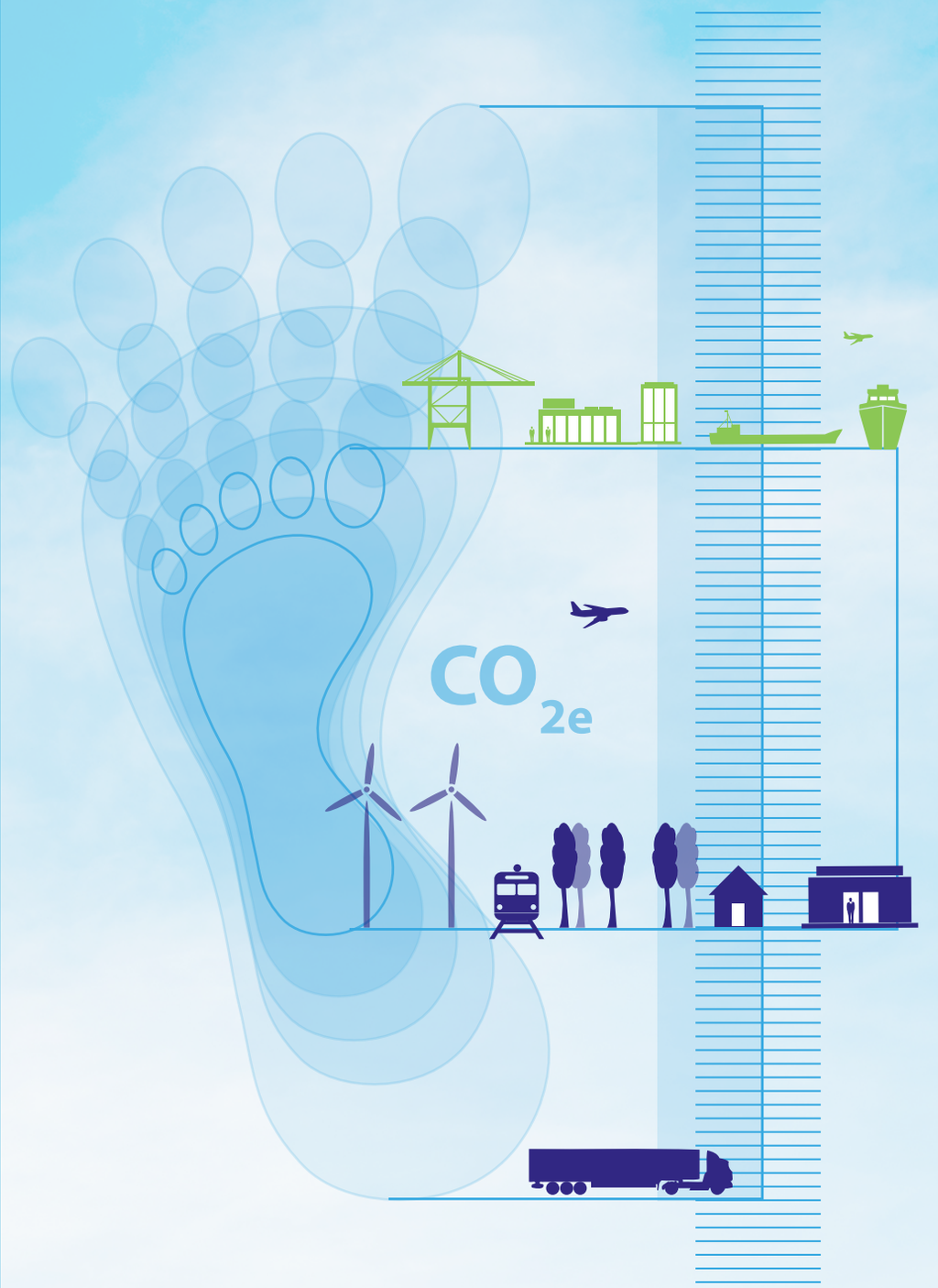
GUIDELINE 11 - CARBON FOOTPRINT IN LOGISTICS



Storage

Connekt

LEAN & GREEN EUROPE

Topsector Logistiek

Colophon

Guideline 11 - Storage

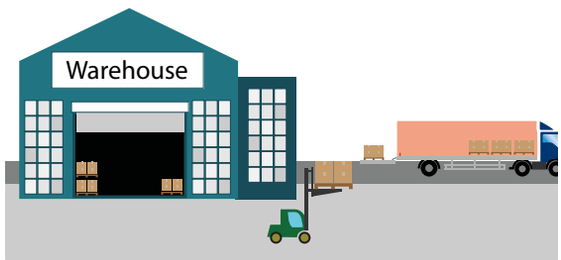
Carbon Footprint in logistics

January 2021

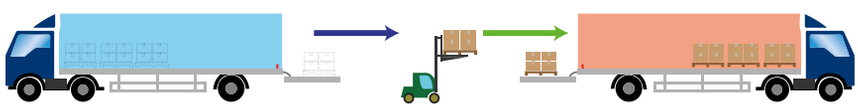
Connekt/Topsector Logistiek
Ezelsveldlaan 59
2611 RV Delft
+31 15 251 65 65
info@connekt.nl
www.connekt.nl

Storage

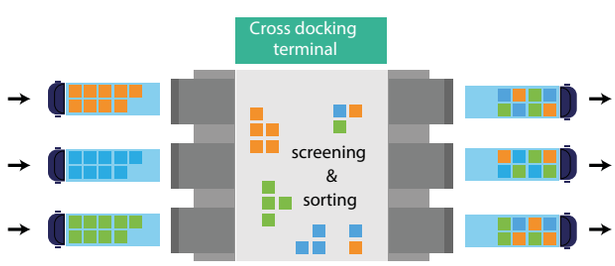
Goods are often placed into storage and transshipped several times within a supply chain. What is the difference between storage and transshipment?



The purpose of storage is to maintain a stock of goods from which goods can be supplied when orders come in.



In the case of transshipment the aim is to transfer goods from one mode of transport to another. They generally remain packed inside the load carrier in which they are delivered.[1]

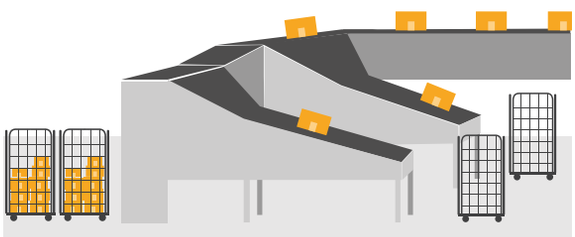


In the case of cross-docking the goods are immediately transferred to another mode of transport.

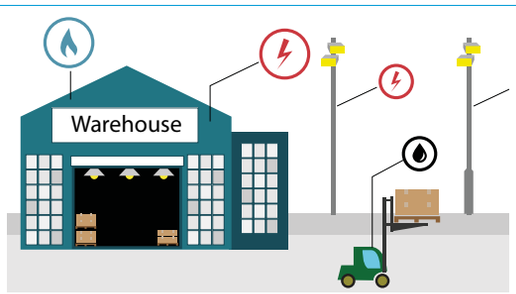
Goods are often removed from their load carrier so they can be divided up into other units (in the case of break bulk, at distribution centers, etc.). Special warehouses are used for temperature-controlled storage.

1 *This does not apply to bulk goods transported without a load carrier: these are deposited into silos or pumped into tanks. In this case the boundary between transshipment and storage becomes more blurred.*

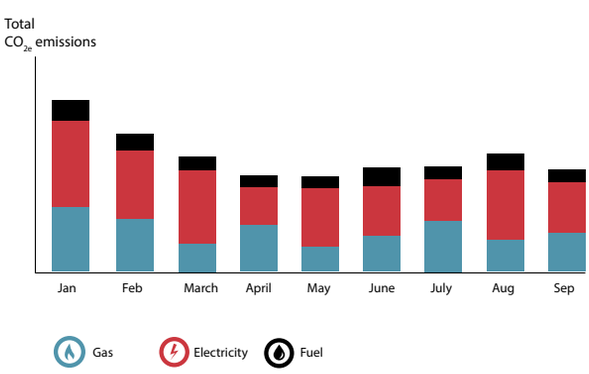
The goods may be placed into temporary storage, as in the case of sea containers at a port, before being transferred to the other mode of transport.



The transshipment of post and parcels represents a special variant: in this case sorting often takes place during transshipment. The post and parcels delivered are sorted by postcode before onward transport of the sorted items.

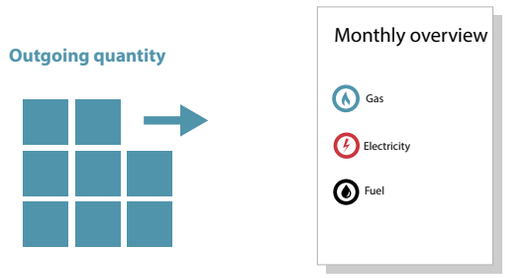


The CO_{2e} emissions of a storage facility (warehouse, cold store, distribution center, etc.) can be attributed, first of all, to the energy and fuel used for storage. This covers everything directly necessary for the activity, e.g. energy (gas, electricity) for buildings and fuel or electricity for (mobile) machines, such as forklift trucks.

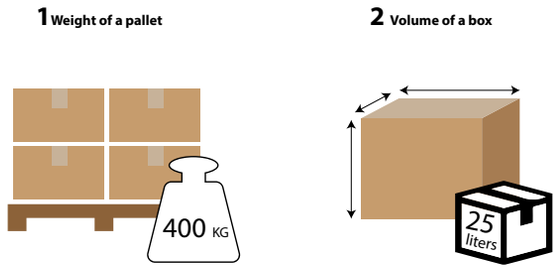


All this energy and fuel is measured and converted into CO_{2e} emissions. Most companies can determine this consumption annually on the basis of statements from energy companies and fuel suppliers. Increasingly, it is also being measured on a monthly or weekly basis and broken down for each element to provide a greater insight.

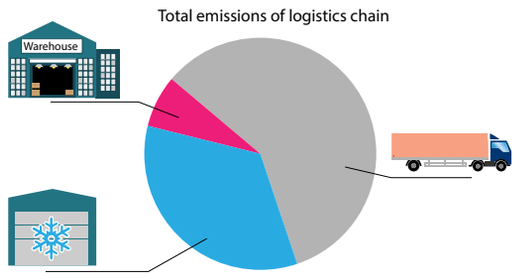
The second source of greenhouse gases[2] is the leakage of refrigerants from refrigeration units. Their contribution can be significant, as certain refrigerants have a much greater greenhouse effect per kg than CO_{2e}. This factor can range from 1 to as much as 4,470: in the latter case 1 kg of refrigerant that escapes into the atmosphere has the same greenhouse effect as 4,470 kg of CO_{2e}. These emissions have to be taken into account.



There is no COFRET guideline for calculating the allocation. In practice, the following method is generally accepted and justifiable: allocation to cargo is based on the outgoing quantity[3] of cargo over the same period used to measure energy and fuel.



The unit used for the quantity can be one or more of the units described in guideline 2 (Cargo). In practice, weight is the most common unit, with volume a close second. The result is: the amount of CO_{2e} per unit of cargo.

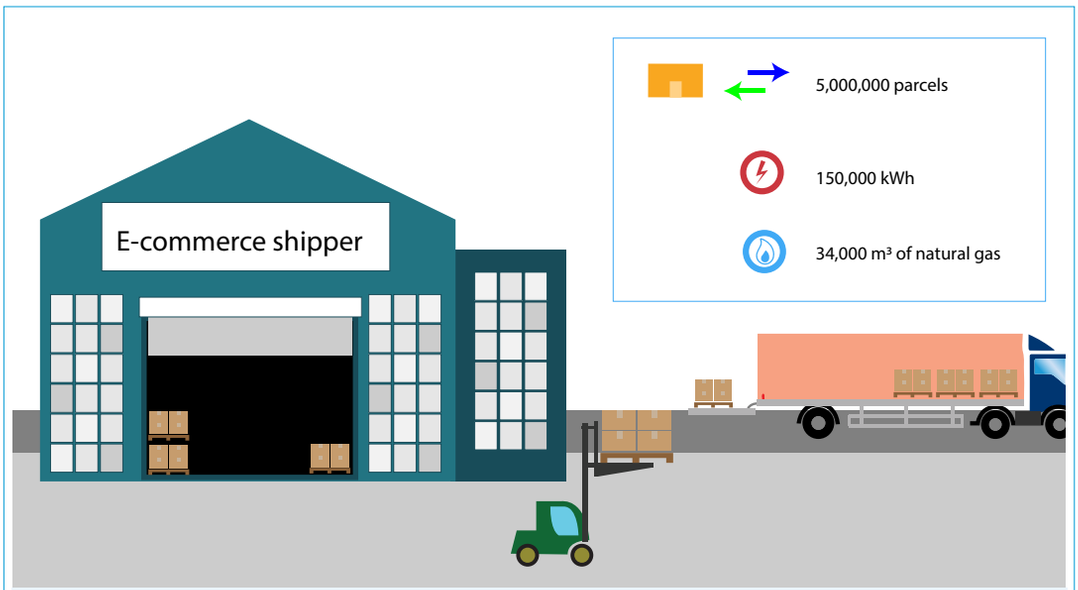


In most cases the contribution made by storage to the total emissions from logistics is small relative to transport, except where chilled and frozen products are stored for a long period of time.

2 *Expressed in CO_{2e}, effect converted to CO_{2e} equivalents.*

3 *Allocation based on the outgoing quantity gives a good approximation if there are only limited differences in the throughput rate of products. A much more complex calculation method takes the number of days for which each product is held into account: in theory this is a better approach, but in practice all this extra effort does not deliver a great deal of added value, unless there are extreme differences in the throughput.*

A simple practical example



In March 5,000,000 parcels are dispatched from the warehouse of an e-commerce shipper, which has an area of 10,000 m^2.

The warehouse consumes 150,000 kWh of electricity and 34,000 m^3 of natural gas over the course of March.

The total emissions of the warehouse are:
150,000 kWh x 475 grams per kWh = 71,250 kg CO_{2e}
34,000 m^3 x 1,890 grams per m^3 gas = 64,260 kg CO_{2e}

Total 135,510 kg CO_{2e} = 27.1 grams CO_{2e} per parcel.

(Source for emission factors: www.co2emissiefactoren.nl)

Carbon Footprint guidelines

0. Measuring, calculating, allocating and reducing

1. Allocating

2. Cargo

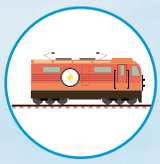
3. Origin and destination

4. Fuel

5. Inland shipping - containers

6. Inland shipping - bulk

7. Freight transport by rail



8. Air freight

9. Maritime and short sea shipping

10. Transshipment

11. Storage

12. Parcel transport and post

13. General road transport

14. Perishable and temperature controlled

15. Outsourced transport

16. Repositioning and empty kilometers

17. (Inter)national supply chains

18. Benchmarking

19. Intermediaries and platforms

20. Auditors and accountants

21. Data quality

22. The relationship between social goals and corporate goals

Connekt

LEAN & GREEN EUROPE

Topsector Logistiek