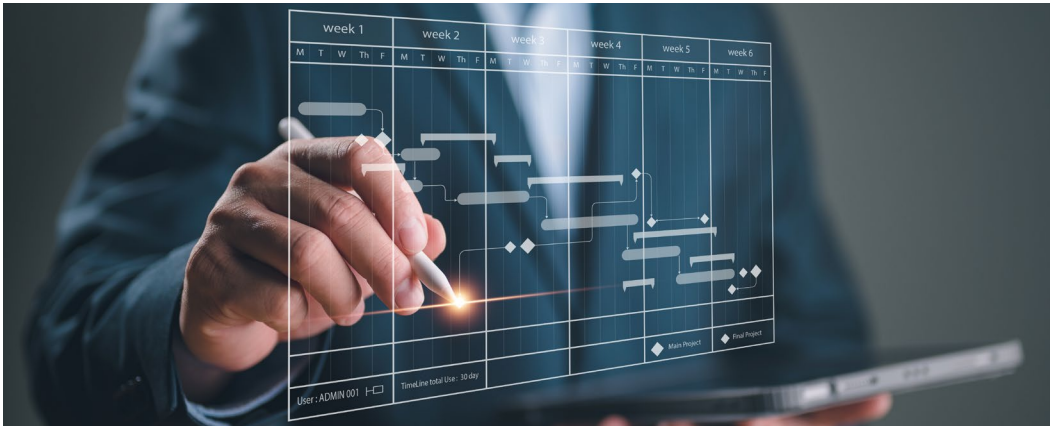
## 4. Improving Load Factor

For shippers with high-frequency lanes, increasing load factor, i.e., shipping more goods per truckload, can provide significant savings.



**GreenHaul, handling 5 shipments per week across 80 lanes, increased its average load from 24 to 25 tons per truck. This adjustment reduced its annual shipments from 260 to 250 per lane, cutting down the number of trips needed and boosting fuel efficiency across its network.**

Studies have shown that increasing the loaded weight by one ton **decreases fuel efficiency by about 1.5%**. Considering that and using \$2 per mile again for freight cost, they would reduce GHG emissions across those 80 lanes by 1.3M pounds and freight spend by \$560,000.



## 5. Origin Efficiency

Long dwell times—when trucks wait to be loaded—result in increased idle time, leading to higher costs and emissions.

By deploying a dock scheduling solution housed within or integrated with a TMS, carriers can secure optimal pickup windows, improving network efficiency and ensuring drivers and trucks arrive when they can get in and out quickly. Additionally, this solution allows shippers to analyze actual versus scheduled arrival times, enabling tighter management of detention invoice approvals.



*For GreenHaul, with its 60,000 shipments, optimizing operations reduced idle time by around 30,000 hours. Since idle time typically costs about \$75 per hour in freight negotiations, this reduction saved GreenHaul \$2.25 million—either by cutting detention charges or by allowing carriers to offer lower base rates with less idle time built in.*

Idle time during freight negotiations		Optimizing ops reduced idle time by		Saved GreenHaul
<b>\$75/hr.</b>	<b>x</b>	<b>30,000hr.</b>	<b>=</b>	<b>\$2.25 Million</b>

Other studies have shown that trucks emit about **18 pounds of CO2** per hour of idling. This would eliminate 540,000 pounds of CO2 emissions in addition to the \$2.25M in cost savings.

## 6. Destination Notifications

Shippers can help customers manage their facilities more efficiently by providing proactive shipment tracking and notifications. While carriers may not always coordinate detailed dock scheduling at destination locations, accurate ETAs and real-time updates on delays or early arrivals enable customers to plan staffing and operations for timely unloading. This reduces idle time, cuts costs, and lowers CO2 emissions—though likely to a lesser extent than at the origin.



*GreenHaul's proactive ETA notifications helped customers plan for timely unloading, reducing idle time and improving efficiency. This approach not only lowered costs but also cut CO2 emissions, enhancing both customer satisfaction and environmental impact.*



## Conclusion

When bulk and break-bulk commodity shippers select the right TMS, the intersection of sustainability and operational efficiency offers significant opportunities. By leveraging a TMS, companies can achieve short-term cost savings while reducing their carbon footprint and addressing shareholder expectations and environmental challenges.

With immediate steps such as optimizing shipment planning, modal conversion, and reducing empty miles, companies can make meaningful progress toward their sustainability goals—saving an estimated \$65 and 120 pounds of CO2 per shipment.

IntelliTrans' advanced TMS provides the automation and visibility needed to unlock these improvements, driving operational excellence and environmental responsibility. Learn more about the [IntelliTrans TMS](#).

