

# Insights into CO2, time for improvement!

*Accurate and reliable reporting and benchmarking.  
Becoming cleaner and more profitable by using  
available time and capacity better.*

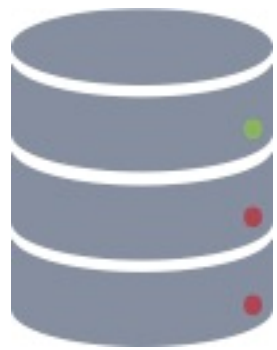




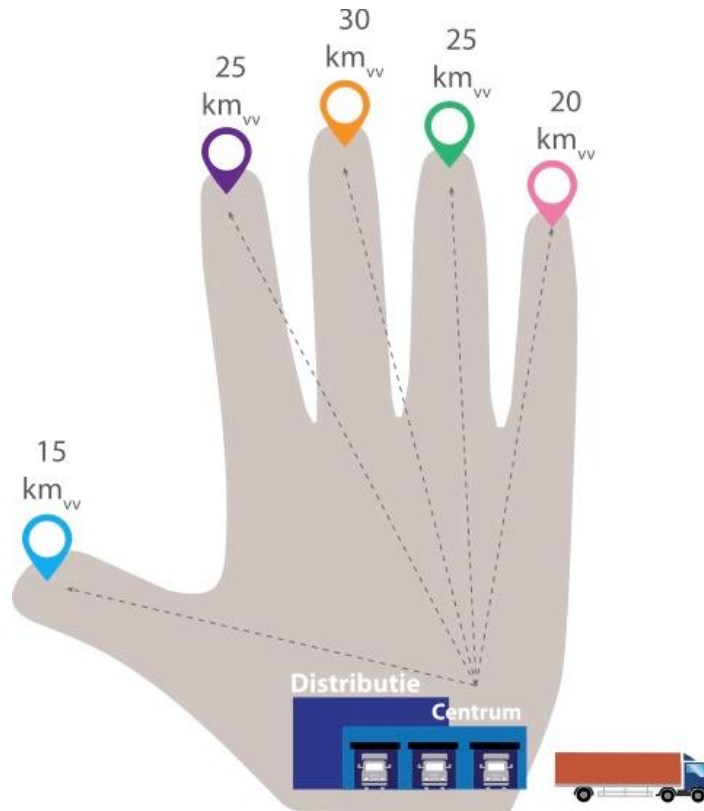
# Introduction



# Insight into CO2, time for improvement!



Transport data



Calculation of allocation

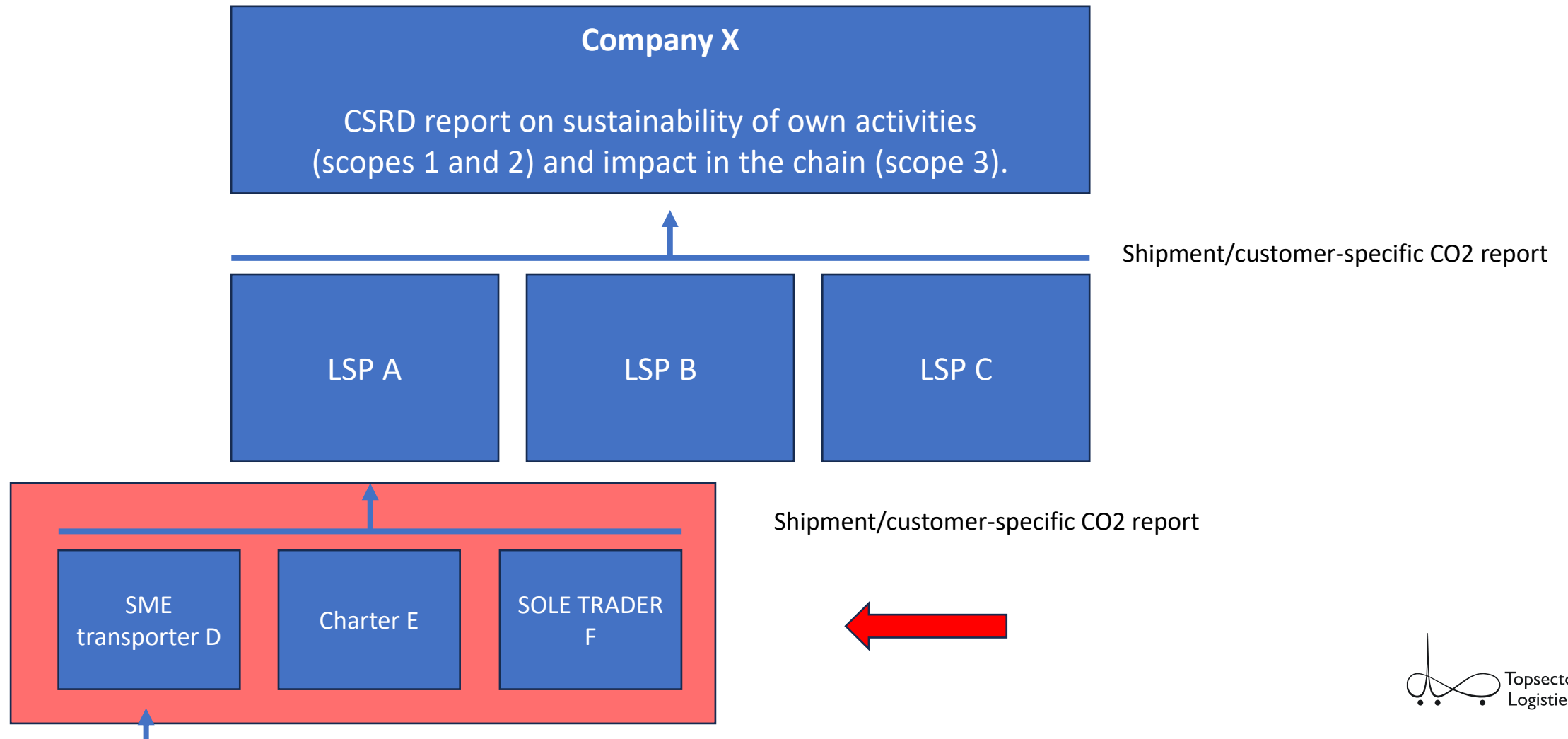


Index expressed in  $\text{CO}_2/\text{tonne.km}$

# Accurate and reliable CO2 reporting

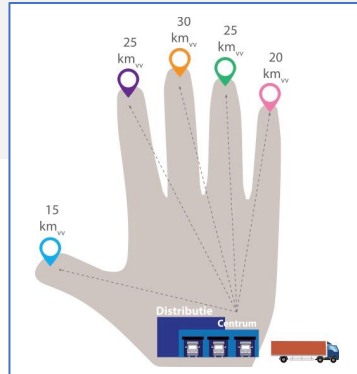


# CSRD: legislation leads to questions from major companies about CO2 data shipments



## Fine

Detailed primary trip data.  
Processing with ISO14083 software  
(BigMile, Loginex, etc.).



Suitable for improving business management (costs).



Suitable for achieving competitive edge (making a difference towards customers).



Suitable for complying with future legislation and customer demands regarding emissions accounting (CSRD).

## Coarse

Calculating company emissions with

- CO2Meter.nu
- [www.co2emissiefactoren.nl](http://www.co2emissiefactoren.nl)



Provides insight into emissions.



Does **not** comply with future legislation and customer demands regarding emissions accounting (CSRD).

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## Medium

**Calculate emissions per shipment based on Transport Performance Database**



**Suitable for complying with future legislation and customer demands regarding emissions accounting (CSRD).**

## Coarse

Calculating company emissions with

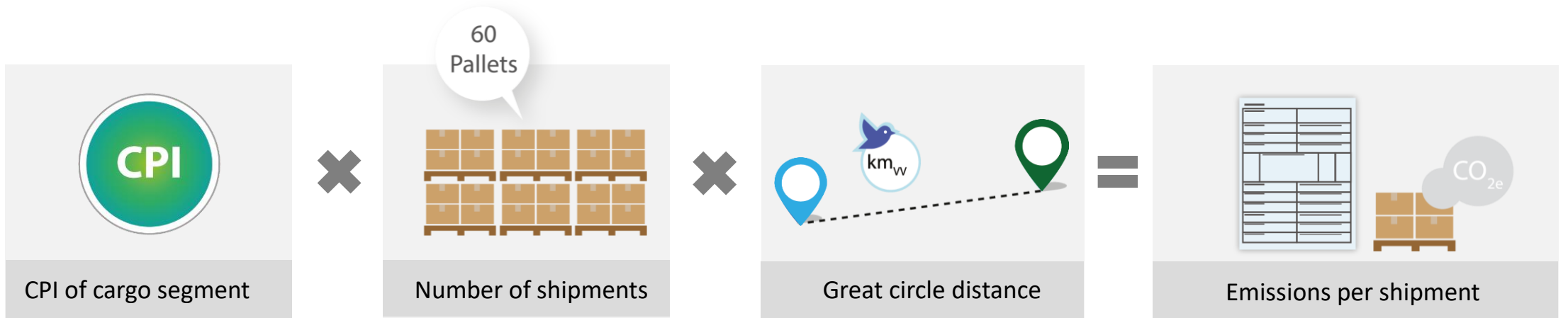
- CO2Meter.nu
- www.co2emissiefactoren.nl



Provides insight into emissions.

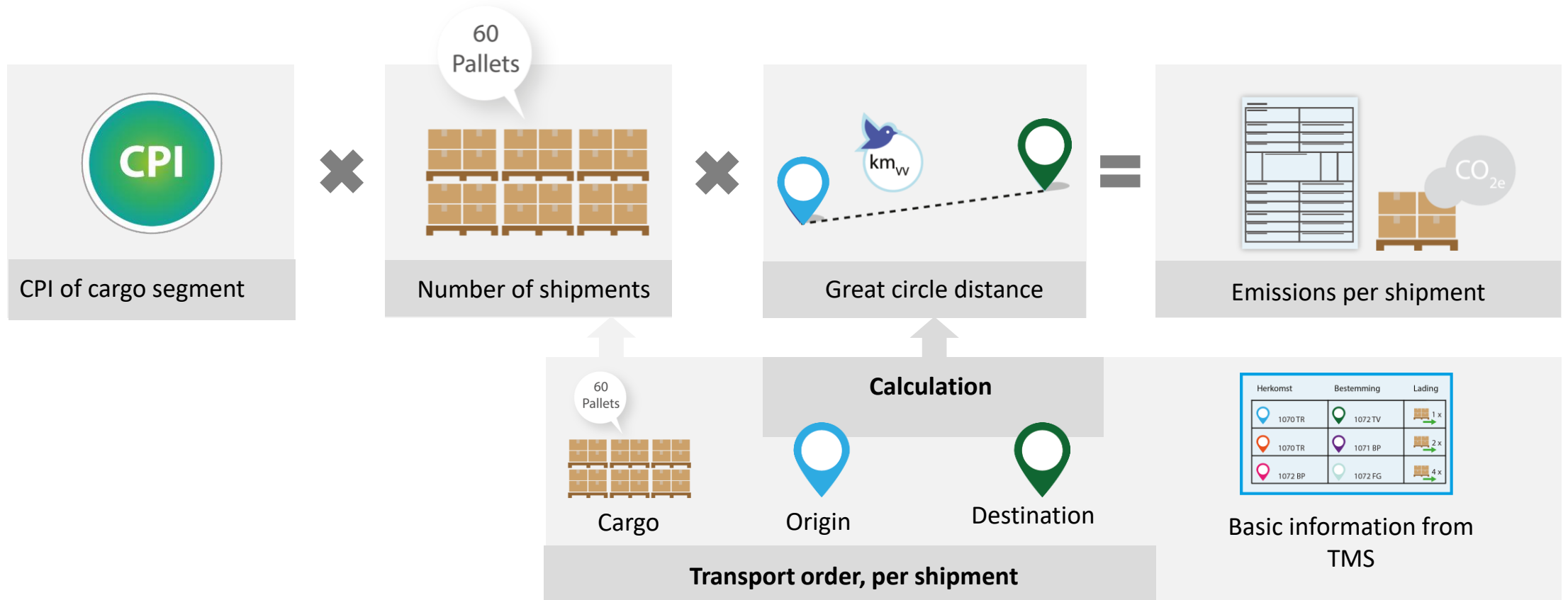


Does **not** comply with future legislation and customer demands regarding emissions accounting (CSRD).



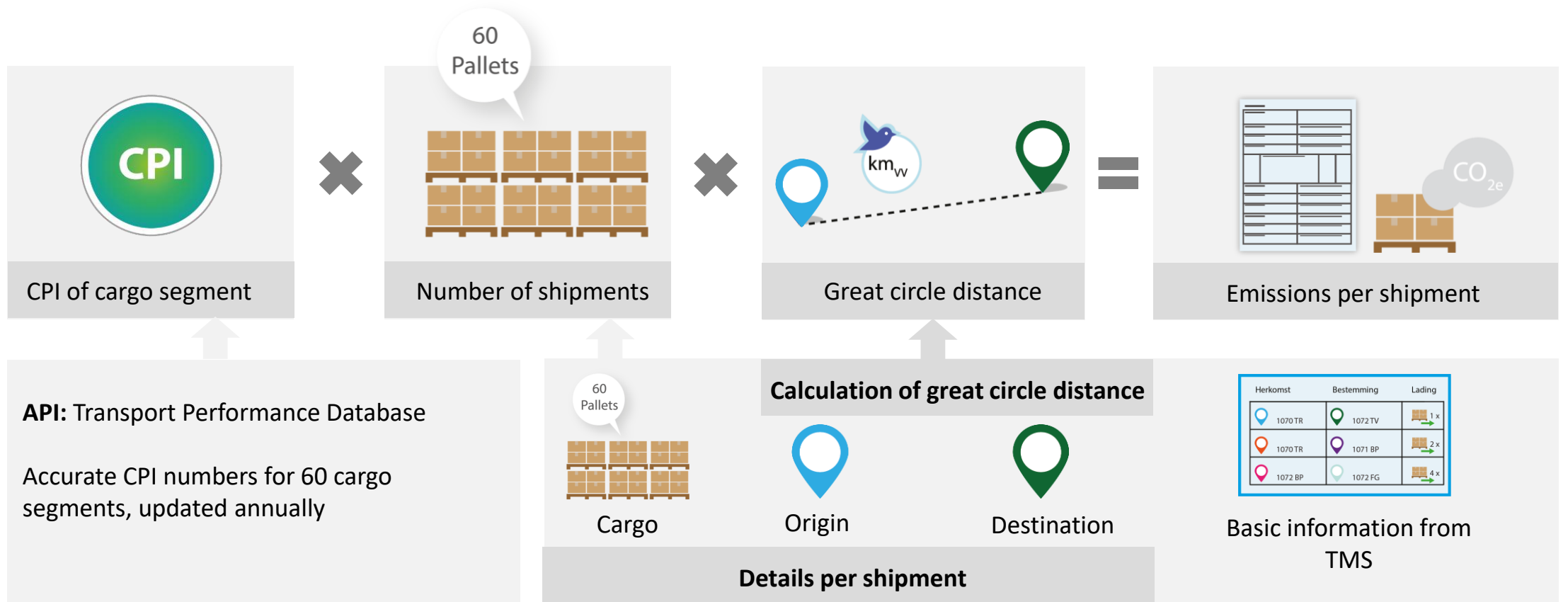
With a CPI for the cargo segment, it is simple to calculate emissions per shipment.



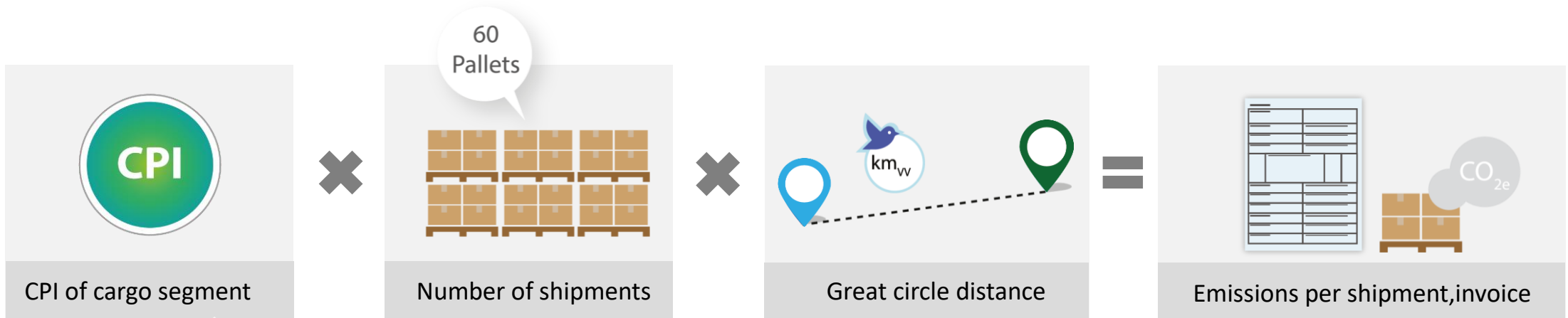


Second part of calculation is easy to automate:

- shipment details are known
- conversion of locations (origin-destination) to great circle distance is a known algorithm



If a transporter can “borrow” the average of the “fine CPI” from colleagues, a TMS system or app (for self-employed drivers) can easily calculate the emissions per shipment for customers. This is good enough for reporting.

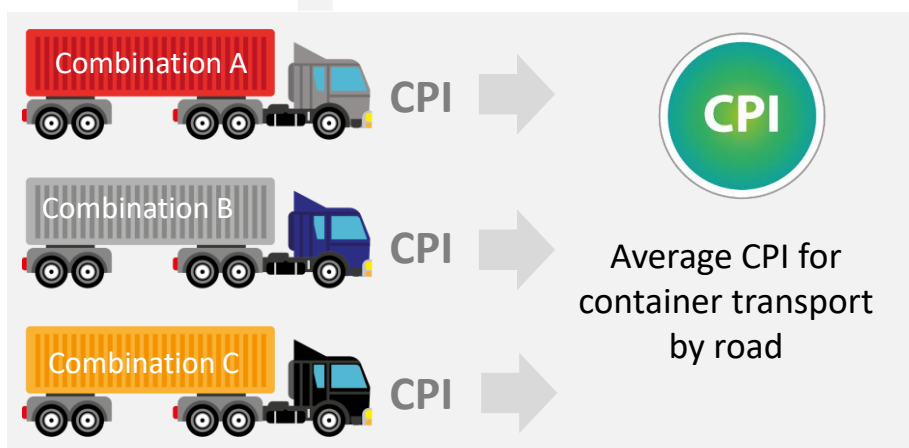


**API: Transport Performance Database**  
 Accurate CPI numbers for 60 cargo segments, updated annually

**Calculation of great circle distance**  
 Cargo (60 Pallets), Source, Purpose  
**Transport order, per shipment**

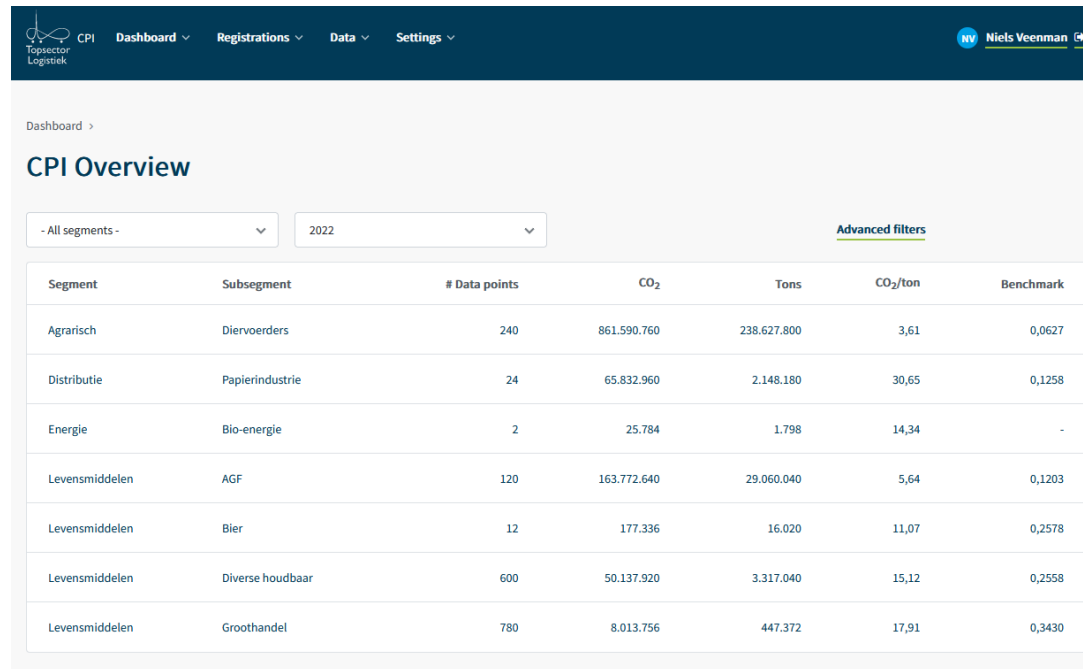
**Basic information from TMS**

Herkomst	Bestemming	Lading
1070 TR	1072 TV	1 x
1070 TR	1071 BP	2 x
1072 BP	1072 FG	4 x



- CPI**
- Annual random samples
  - 4-5 different shipper/carrier combinations
  - Per cargo segment (e.g. distribution of beverages, fresh produce, containers)
  - Detailed primary data for period of weeks - month
  - Processing by ISO14083-certified software

# Transport Performance Database



Dashboard >

## CPI Overview

- All segments - 2022 [Advanced filters](#)

Segment	Subsegment	# Data points	CO <sub>2</sub>	Tons	CO <sub>2</sub> /ton	Benchmark
Agrarisch	Diervoeders	240	861.590.760	238.627.800	3,61	0,0627
Distributie	Papierindustrie	24	65.832.960	2.148.180	30,65	0,1258
Energie	Bio-energie	2	25.784	1.798	14,34	-
Levensmiddelen	AGF	120	163.772.640	29.060.040	5,64	0,1203
Levensmiddelen	Bier	12	177.336	16.020	11,07	0,2578
Levensmiddelen	Diverse houdbaar	600	50.137.920	3.317.040	15,12	0,2558
Levensmiddelen	Groothandel	780	8.013.756	447.372	17,91	0,3430

1. Benchmarking of CO<sub>2</sub> with peers from own sector
2. Using CPIs to “fill gaps” in own data better/more accurately than with regular indicators

- Characteristics

- Publicly available to everyone (provisional)
- Approachable and easy to consult
- Independent

- Future

- Roll out machine-to-machine interaction with the database
- Complete the scope of the database: More modalities and international

# Optimal use of scarce time and capacity



# City logistics



## Binnenstad is vrachtwagens in Arnhemse winkelstraten zat

ARNHEM - Ondernemers, winkelend publiek, de gemeente en bewoners van de binnenstad van Arnhem zijn de vele bestelbusjes en vrachtwagens die de winkels en horeca in het centrum bevoorraden zat. Dat is de belangrijkste conclusie uit een onderzoek van de Hooeschool van



# At distribution centers



An aerial, top-down view of a complex multi-level highway interchange. Several cars are visible on the various levels of the road. A large, semi-transparent blue shape, resembling a silhouette of a human head in profile, is overlaid on the right side of the image. Inside this blue shape, the text "How efficiently is transport actually organised?" is written in white, sans-serif font.

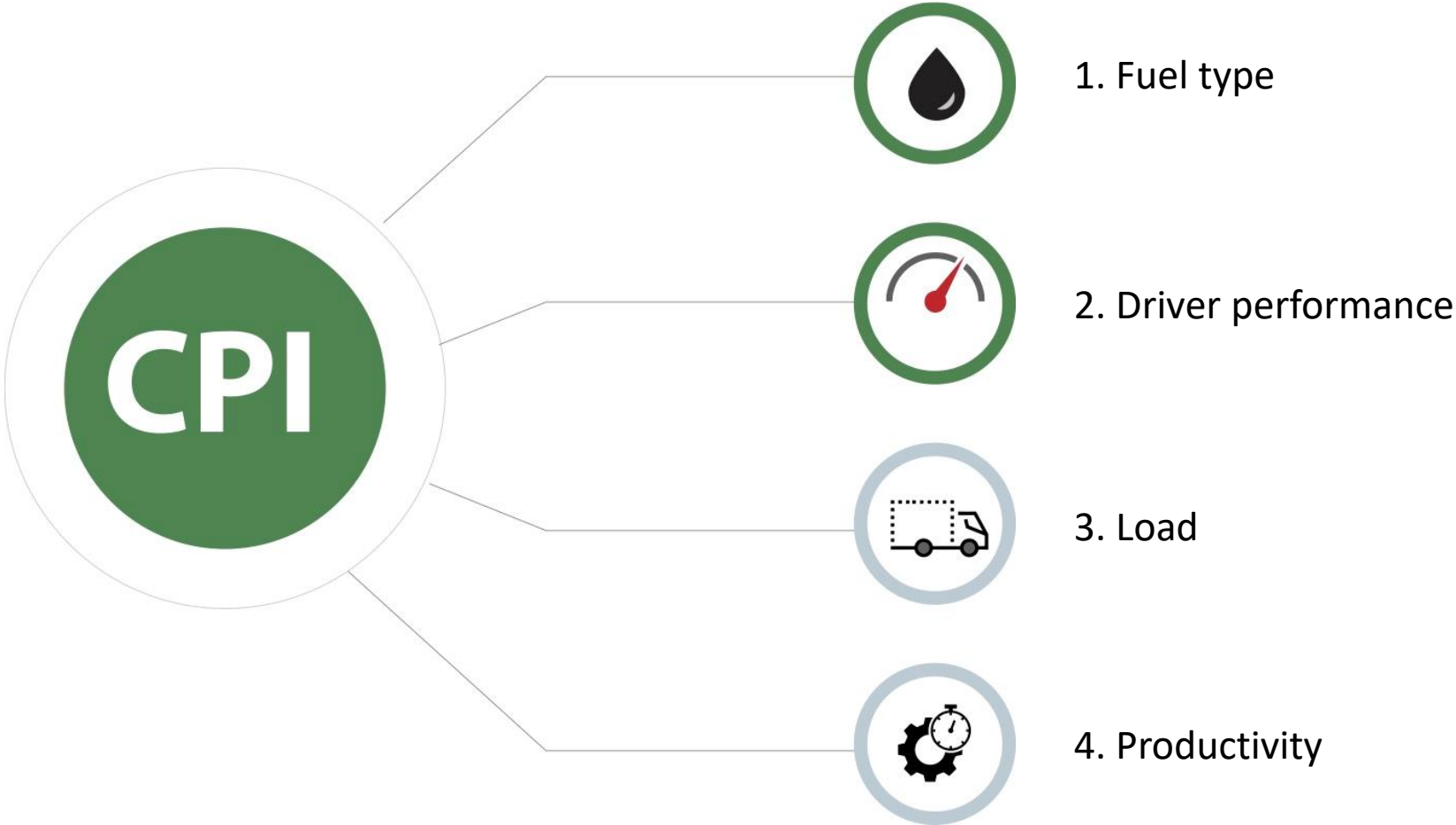
How efficiently is  
transport actually  
organised?





- 31% of the trucks in The Netherlands drives empty
- It is unknown how full the other 69% is
- No uniform reporting metrics
- At lot of discussion about the topic
- Transportation companies don't know their own performance

# Zoom in further

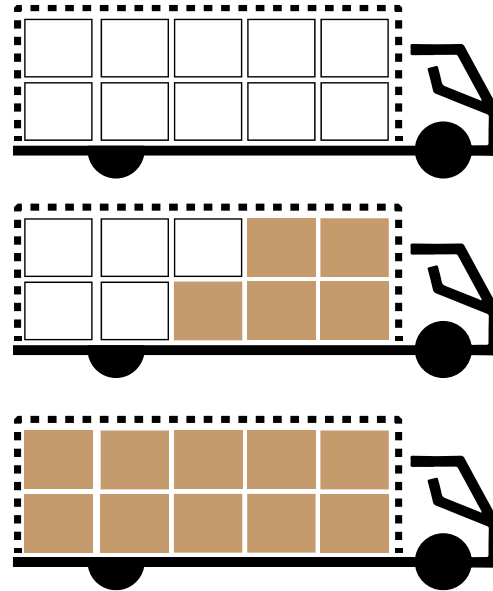


# From CPI to LPI



Index  
expressed in  
CO<sub>2</sub>/tonne.km

+



Vehicle capacity

=



Index  
expressed in tonne.km  
or m<sup>3</sup>.km + utilisation



**Buck  
Consultants  
International**



Test cases



**DLG**  
Your logistic partner



**DISTRICON**  
a company of Royal HaskoningDHV



# Detailed insights: Where is truck capacity spilled?

CONSIGNMENTS

108

AVERAGE LOAD FACTOR TRIP

48,43

%

AVERAGE EMPTY KM PER TRIP

0

km

VS TOTAL KM

0

%

CUSTOMERS

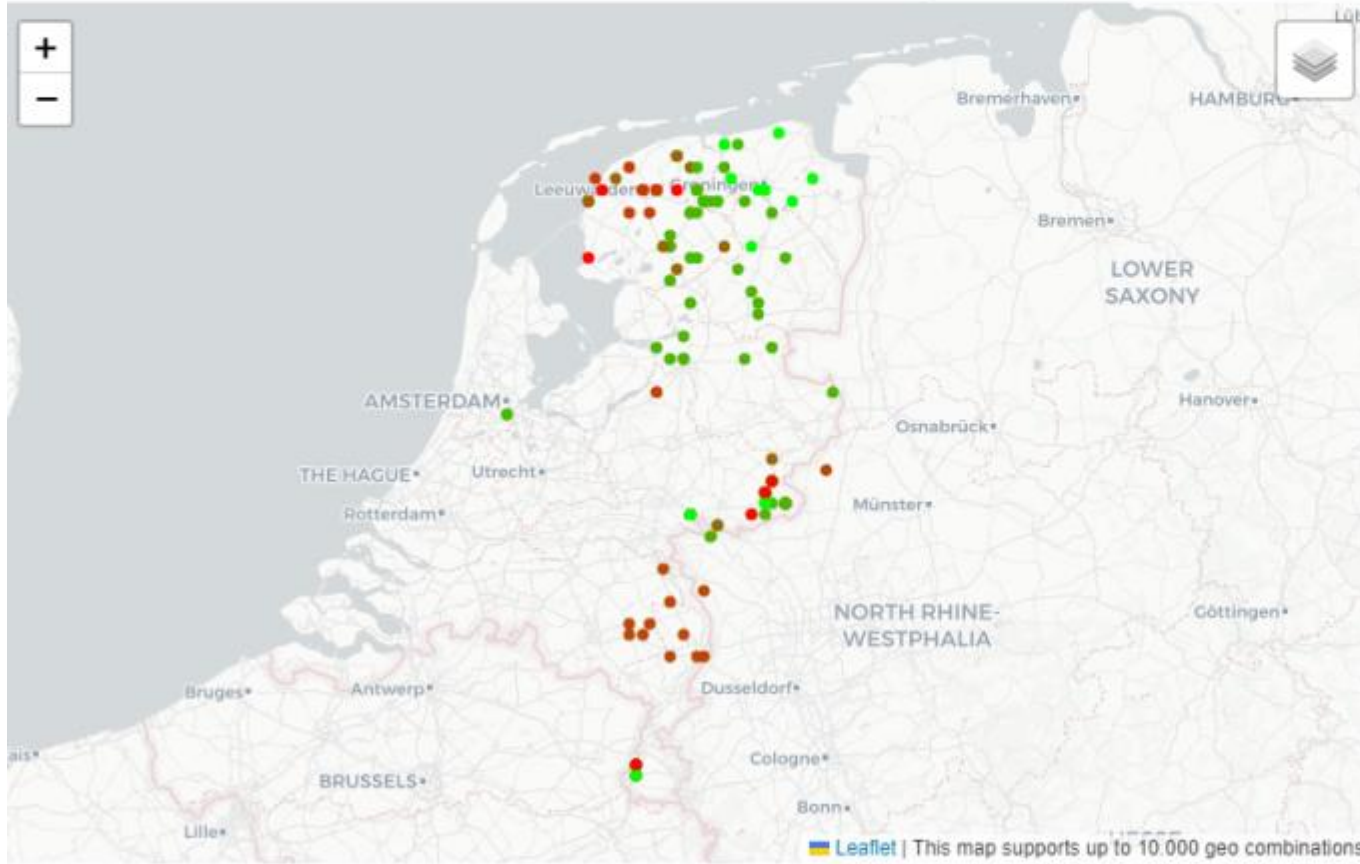
39

Average load factor per trip

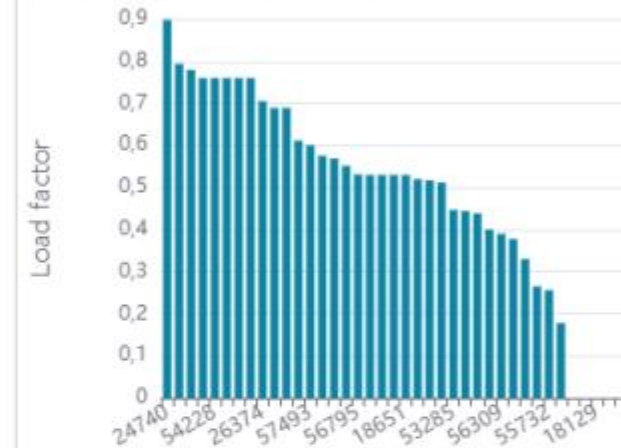
Low High

Select measure

Average load factor



Load factor per Customer



Customer Average empty KM Average load factor

24740 0 89,8 %

57396 0 79,35 %

57750 0 77,94 %

56782 0 75,99 %

52510 0 75,99 %

54228 0 75,99 %

57700 0 75,00 %

# Detailed insights: Where is time wasted?

CONSIGNMENTS

**7578**

AMOUNT OF TRUCKS

**57**

HOURS DRIVEN

**1.130,88**

Hours

HOURS WAITED

**216,77**

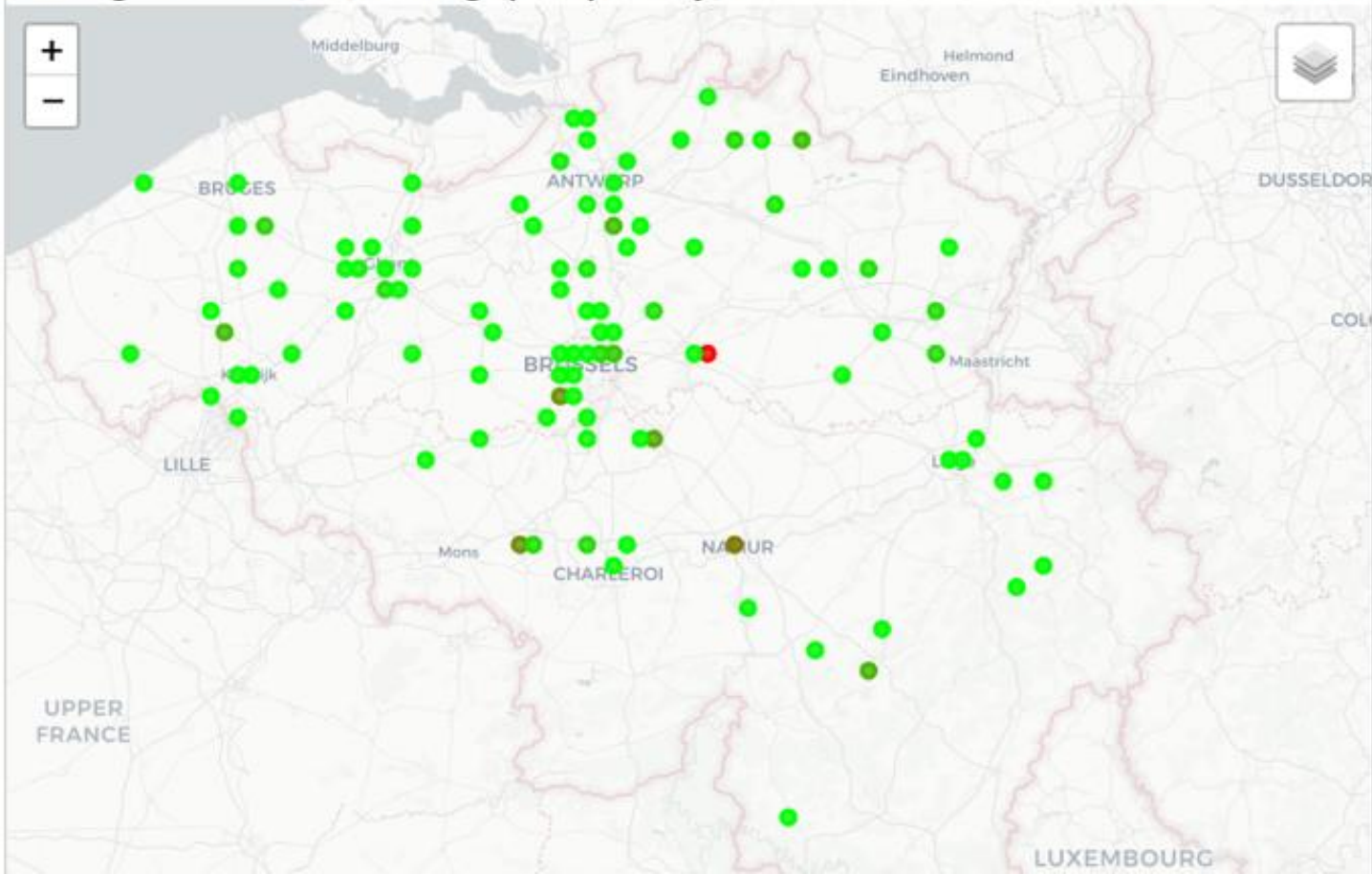
Hours

% ON TIME

**7,4**

%

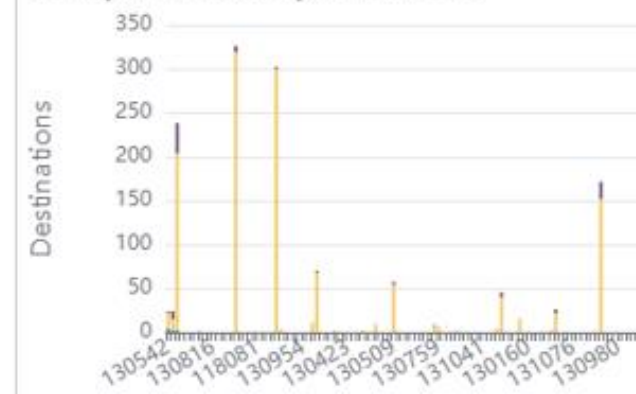
Average time of (un)loading (per quantity)



Duration per activity



Time performance per customer



# We can start improving now!

Improvements in loading and productivity directly have a positive impact on the margin.

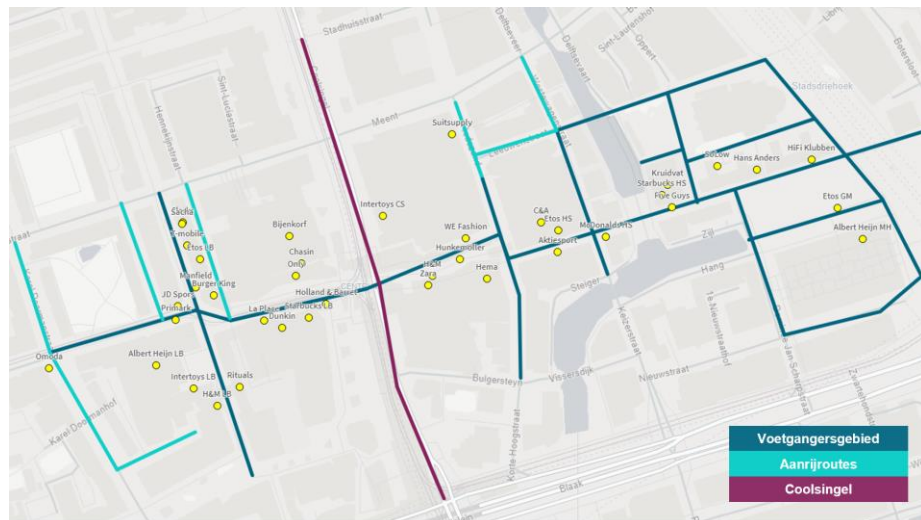
Inefficiencies are only partly a result of individual choices of the logistics service provider. A larger part is the result of external factors like:

- Delivery frequencies
- Time windows
- Opening hours
- Waiting times



# Pilot city of Rotterdam

- Modification of time windows
- Measuring impact with LPI and TPI
- Possible continuation in Utrecht, Groningen, Tilburg and Den Bosch





Purpose: Encouraging cooperation in the supply chain and achieving improvements



What could be the benefits for your company?

# Questions or contributions



# Conclusion

Thank you for your attention



Topsector  
Logistiek

