

Emissions associated with the transport of goods

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I - Presentation of the source of emissions

Emissions linked to the transport of goods correspond to greenhouse gas (GHG) emissions linked to the transport of merchandise up and down the value chain. These include the transport of raw materials to the factory, the transport of products to the end customer and the immobilisation of vehicles.

30% of territorial GHG emissions in 2021,
(Source : HCC 2022 report¹)

→ **Number 1 source of emissions,**
(an average decrease of 1.5%/year since 2015, and a targeted rate of around 3%/year over the period 2022-2030)

Annual transport of **363 billion** tonne-kilometres of goods (excluding pipelines)

→ on French territory using² :



89% road transport



9% rail transport



2% river transport (source ENTD 2008)

44% of these emissions are attributable to the transport of goods:



27% related to heavy goods vehicles



14% for commercial vehicles



3% to means of transport such as sea and rail]

Annual transport of **2,4 billion** tonne-kilometres of goods by air to France³

Annual transport of **16,7 billion** tonne-kilometres of goods by domestic sea transport in 2019.⁴

The authorities are aiming to reduce greenhouse gas emissions from the transport of goods through the following binding measures :

- Elimination of the tax advantage granted to road transport by 2030,
- Adjustment of road toll rates according to the environmental performance of heavy goods [vehicles](#)⁵ ;
- End of sales of combustion models by 2040.

¹ Representing 126 Mt CO2 equivalent, according to the 2022 annual report of the High Council for the Climate

² [Key transport figures](#) from the Ministry for Ecological Transition and Territorial Cohesion

³ [Data from the World Bank.](#)

⁴ [According to the Ministry for Ecological Transition and Territorial Cohesion.](#)

II - Presentation of levers and best practices

The transport of goods can be divided into two main categories, depending on whether the company is in charge of the vehicles or outsources the transport of goods. Levers in **green** are easy to implement and offer significant gains in terms of GHG emissions, while the **orange** levers are more difficult to implement, but offer significant gains in GHG emissions, and the **blue** levers are easy to implement, but offer lower GHG emission gains.

1. Reduce emissions linked to the fleet of vehicles owned by the company

1.1 Optimise transport

1.2 Train drivers in eco-driving

1.3 Renew the vehicle fleet with low-emission models

2. Reduce emissions linked to the vehicle fleet when the company subcontracts

2.1 Select subcontractors on the basis of environmental performance

3. Reduce emissions linked to supply and distribution strategy

3.1 Include supplier and distributor location in the selection process

3.2 Review planning policy to accept longer delivery times

1. Reduce emissions linked to the fleet of vehicles owned by the company

1.1 OPTIMISE TRANSPORT

- **Optimise journeys** to reduce GHG emissions and costs : <https://www.objectifco2.fr/>
- GHG emissions are directly linked to the quantity of fuel consumed, which corresponds to the distance and volume transported ;



In France, the average fill rate for trucks is 60% and the empty return rate is 17%. Yet GHG emissions are proportional to the number of kilometres travelled and the weight transported. Thanks to vehicle fleet management tools, it is possible to reduce GHG emissions by increasing the occupancy rate and reducing the empty return rate. Data from ADEME carbon database.

- **Optimise product packaging** (over-wrapping, quantity of products per pallet, etc.,) to maximise the number of products per lorry and thus the quantity of greenhouse gases emitted per product.

1.2 TRAIN DRIVERS IN ECO-DRIVING

- **Eco-driving**: socially responsible driving behaviour to **reduce fuel consumption**⁶ based on:

- Vehicle maintenance,
- Anticipating acceleration and deceleration,
- Speed adaptation,

- **Reduces fuel consumption by up to 25%** and the risk of accidents by 15%

- It also means financial savings (increase in fuel prices, end of tax breaks on road diesel by 2030)
- Increase the range of alternative energy vehicles (end of sales of fossil-fuelled HGVs in 2040)

⁶ [According to the government's eco-driving report](#)

⁷ [According to the newspaper Le Point](#)

1.3 RENEW THE VEHICLE FLEET WITH LOW-EMISSION MODELS

- Current standards regulate emissions of fine particles and nitrogen oxides, but not GHG emissions
- Euro 6 legislation, which came into force in 2014, provides for a 66% reduction in fine particle emissions and an 80% reduction in nitrogen oxide emissions compared with Euro 5 legislation⁸ ;

▮ **Invest in alternative energy vehicles** emitting less CO₂eq per tonne-kilometre;



Various technologies are available on the market or under development. The most mature technology is NGV vehicles. Technologies based on hydrogen or electricity could be brought to market in the near future. Information provided by [Reseaulation](#).

2. Reduce emissions linked to the vehicle fleet when the company subcontracts

2.1 SELECT SUBCONTRACTORS ON THE BASIS OF ENVIRONMENTAL PERFORMANCE

- ▮ Select service providers based on their **environmental performance**, using the following KPIs :
 - Load factor (in % of capacity)
 - Empty return rate (%)
 - CO₂eq emissions per tonne of kilometres travelled (in kgCO₂e/tonne.kilometre)
 - Vehicles making up the fleet
 - Etc.
- ▮ Define an **environmental charter** to be respected by subcontractors (contractual constraint on the various KPIs defined by the company)

3. Reduce emissions linked to supply and distribution strategy

3.1 INCLUDE SUPPLIER AND DISTRIBUTOR LOCATION IN THE SELECTION PROCESS

- ▮ Limit the **distance travelled by products**
 - Choose suppliers or distributors in the distribution chain to avoid unnecessary detours and thus fuel consumption.

3.2 REVIEW PLANNING POLICY TO ACCEPT LONGER DELIVERY TIMES

- ▮ **Less emissive means of transport** exist and can be used as an alternative to lorries. This type of transport may require longer lead times, impacting on product delivery times, but can reduce greenhouse gas emissions by a factor of between 10 and 100.

Haulage



0,004 kg CO₂e



0,02 kg CO₂e



0,3 kg CO₂e



1,7 kg CO₂e

In France, freight transport by train emits an average of 0.004 kgCO₂eq/tonne.kilometre, maritime transport by container ship emits an average of 0.02 kgCO₂eq/tonne.kilometre, road transport by heavy goods vehicle emits an average of 0.3 kgCO₂eq/tonne.kilometre, and air transport emits an average of at least 1.7 kgCO₂eq/tonne.kilometre. Data from ADEME carbon database.

⁸ Information provided per second-hand truck

- ▣ Transport by plane emits on average **5 times more greenhouse gases than transport by lorry** ;
- ▣ Choose a truck distribution system that optimises **the fill rate**
 - Scheduled deliveries ;
 - Loop circuit.

OPERATIONAL KPIS :

▣ Composition of vehicle fleet used (%)	
• Fossil-fuelled vehicles
• LNG-powered heavy goods vehicles
• Heavy goods vehicles powered by electricity
• Heavy goods vehicles powered by hydrogen
▣ Average number of tonne-kilometres travelled by products, raw materials, etc.	
.....	
▣ Average GHG emissions per tonne.kilometre of goods transported (in kgCO ₂ e/ tonne.kilometre)	
.....	

III - Case study



Specialist in premium last-mile delivery, **TOPCHRONO** has embarked on an ambitious decarbonisation plan, which involves renewing its fleet. Of the 500 vehicles owned, the proportion of electric vehicles will rise from 5% by the end of 2020 to 38% by the end of 2022. It is aiming for 80% by 2024.

The investment plan has been modified accordingly, to meet the significant costs of purchasing electric vehicles and installing charging stations. In addition, Topchronto is developing new clean and efficient delivery methods in city centres, such as cargo bikes, the number of which has risen to 50, a 10-fold increase in just a few months. The use of algorithms also makes it possible to optimise journeys and therefore reduce pollution. Finally, to offset its residual emissions, Topchronto is stepping up its reforestation policy in the Hauts-de-France region, planting an average of 1 tree a day. The company is counting on a rapid return on these decarbonisation investments: not only do regulations and customer demand favour green transport, but the performance of the new means of delivery, by bicycle or even on foot, is better than that of combustion-powered vehicles because they are better suited to today's cities.



French and European leader in low-carbon road haulage, **JACKY PERRENOT** has set itself the target of reducing emissions per kilometre travelled by 25% by 2030. As a point of reference, Scope 1 accounts for 96% of the Group's carbon footprint. To achieve this, Jacky Perrenot, whose fleet currently comprises almost 15% of vehicles powered by low-carbon energies such as gas, B100 or electricity, is aiming for a low-emission fleet rate of 30% by 2025 and almost 75% by 2040.

This strategy of diversifying the fleet's energy mix is the fruit of collaboration with customers, vehicle manufacturers and local institutions, both in the development of low-carbon technologies and operational infrastructure. It is essential to involve all our stakeholders in this transition, because it involves R&D and high costs. By bringing together all the players in the value chain, it is possible to find the material and financial balance required to achieve the decarbonisation objectives.

In addition, Jacky Perrenot is aiming for 60% of the installed tyres to be retreaded or regrooved in order to extend their service life, as well as developing a recycling sector. The Group is also working with its property owners to reduce the electricity consumption of its refrigeration systems. Finally, it is investing massively in the digitisation of its operational processes, enabling it to reduce its paper consumption.



As Europe's leading premium logistics provider, **Sterne Group** offers its customers a range of high value-added transport and logistics services, both scheduled and on-demand, tailored to each business and to the urgency of each situation. The Group offers four main types of service: (1) regular, for regular collection and delivery; (2) urgent, for critical ad hoc deliveries; (3) express, for rapid D+1 or D+2 deliveries and finally (4) urban, for shopping and urban distribution.

The Group's strength is based on a unique model for pooling flows, optimising all journeys and never driving "empty". In particular, this pooling involves :

- the creation of a network of more than 200 "hubs" or parking areas, connecting regular routes throughout Europe ;
- night deliveries (more than 75% of the Group's journeys), which speed up journeys and minimise the latency caused by road density ;
- "reverse logistics" or simultaneous delivery and collection.

This results in more than **135 000 tonnes** of GHG emissions avoided every year.

To go further, Sterne Group has signed up to the Science-Based Target initiative (SBTi) and has defined a 1.5°C alignment strategy, through which the Group is committed to reducing its already optimised emissions by 7% per year. This involves further optimisation, a transition of the fleet to a majority of electric/hybrid or NGV vehicles, and investment in energy-efficient renovation of the logistics sites operated by the Group. Sterne Group has also held EcoVadis Platinum status for several years.

These actions support the Group's mission to improve business performance and competitiveness by offering integrated, efficient and more sustainable multimodal transport solutions. The carbon issue is at the heart of Sterne Group's customer relations: customers receive half-yearly data on the GHG emissions linked to their deliveries and have the opportunity to take part in initiatives to offset residual emissions coordinated by the Group.

IV - Openness to other environmental issues

Reducing GHG emissions associated with the transport of goods can have co-benefits on other environmental issues, in particular:



- **Biodiversity** : transport and associated infrastructure are responsible for a significant proportion of the artificialisation of land and the fragmentation of natural areas. ([Guide Biodiversité France Invest](#))
- **Air pollution** : transport is responsible for a large proportion of air pollution, particularly in urban areas (ozone, nitrogen oxides, fine particles), which is a major public health problem in France.

V - Further information

Here are a few resources for a more in-depth look at transport emissions:

- [Publications of France nature environnement](#)
- [ADEME publication for road hauliers](#)

VI - Appendice

Regulatory method version 5	Item	GHG Protocol	Category
Category		Scope	
1. Direct GHG emissions	Other direct emissions	Scope 1 (direct)	Other direct emissions
	1.2 Direct emissions from mobile combustion sources		Direct emissions from mobile combustion sources
2. Indirect emissions associated with energy	2.1 Indirect emissions from electricity consumption	Scope 2 (indirect) Generation of energy consumed	Indirect emissions linked to electricity consumption
	2.2 Indirect emissions from energy consumption other than electricity (e.g. hydrogen production)		Indirect emissions from energy consumption other than electricity (e.g. hydrogen production)
3. Indirect emissions associated with transport	3.1 Upstream goods transport	Scope 3 (indirect)	4. Upstream transport and distribution
	3.2 Downstream goods transport		9. Downstream transport and distribution
4. Indirect emissions associated with products purchased	Passenger transport		Other scope 3 emissions (passenger transport, purchases of goods and services, etc.)
	4.2 Fixed assets		3. Energy and fuel-related activities
	4.4 Upstream leasing assets	2. Fixed assets	
5. Indirect emissions associated with products sold	Use and end of life of products sold, etc.		
6. Other indirect emissions	Other indirect emissions		8. Upstream leasing assets

Emissions item concerned by the sheet
 Emissions item not concerned by sheet





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