

Reduce Emissions from Freight and Goods Transport

GHG emissions category

Owned fuel vehicles: Scope 1

Owned electrical vehicles: Scope 2

Supplier managed shipping: Scope 3, Category 4, Upstream Transportation and Distribution

Introduction

This guide covers how to reduce emissions from shipping and goods transportation. Right now, this sector is responsible for eight percent of global carbon emissions. But there are already solutions that companies can roll out to dramatically lower these emissions. The transportation industry is changing fast and the coming decade will likely see the growth of technologies like e-fuels and electric trucks that can further accelerate the shift to sustainable practices.

Measure and understand

To figure out emissions from your shipping and freight, you can use a method that combines the distance travelled, the weight of the goods (when relevant), and an emission intensity factor, which depends on the type of vehicle, fuel, and region. If a supplier handles your shipping, they should be able to give you this information. If you don't have access to this data, you can find several online calculators that can estimate your shipping emissions (see one example [here](#)).

Key Actions

1. Reduce Transport

The solutions available for reducing emissions from transportation can be broken down into three strategies: reducing transport, replacing fossil fuels and rethinking transportation. Effectively reducing unnecessary transportation can be done in a number of ways:

- Optimising networks to ensure a smoother flow of goods, reducing unnecessary movements.
- Optimising space usage by increasing utilisation of equipment, to reduce the number of units needed. This will result in both lower costs and a decreased carbon footprint.
- Incorporating larger equipment to boost capacity and decrease shipment frequency. Whenever applicable, ask your service providers (existing and new) to set science-aligned targets and plans, and join organisations such as the UN Climate Change High-Level Climate Champions' Race to Zero. The purpose is to ensure that these service providers actively work to drive down emissions in their supply chains, which will be essential for you to reach your own targets.
- Ensure that your business model minimises transportation-heavy services such as return of products.
- Collaborate with your transport service providers to reduce fuel and energy consumption by increasing efficiencies. Service providers might, for example, enact a “no idling” policy and provide training for drivers to help them follow new regulations.

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2. Replace Fossil Fuels by Shifting Modes of Transport

The first component of the Replace strategy is to shift modes of transport. Specifically, this can be achieved by:

- **Shifting away from air transport:** This can significantly reduce emissions, as Figure 2 shows. This modal shift requires careful planning and logistics management to ensure the maintenance of efficient and on-time deliveries, and may require additional storage capacity closer to the final market.
- **Shifting from road to rail transport:** Trains are significantly more energy-efficient (per tonne-km) than trucks, so shifting goods from trucks to trains can substantially reduce emissions, particularly in long-distance transportation.
- **Shifting from road to sea transport:** Maritime shipping, especially for long distances, is one of the most carbon-efficient modes of freight transport. Shipping will, however, take longer, so extensive planning and coordination will be needed. You also need to consider the distance and the mode of transportation for the “last mile” transportation, where goods are transported to and from ports.
- **Intermodal transport:** Given that not all air-covered distances can be shifted to sea, we must account for intermodal transportation, which means using multiple modes of transport, such as a combination of trucks, trains, and ships. Intermodal transportation provides an opportunity to take advantage of the best of each mode, such as the flexibility of trucks, the efficiency of trains, and the low emissions of marine transport. This often results in lower overall emissions (per tonne-km) than relying on just one mode of transport.

Note: While these shifts in transportation modes can reduce emissions, other factors will also play a key role, such as the sorts of technologies and fuels used by the particular transportation mode, the distance covered, and the efficiency of the specific vehicles. Optimising routes, improving vehicle efficiencies, and investing in cleaner technologies can further reduce freight transport emissions.

3. Replace Fossil Fuels in Modes of Transport

The second component of the Replace strategy is to shift away from fossil fuels and towards cleaner energy sources.

Companies can use the following list of solutions, where electrification and hydrogen would be the recommended alternatives:

- **Electrification:** Electrification is key to decarbonising transport in the long term. In the case of electric trucks, the technology is developing fast and it is already possible to electrify in many cases today. Requisites to electrifying a heavy-duty fleet include access to fossil-free electricity, grid capacity, and land for charging infrastructure.
- **Hydrogen and fuel cells:** Hydrogen is one option for replacing fossil fuels and reducing a significant portion of emissions. Fuel cells avoid air pollution and reduce emissions at the point of operation, but their production requires a lot of energy. Hydrogen should specifically be applied for hard-to-abate sectors.
- **Biofuels:** Biofuels are another option for replacing fossil fuels and reducing emissions in the short term, but only if their source is sustainable across the whole lifecycle. Biofuels should primarily be used for hard-to-abate sectors such as aviation.
- **Electrofuels (e-fuels):** As a longer-term alternative to replacing fossil fuels, e-fuels can be considered. Currently, due to high costs and limited scales, the adoption of synthetic fuels (such as e-methanol) will likely focus on hard-to-abate sectors.

4. Rethink transportation by collaborating and innovating

Get creative with incorporating innovations and emerging technologies into your transportation emission-reduction strategies. Pilot new innovations, evaluate their impacts, and if successful, expand them within your operations. For example, in addition

to the Reduce and Replace solutions suggested above, you might experiment with the following approaches:

- **Review Transportation Strategies:** Explore alternative logistics setups, such as producing goods closer to market warehouses rather than manufacturing to order for long-distance shipping. As a bonus, this may also result in lower production emissions and higher supply chain resilience.
- **Digital and Automated Optimisation:** Apply digital and automated solutions, including AI, to optimise routing and maximise capacity utilisation in your transportation processes.
- **Considering Local Technological Advancements:** Take into account local technology and infrastructure advancements that can enhance the efficiency and sustainability of your operations.
- **Collaboration:** Work with suppliers and purchasers to share logistics solutions, such as co-shipping, cold chains, and recycling products. For instance, medical companies can reclaim plastics for reuse, while fashion retailers can repurpose clothing as second-hand items.