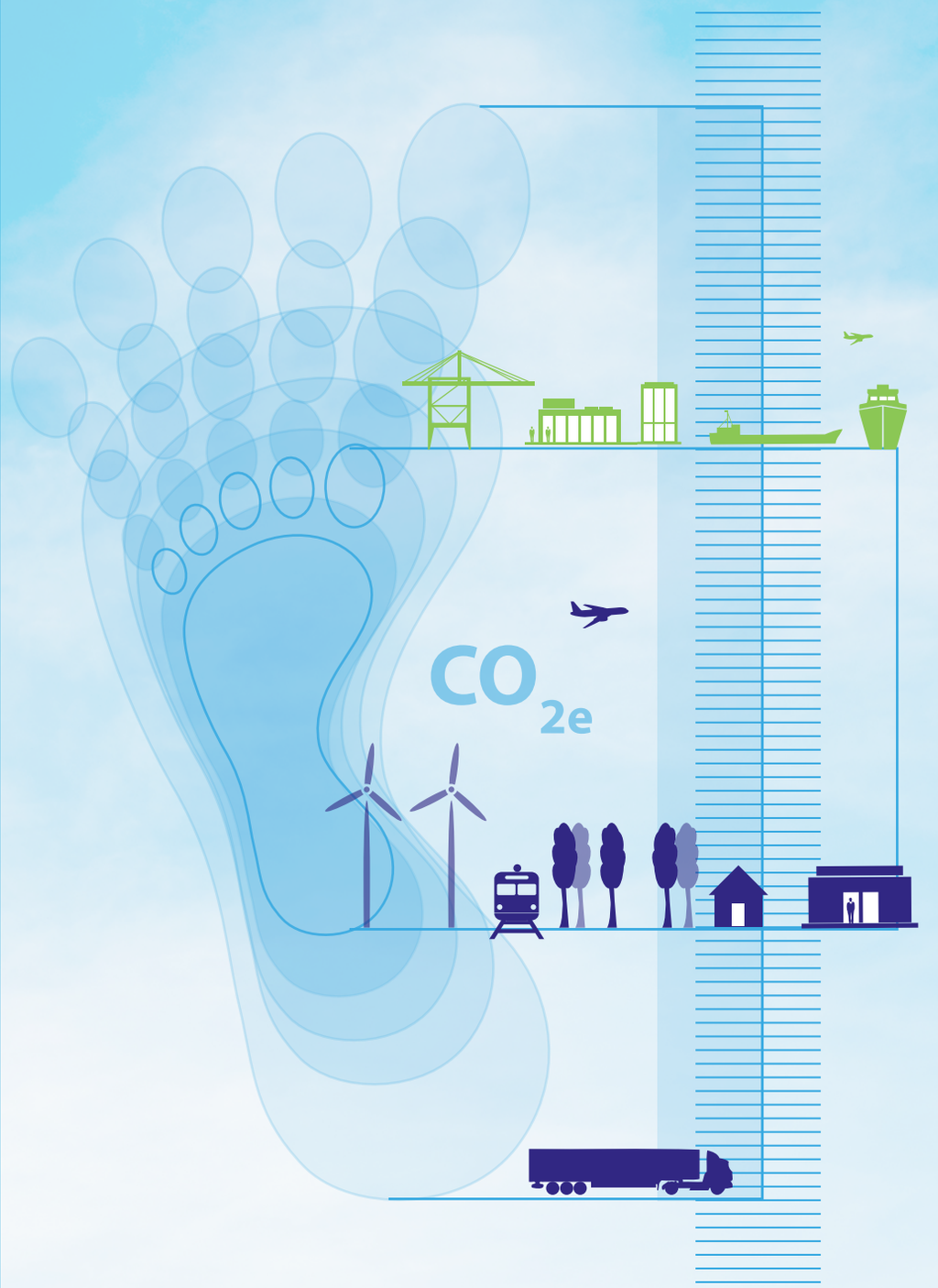
GUIDELINE 10 - CARBON FOOTPRINT IN LOGISTICS



Transshipment

Connekt

LEAN & GREEN EUROPE

Topsector Logistiek

Colophon

Guideline 10 - Transshipment

Carbon Footprint in Logistics

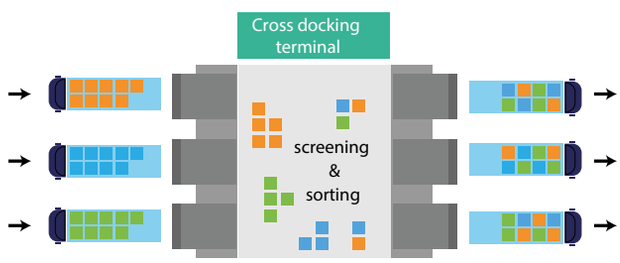
January 2021
© Connekt

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

Transshipment

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

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]

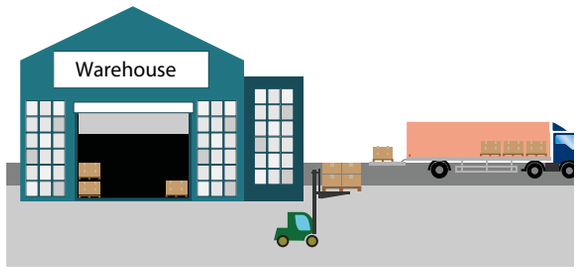


In the case of cross-docking the goods are immediately transferred to another mode of transport. Transshipment involves holding goods for a relatively short time. For this reason no distinction is made between ordinary and refrigerated freight and refrigerant leakage is also not taken into account.

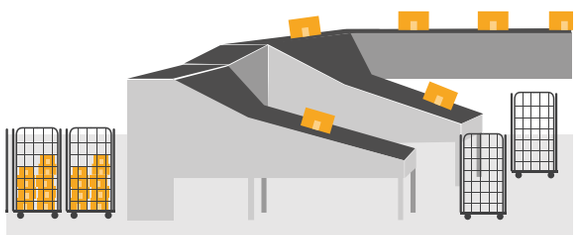
Goods are often removed from their load carrier so they can be divided up into other units (in the case of break bulk, at distribution centers, etc.). Special warehouses are used for temperature-controlled storage. In this case a significant amount of electricity is consumed and refrigerant leakage also needs to be included in the actual contribution to greenhouse gas emissions.

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. A terminal that handles sea containers will often move the containers several times during the transfer from container ship to hinterland transport. In such a case the emissions per TEU are counted for each 'move'.

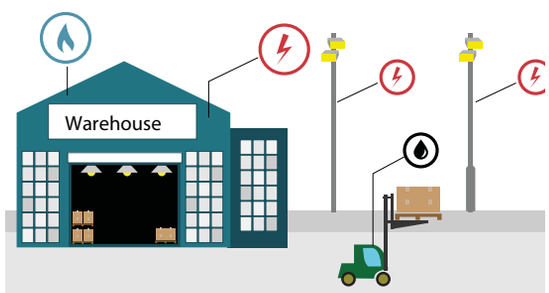
1 *this does not apply to bulk goods transported without a load carrier: these are deposited into silos or pumped into tanks. In this case the boundary between transshipment and storage becomes more blurred.*



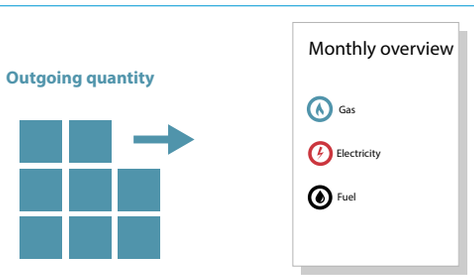
The purpose of storage is to maintain a stock of goods from which goods can be supplied when orders come in.



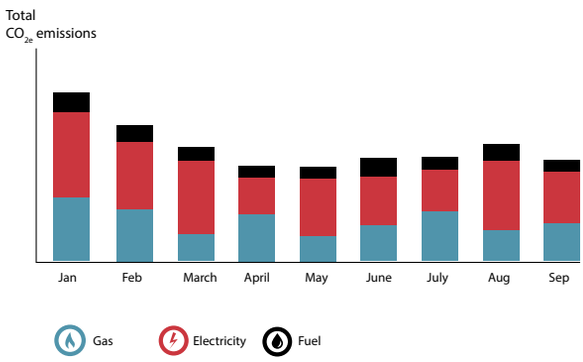
The transshipment of post and parcels represents a special variant: in this case sorting often takes place during transshipment. The post and parcels delivered are sorted by postcode before onward transport of the sorted items.



The CO_{2e} emissions of a transshipment point can be attributed to the energy and fuel used for transshipment. This covers everything directly necessary for the activity, e.g. energy (gas, electricity) for buildings, external lighting and fuel or electricity for (mobile) machines, such as forklift trucks, reach trucks, cranes, terminal tractors, sorting machines, etc.

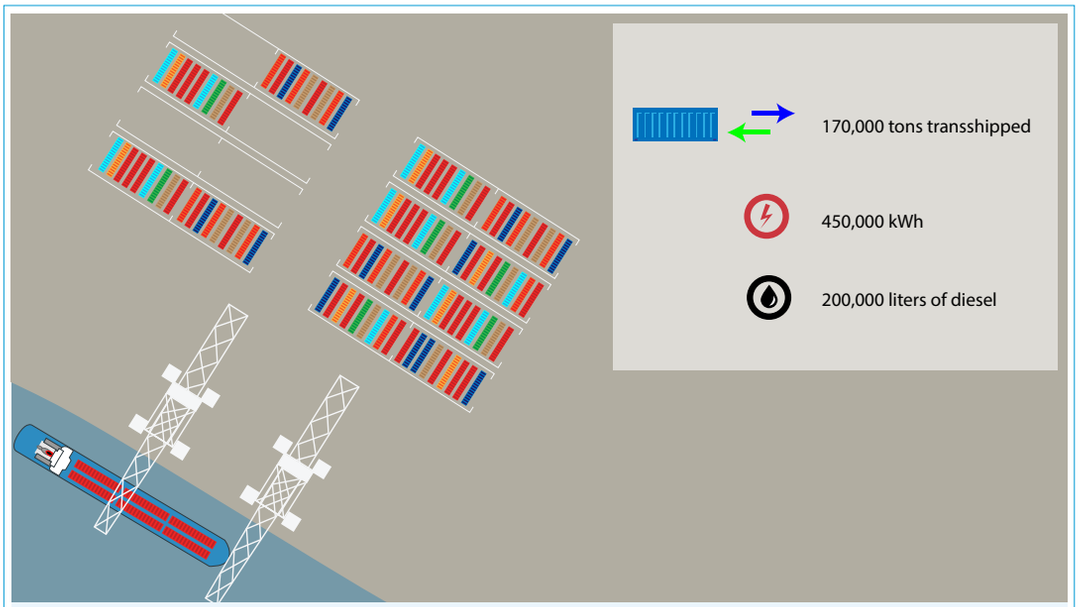


Allocation to cargo is based on the outgoing quantity of cargo over the same period used to measure energy and fuel. This results in: CO_{2e} per unit of cargo.



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.

How does this work at an inland shipping terminal?

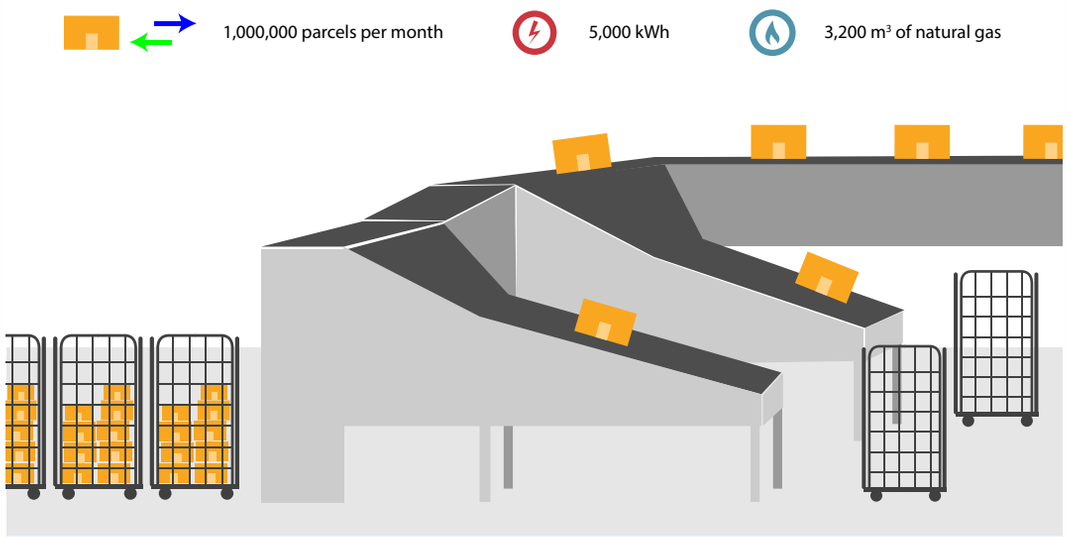


Let's take the following example:
A terminal transships 170,000 tons of cargo in the course of a year.
Over that year a total of 450,000 kWh of electricity (non-renewable electricity, Dutch average) and 200,000 liters of diesel are consumed.

This results in total emissions of:
(emission factors from co2emissiefactoren.nl)
450,000 x 475 gram = 213,750 kg CO_{2e} (WTW)
200,000 x 3,230 gram = 664,000 kg CO_{2e} (WTW)

Total: 877,750 kg/170,000 tons = 5.16 kg CO_{2e} (WTW) per ton.

How does this work at a parcel sorting center?



A parcel sorting center processes 1,000,000 parcels per month.

In March it consumes 5,000 kWh of electricity and 3,200 m^3 of natural gas.

5,000 kWh x 475 gram = 2,375 kg CO_{2e}
3200 m^3 x 1,890 gram = 1,890 kg CO_{2e}

Together 4,265 kg CO_{2e} = 4,26 grams per parcel.

Carbon Footprint guidelines

0. Measuring, calculating, allocating and reducing

1. Allocating

2. Cargo

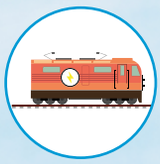
3. Origin and destination

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