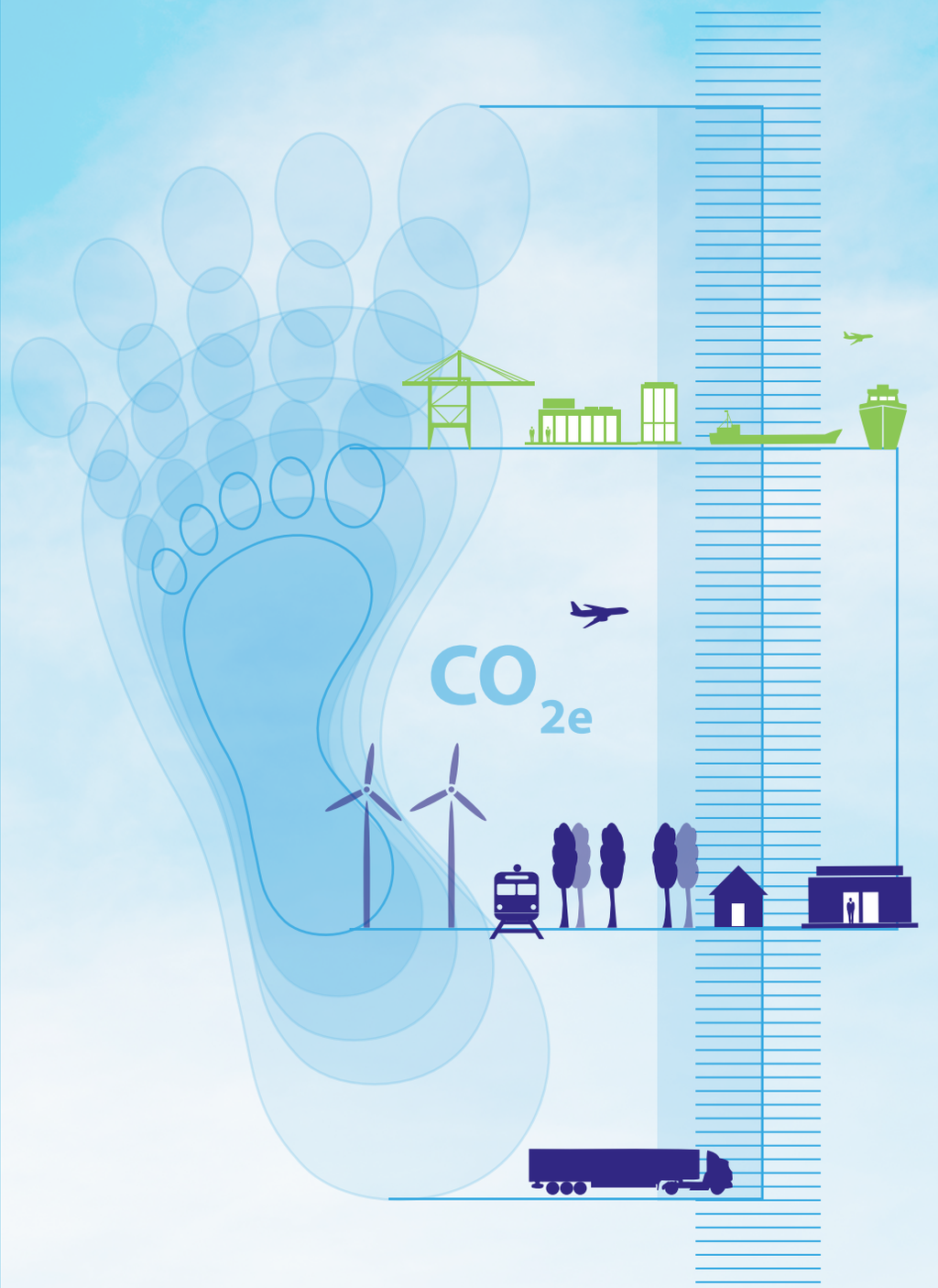
GUIDELINE 19 - CARBON FOOTPRINT IN LOGISTICS



Intermediaries and platforms

Matching supply and demand

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Topsector Logistiek

Colophon

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Matching supply and demand

Carbon Footprint in logistics

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

Intermediaries and platforms

Matching supply and demand

Good mobile communication and the internet have given intermediaries and IT platforms the capability to match supply and demand. In this guideline we look in more detail at the allocation of emissions to cargo that is combined with an existing transport by an intermediary or IT platforms (‘platforms’).

Platforms can act as a broker or an outsourcer of a transport order: in the latter case they take on the order and place it with one of the transporters with whom they have a relationship.

The simplest situation is one in which a platform has already chartered a transporter and adds an order to this transport. This is comparable with outsourcing (for the calculation of an allocation in this situation please refer to the guideline 'Outsourced transport').

The specific situation that we focus on in this guideline is one in which the platform receives an order and tries to place it with a truck that is already on the road and has some space left over. To make this possible, transporters provide the intermediary with a real-time insight:

- The position and speed of the truck (tracking and tracing);
- The quantity of cargo on board (i.e. how much space is left to add more cargo);
- Where and when this cargo has to be delivered.

The platform selects the best option from all those available and places the order with the truck that:

- has to make the shortest diversion;
- still has enough space left on board and has enough time;
- and is able to comply with the agreements already made in spite of the additional order.

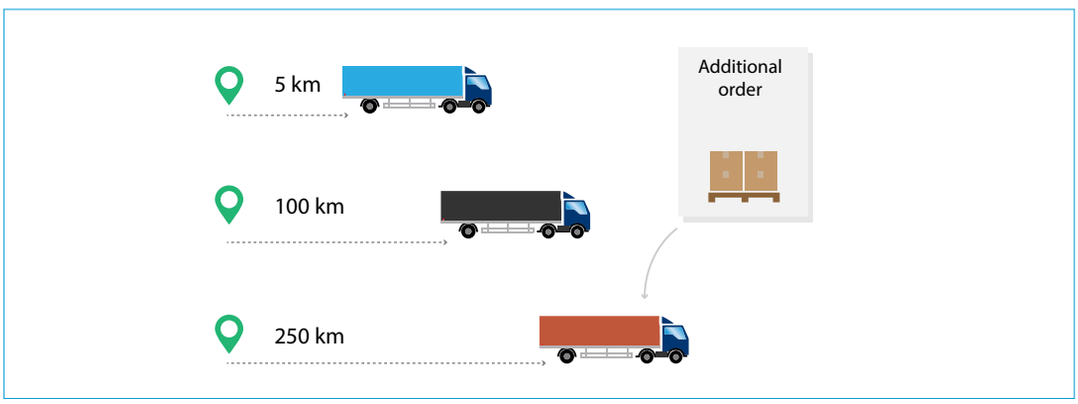
The truck adjusts its route and takes on the additional cargo: everyone benefits and emissions are saved.

The platform knows what type of truck it is, what the standard consumption per kilometer is and how many kilometers the truck travels (real-time tracking and tracing). This allows the total consumption to be estimated effectively.

Allocation of CO_{2e}

How can this intermediary now work out the quantity of CO_{2e} emissions that needs to be allocated to this additional cargo if the customer requests this information or the government asks for a report?

CO_{2e} emissions are normally calculated on the basis of the amount of fuel consumed and allocated on the basis of the distance between the origin and destination, as well as the quantity of cargo transported by the vehicle. The question in this case is what scope (fuel, as well as cargo for allocation) should be used. The example below illustrates the dilemma.



Imagine that 3 trucks are traveling in the vicinity of each other and all 3 would be able to take on the additional cargo. However, the first truck is just 5 km from its starting location, the second has already covered 100 km and the third has traveled 250 km. It becomes clear that the route of the third truck is optimal for transporting the additional order. In such a case it would be odd to allocate the preceding 250 km to the additional cargo.

According to the COFRET methodology, you should now take the total round trip of the chosen transporter, the total amount of fuel for the round trip and all orders forming part of that round trip as a basis. The transporter then works out the allocation.

But what if this information is not known to the platform and the transporter does not calculate it?
A dilemma then arises.

In this specific case it is more logical to take the moment when the decision is made as a basis. The transporter has planned its own trip and is responsible for all of it. The platform decides, independently of the transporter, to allocate the order at a given moment.

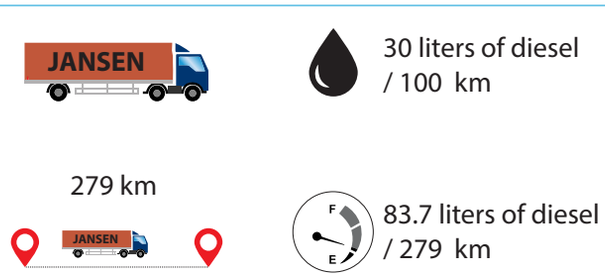
Decision is the starting point

The intermediary becomes jointly responsible from the moment it decides to assign the order. For the additional order this moment is therefore the starting point for calculating and allocating CO_{2e}, until the original destination of the trip is reached. This moment can be translated into the truck's location at the time the decision is made, even if it is traveling on a motorway at that particular moment.
How is this incorporated into the calculation?

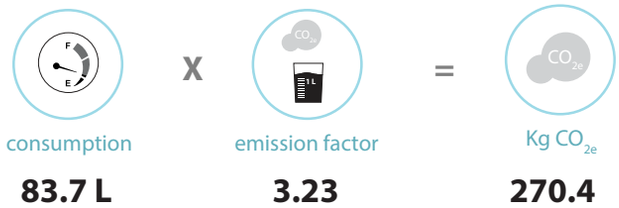
An example is provided below.

A transporter, Jansen, has a truck (tractor with semi-trailer) that is traveling from an unknown location and carrying 20 roll cages. Its destination is Amsterdam Westpoort and it is traveling via Maastricht on the A2.

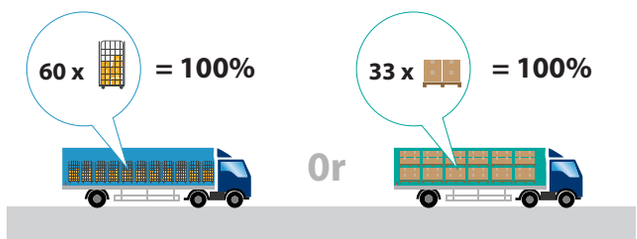
While driving through Maastricht the transporter/driver receives the order from platform R to pick up 6 pallets at Violierstraat in Venlo and deliver these to Gouwzeestraat 9, 1382 KD Weesp as part of its trip. The route therefore changes. Route 2 is longer: 279 km.



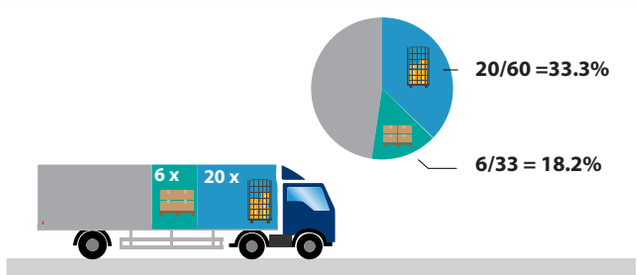
Fuel
The truck consumes an average of 30 liters of diesel per 100 km. When platform R placed the order the distance to the end point became 279 km. This therefore corresponds to 83.7 liters of diesel.



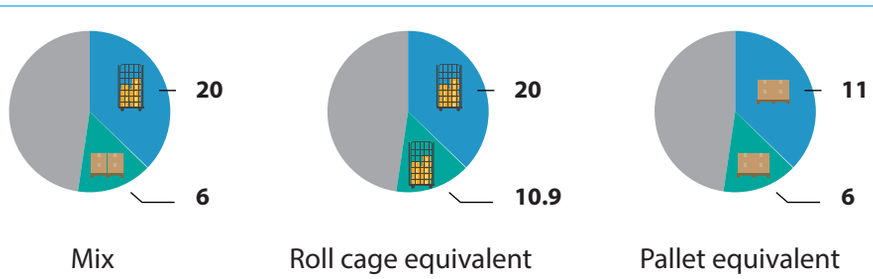
Emissions
With a Well-to-Wheel emission factor for diesel of 3.23 kg CO_{2e} per liter, that comes to 270.4 kg CO_{2e}.



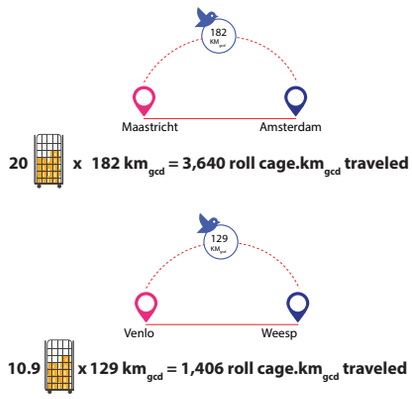
Max load
This truck can carry a maximum of 60 roll cages or a maximum of 33 pallets.



Trip load
20 roll cages require 1/3 = 33.3% of the truck's capacity.
6 pallets require 6/33 = 18.2% of the truck's capacity.



Trip load in equivalents
You can also convert one type of unit to another:
6 pallets = 0.182 x 60 = 10.9 "roll cage equivalents" as regards floor utilization.
Conversely: 20 roll cages = 0.333 x 33 = 11 "pallet equivalents" as regards floor utilization.
** Provided we use the same measure for the weighting of emissions it is fine.*

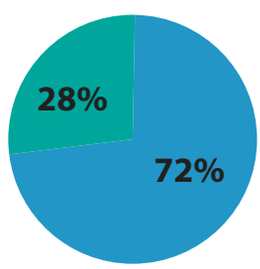


The total

3,640
1,406 +
5,046 = roll cage.km$_{gcd}$

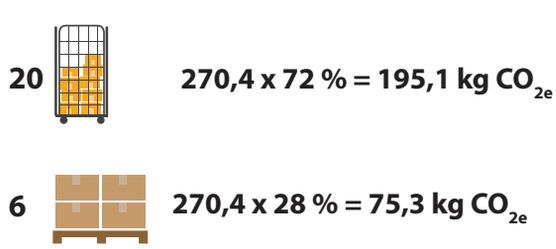
The distance

The great-circle distance between Maastricht and Amsterdam (Jarmuiden) is 182 km$_{gcd}$.
20 roll cages x 182 kkm$_{gcd}$ = 3,640 roll cage.km$_{gcd}$ traveled.
The great-circle distance between Violierstraat in Venlo and Gouwzeestraat 9 in Weesp is 129 km$_{gcd}$.
10.9 roll cage (equivalents) x 129 km$_{gcd}$ = 1,406 roll cage.km$_{gcd}$ traveled.



Percentages

3,640/5,046 = 72% weighting.
1,406/5,406 = 28% weighting.



Allocation of CO_{2e} per cargo

The 20 roll cages are therefore allocated 270.4 x 72% = 195.1 kg CO_{2e}.
The 6 pallets are therefore allocated 270.4 x 28% = 75.3 kg CO_{2e}.

In this way all parties benefit from combining the cargoes

This becomes immediately clear if you work out the allocated emissions without the additional cargo.

Without additional cargo

Jansen was originally supposed to travel 225 km to Westpoort (from the moment of the decision), carrying 20 roll cages. 225 km at 30 liters/100 km = 67.5 liters of diesel x 3.23 kg CO_{2e}/liter = 218 kg CO_{2e} instead of 195 kg CO_{2e} for 20 roll cages in the case of the combined transport.

Or if 12 additional pallets are carried instead of 6

In this case the example is calculated as follows: 6,452 roll cage.km_{gcd} traveled in total.
Of the CO_{2e} emissions 56.4% is allocated to the 20 roll cages and 43.7% to the 12 pallets.
This corresponds to: 152.5 kg CO_{2e} for the 20 roll cages and 117.9 kg CO_{2e} for the 12 pallets.
The more cargo is combined, the lower the emissions per unit.

Carbon Footprint guidelines

0. Measuring, calculating, allocating and reducing

1. Allocating

2. Cargo

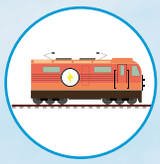
3. Origin and destination

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

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