Deloitte.

Sustainable Logistics

Transport & Logistics

15th of October 2025

Deloitte.

Frederick Dobbelaere

Manager

Supply Chain & Network Operations

E fdobbelaere@deloitte.com

M + 32 471 62 73 45

Arne Devriendt

Specialist Leader

Supply Chain & Network Operations

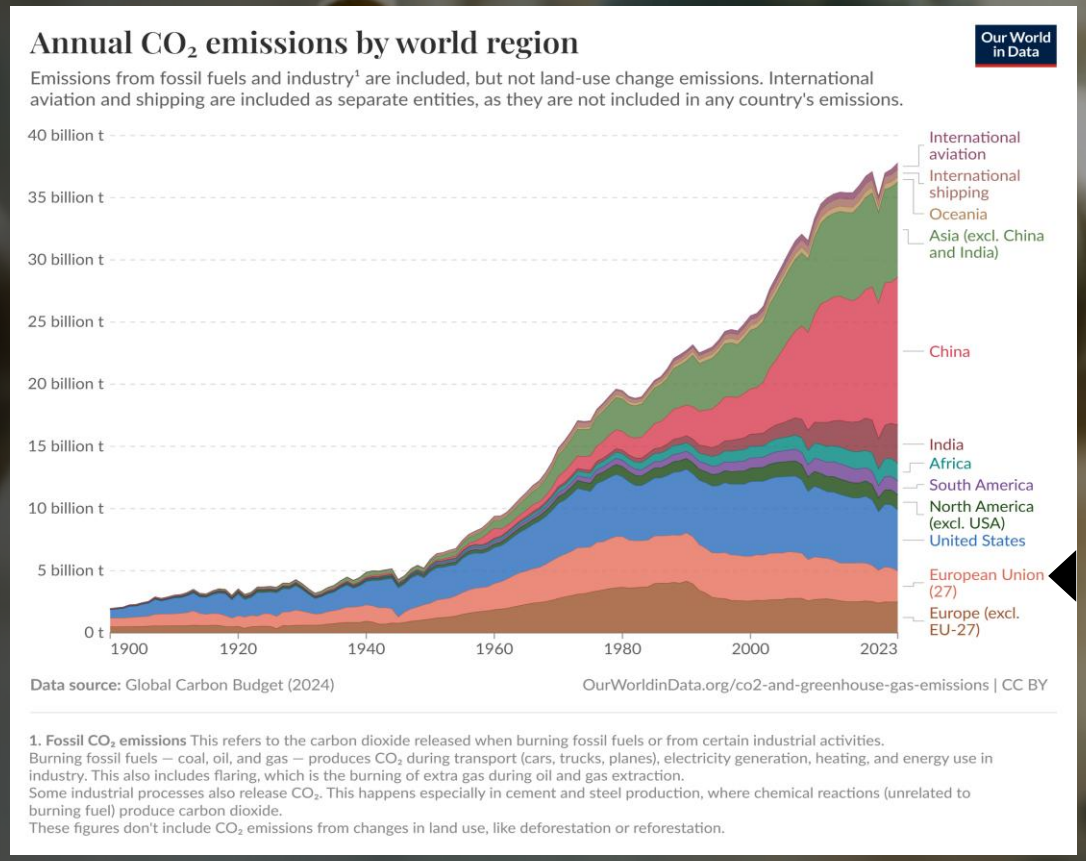
EMEA Transportation consulting lead

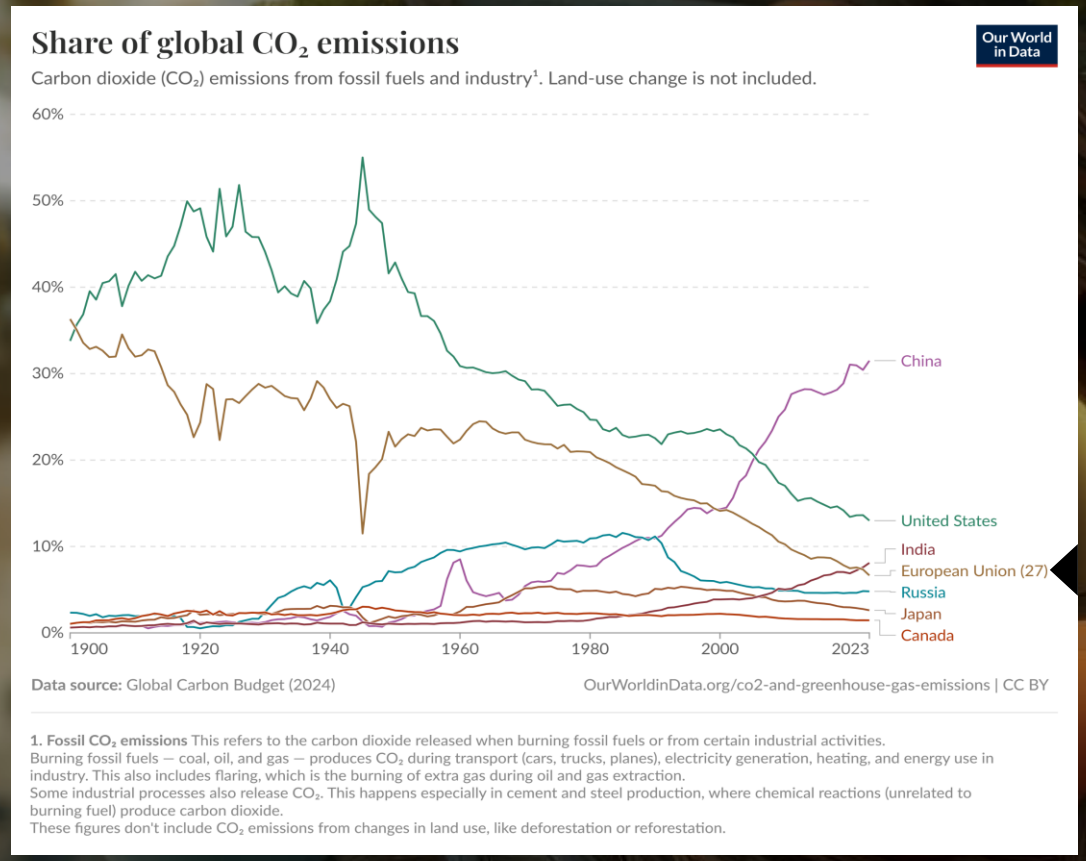
E adevriendt@deloitte.com

M + 32 499 56 77 98

Sustainability is a lot more than just emissions

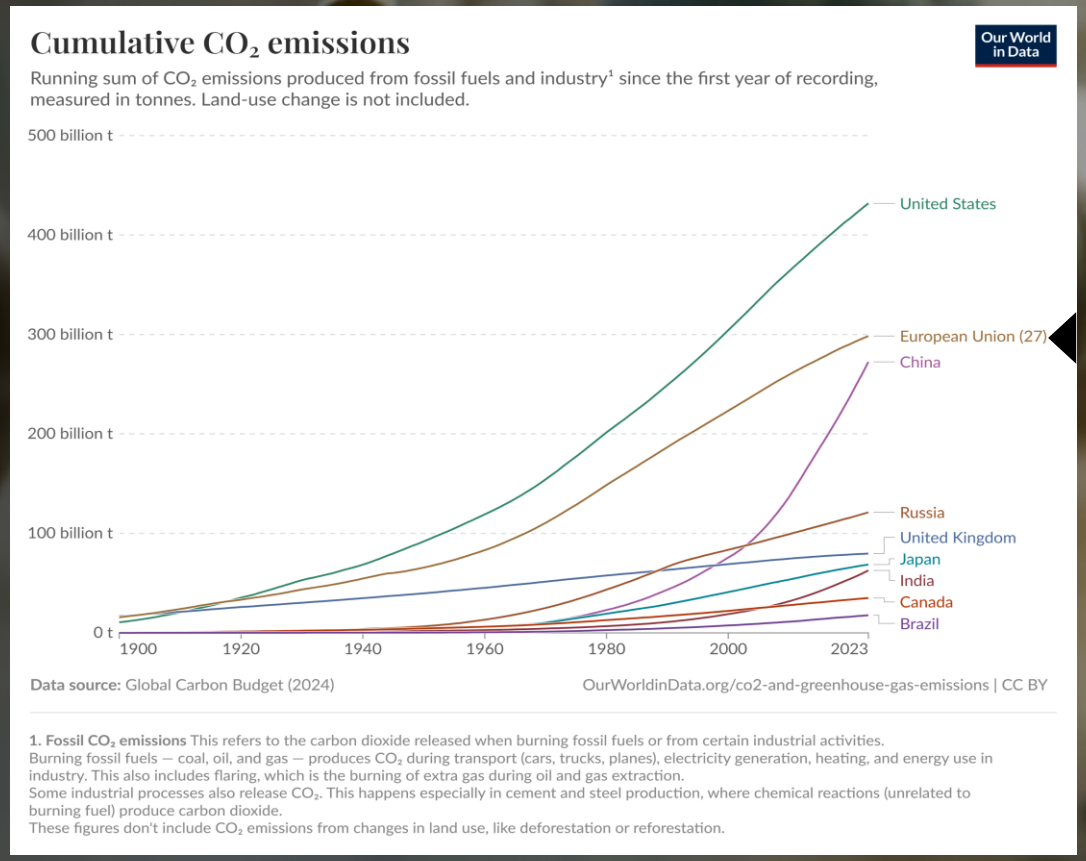
Europe is an 6,6% drop in the worldwide ocean, but emissions do not stop at the border

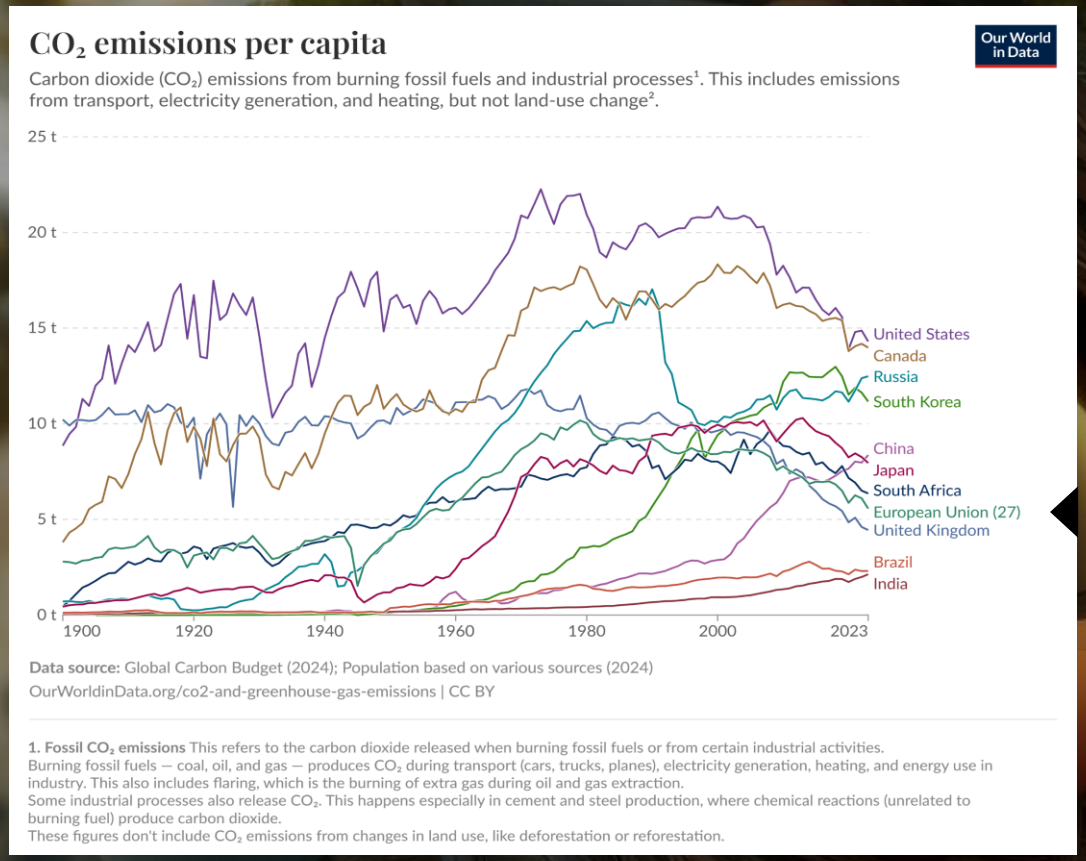




SO, WHO IS TO BLAME ?

And emissions accumulate





IT IS A RESPONSIBILITY OF ALL OF US, BUT WHO ACTS BESIDES THE EU…

Sustainability is still high on the agenda of the industry

Companies continue to invest in sustainability, but respondents indicate a decrease in the range of initiatives launched after several years of advancements.

Sustainability within the industry

Climate change is still top of mind

Climate change is considered one of the most pressing issue **with 43%** of the surveyed companies **ranking it as top 3 most pressing issue**, and on par with **technology adoption and AI !**

Sustainability investments are increasing

According to the Deloitte CxO survey, **73% of the companies have increased their sustainability investments** in comparison to last year

Sustainability is seen as less disruptive to business strategy and operations

Over the coming three years, **60% of companies** expect climate change to **impact** their company's **strategy and operations** (previous year 70%)

Continued importance of sustainability

The obstacles to sustainability deployment

Cost does not seem to be the issue

A relatively small percentage of respondents identified cost (11%) or lack of policy support (13%) as significant obstacles to their sustainability efforts.

Measurement is main struggle

Instead, respondents indicate that they continue to struggle with measuring the environmental impact of their efforts and securing sustainable inputs to their processes.

Requires focus

They are also challenged by a focus on near-term business challenges and demands from investors (cited by 21% of respondents, up slightly from 18% last year).

Sources: Deloitte 2025 CxO Sustainability survey amongst 2100 CxO across 27 countries
Deloitte Global

Sustainability as such is still alive, but what about sustainable logistics?

Transport is 14% of global emissions and mainly scope 3

8% of global emissions are caused by road freight

Which is the most flexible part of the global logistics chain

3% of global emissions are caused by sea freight

Which is the most efficient transport modes emission-wise

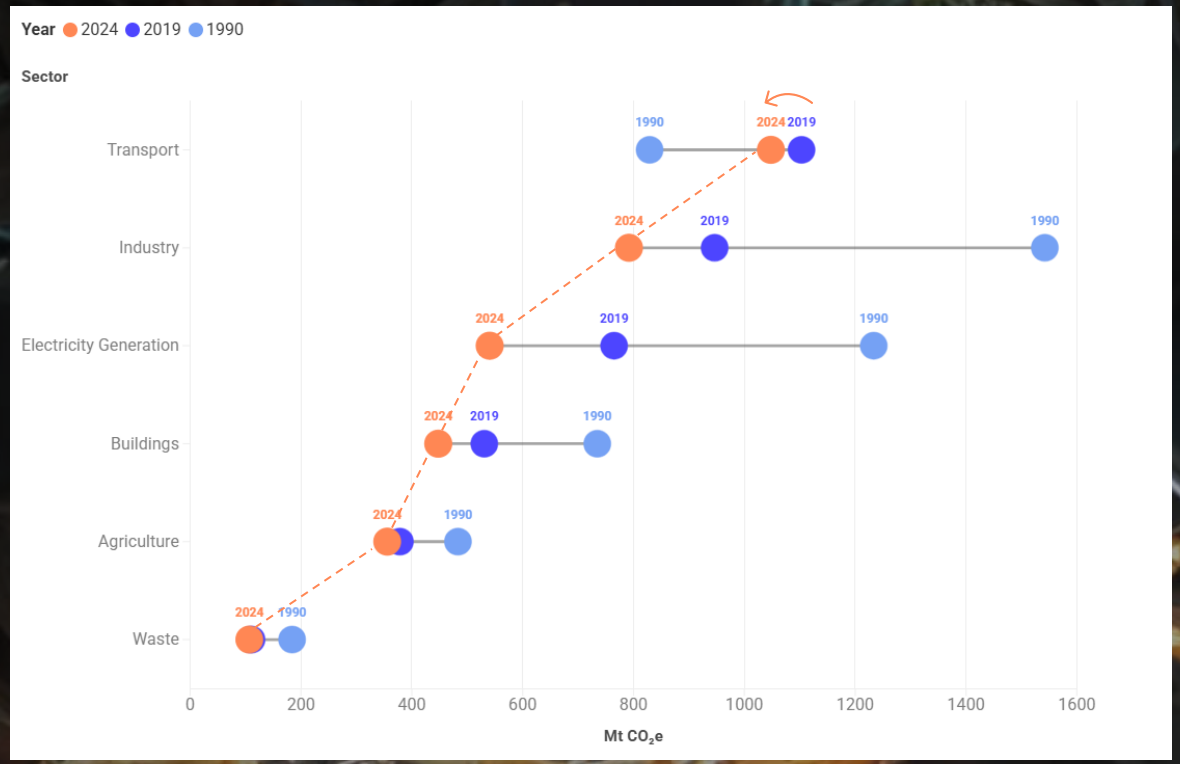
3% of global emissions are caused by air freight

Emission-wise least efficient transport mode but with very short lead-times

Source: *Deloitte - Decarbonization of Road Freight – getting into Gear (2021), IEA Future of Trucks, OECD*

First signs of reversing the negative trend in transport emissions in the EU

Change in greenhouse gas emission by sector



Source: UNFCCC, EEA, Stratas Advisors, Ember.
Transport includes international aviation and maritime. Electricity Generation includes heat. 2024 values for Agriculture, Waste, Buildings, Industry are based on 5 year trends

01 EU freight transport activity (Gtmk) has increased from 2005 with 16% and will **continue to grow 9% by 2030**

02 As the volume of the transported goods increase and consolidation decreases, **emissions increase**

03 To meet 1.5 °C agreement, **82% net reduction in emissions is needed by 2050**, and 33% by 2030

04 **Heavy-duty & medium duty trucks** make up 29% of global freight but are responsible of **62% of road freight CO_2 emissions**

Significant upcoming regulatory changes impacting logistics

These changes will not only require extensive reporting but also imply a significant operational cost increase if not mitigated

EU Taxonomy (Active)

Sets rules on what is green and not

Companies are required to **report** on the environmental sustainability of their activities according to the EU taxonomy classification. Enables investors & stakeholders to take **sustainability into account in their investment decisions**

CBAM (Active)

Tool to prevent the shifting of carbon-intensive production to regions with less stringent climate policies, thereby protecting the competitiveness of EU industries while incentivizing emission reductions globally.

Import of CBAM goods will require the purchase or surrender of CBAM certificates

ETS (Active)

Putting a cost on carbon for the internal market.

- ❑ 2024-2026: Phase out free rights within aviation sector
- ❑ 2025-2027: Phase in of carbon allowances within the maritime sector
- ❑ 2027: Installment of carbon allowances within the road freight sector

! Depending on trading prices of CO_2, this could mean +5% cost of freight

EU Taxonomy

2022

Carbon Border Adjustment Mechanism (CBAM)

2023

European Emission Trading System (ETS)

2024

CSRD (Active, wave2/3 delayed)

Report the impact on people & planet of your business **which includes scope 3 emissions**

Report the **impact of climate change** on your business

Data needs to be reviewed by an **impartial third-party** to make sure the information is accurate and reliable

Corporate Sustainability Reporting Directive (CSRD)

2025

European Green Claims Directive – eGCD

(under negotiation, expected to become binding in 2027)

Packaging & Packaging Waste Regulation – PPWR

(binding as of August 2026)

Corporate Sustainability Due Diligence Directive - CS3D

(delayed to +2028)

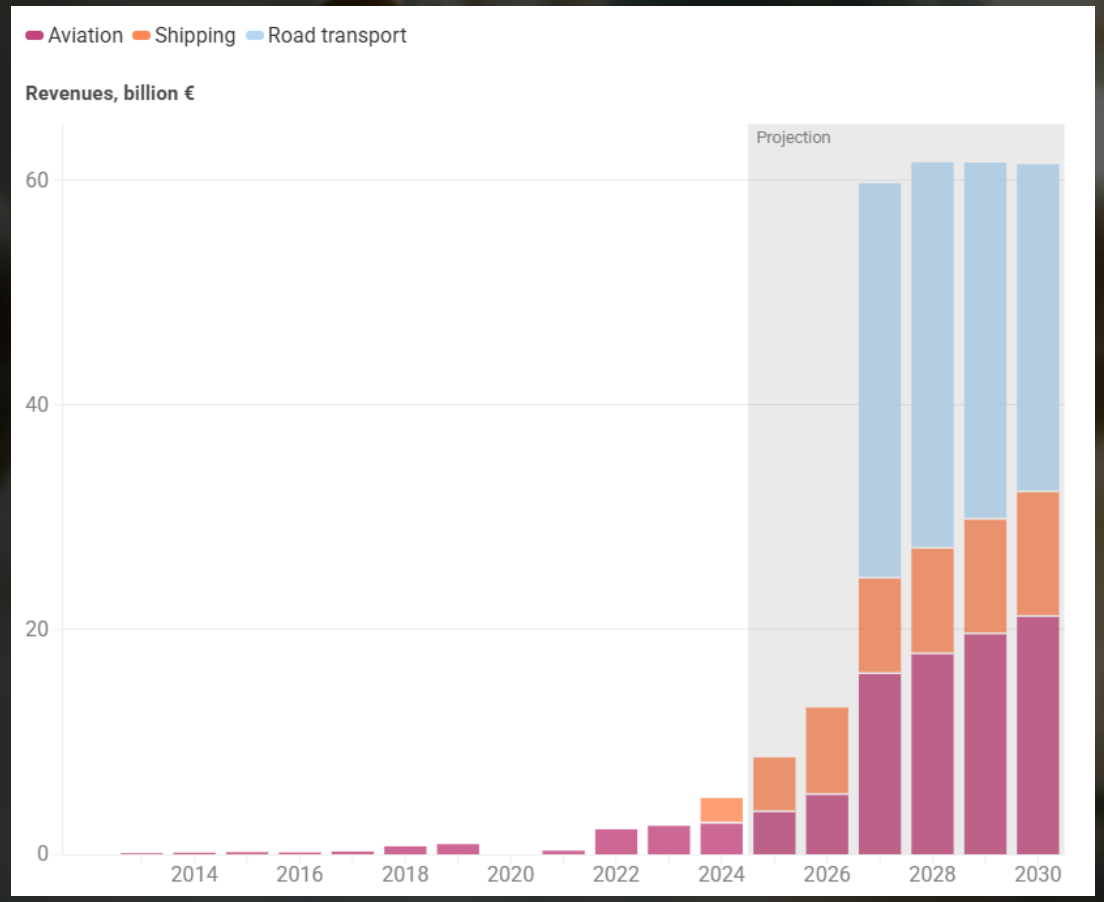
>2026

Sources: EU 2025 Sustainability Regulation Outlook (Deloitte); EU 2024 Sustainability regulation outlook (Deloitte)

THE EUROPEAN COMMISSION IS BALANCING ITS SUSTAINABILITY AGENDA WHILE PRESERVING A LEVEL PLAYING FIELD FOR BUSINESSES.

ETS is already affecting the transportation market

Aviation and shipping could generate €135 billion by the end of the decade.
Extending emissions trading to road transport could raise €265 billion by 2030.



Source: T&E, ICAP, Ember, IEA, BNEF
ETS1 allowance price (covering aviation and shipping) assumed at €80 in 2025 and rising to the €129 in 2030. Assumed all departing scope for aviation in 2027. ETS2 allowances price (covering road transport) is assumed constant at €55, corresponding to the EC 2020 reference price corrected for inflation.

WILL ALL BE REINVESTED IN TRANSPORT DECARBONIZATION ?

Levers curbing transport emissions

1. *Network optimization*

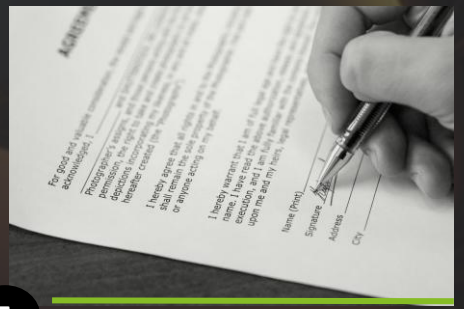
2. *Intermodal transport*

3. *Right size packaging & truck fill rate*

4. *Alternative fuels*

5. *Route Optimization*

6. Circular supply chain



7. *Data capture & optimization*

Levers curbing transport emissions

1. *Network optimization*

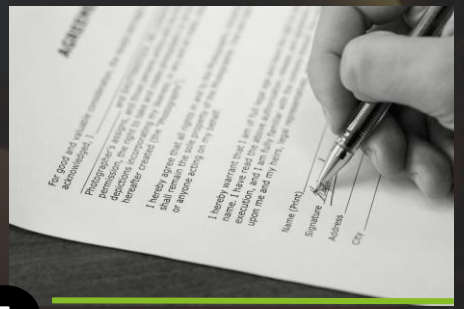
2. *Intermodal transport*

3. *Right size packaging & truck fill rate*

4. *Alternative fuels*

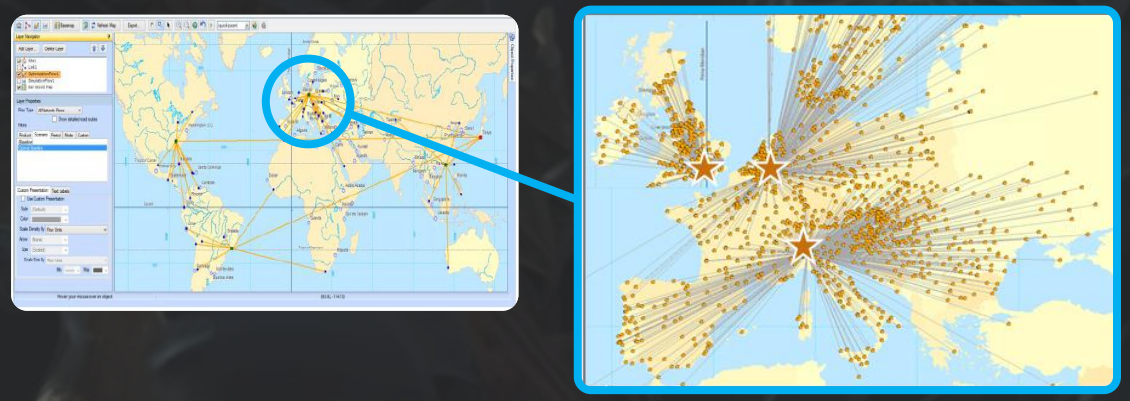
5. *Route Optimization*

6. Circular supply chain



7. *Data capture & optimization*

It is key to define your nodes and modes in the network optimally

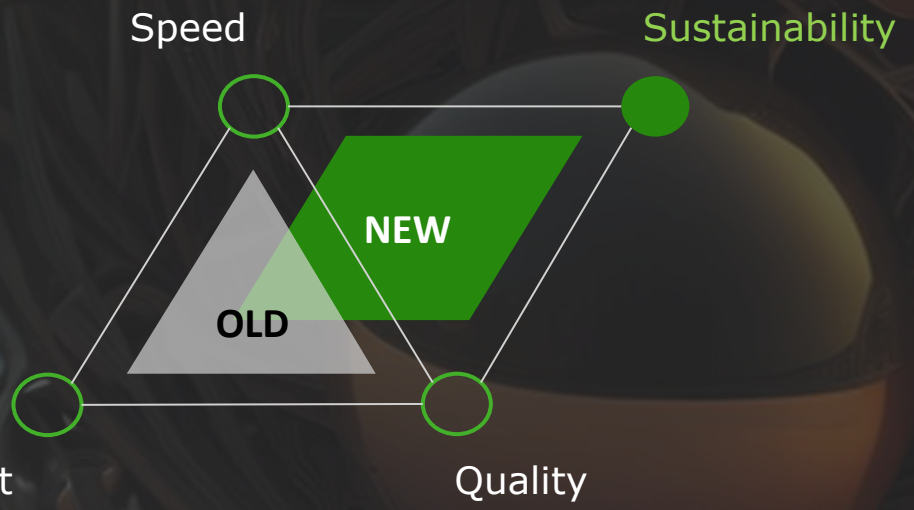


Nodes

- Production
- Global/Regional Distribution Center (RDC)
- Local DC
- Depot / Retail point
- End Customer

Mode of Transportation

- Ocean
- Full truckload
- Less-than-truckload
- Courier Parcel
- Air (exceptionally)



For an automotive customer we revised the EU spare parts network and conducted a Voice of Customer to identify true logistics service needs:

- Cost saving of 6 M EUR by flow optimization
- Lead time saving of 6,5% on urgent orders
- CO2 reduction of 16%
- Significant increase in resilience as adding a second customer facing point in the network adds to business continuity
- Warehouse utilization remains under capacity constraints taking into account planned expansion

Levers curbing transport emissions

1. *Network optimization*

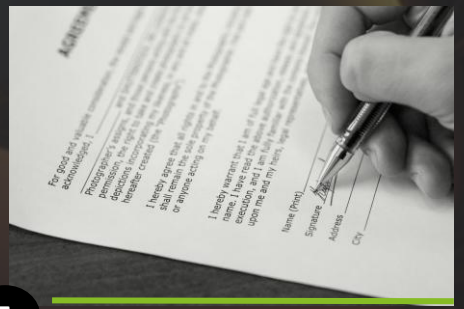
2. *Intermodal transport*

3. *Right size packaging & truck fill rate*

4. *Alternative fuels*

5. *Route Optimization*

6. Circular supply chain

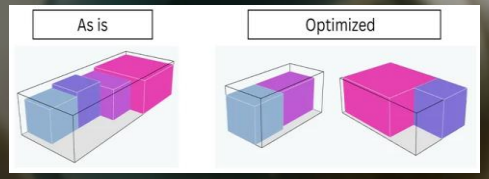


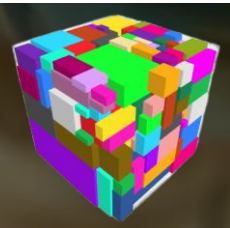
7. *Data capture & optimization*

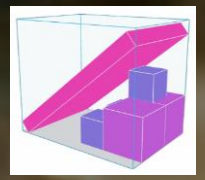
Sqeezing air out of shipments by optimizing packing and loading

Design products with shipment requirements in mind

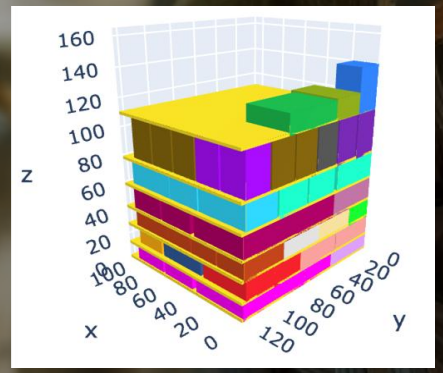
Find the right box configuration for your order (cartonization)



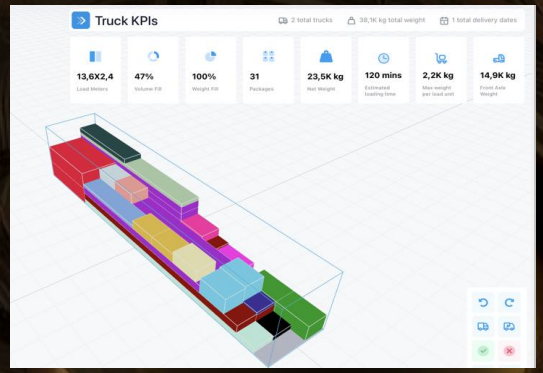




Construct stable and optimal pallet loads (palletization)



Operate your trailers/containers at full capacity (load building)



Use Case : OPTIRYX

- ❑ Stackability constraints
- ❑ Different carton/pallet types
- ❑ Pallet overhang
- ❑ Item density (kg/m3) constraints
- ❑ Stackability constraints
- ❑ Order priorities
- ❑ (Un)loading sequence constraints
- ❑ Transport rates

- ✓ 15-30% Less air transported
- ✓ 5-11% Less packaging material used
- ✓ 6-17% Lower transport cost

Levers curbing transport emissions

1. *Network optimization*

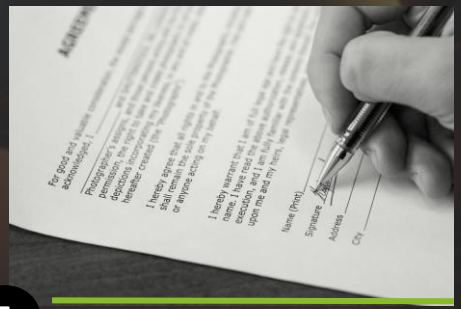
2. *Intermodal transport*

3. *Right size packaging & truck fill rate*

4. *Alternative fuels*

5. *Route Optimization*

6. Circular supply chain

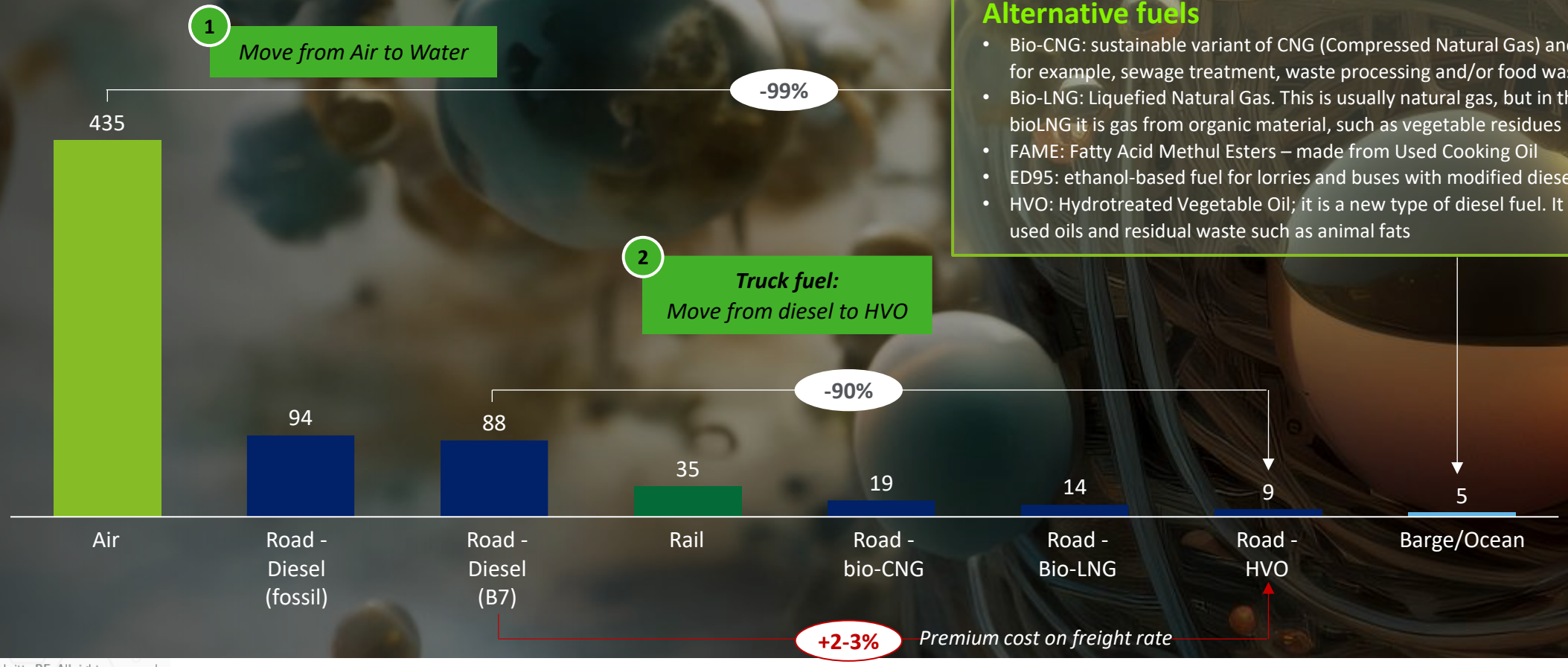


7. *Data capture & optimization*

Levers curbing transport emissions (non-electrified)

The CO2 emissions per transport mode and fuel used vary. Moving from air to water and from diesel to HVO offers great opportunities for emission reduction

CO2 emissions by transportation mode (g CO2 per tonkm)



Alternative fuels

- Bio-CNG: sustainable variant of CNG (Compressed Natural Gas) and its source is, for example, sewage treatment, waste processing and/or food waste
- Bio-LNG: Liquefied Natural Gas. This is usually natural gas, but in the case of bioLNG it is gas from organic material, such as vegetable residues
- FAME: Fatty Acid Methul Esters – made from Used Cooking Oil
- ED95: ethanol-based fuel for lorries and buses with modified diesel engines
- HVO: Hydrotreated Vegetable Oil; it is a new type of diesel fuel. It is made from used oils and residual waste such as animal fats

Fleet decarbonization options : its advantages & disadvantages

Decarbonization can be pursued by alternative fuels and alternative technologies with Battery Electric Vehicles showing the greatest potential

*International Transport Forum – Decarbonising Europe's Trucks
**According to Transport Scotland – Zero Emission Truck Taskforce

Alternative fuels

- Natural gas, biofuels and synthetic fuel can be used however the **drawbacks** are that they either aren't **carbon neutral** (natural gas), nor available in sufficient **quantity** (biofuels) nor **affordable** (synthetic fuels)
- Alternative fuels can use the internal combustion engine (ICE) and can be used in the **current rolling stock.**
- Therefore, alternative fuels are an **ideal intermediary solution** but unsustainable in the long term

Battery Electric Vehicles (BEV)

- Increasing momentum but still at only 4% of new truck sales
- Mature solution for **Light Commercial Vehicles and** leveraging EV infrastructure and technology
- **Long distance** & heavy-duty trucks reach psychological barrier of 450km and innovation will con't to increase range & performance. Concerns on sufficient charging infrastructure to break-through (network of mega-chargers)
- Total Cost of Ownership (TCO) for BEV is expected to **outperform ICE vehicles in the 2030s**.** However recent studies have shown that the TCO BEV tends to be underestimated
- By **mid-2030** electrified heavy-duty trucks could potentially represent **half of all new trucks** sold*

Fuel Cell Electric Vehicle (FCEV)

- Electric vehicles using a fuel cell converting **compressed hydrogen** emitting only water when in use but requiring **replacement of rolling stock**
- FCEV vehicles offer an **extended range** combined with **limited charging** time.
- The **technology is still in development** to reduce size, cost and weight.
- Given the required development could potentially **enter the market share as of 2040s** at the earliest
- Losing momentum in the market as Fuel-cell truck sales continue to slide in first half of 2025

Levers curbing transport emissions

1. *Network optimization*

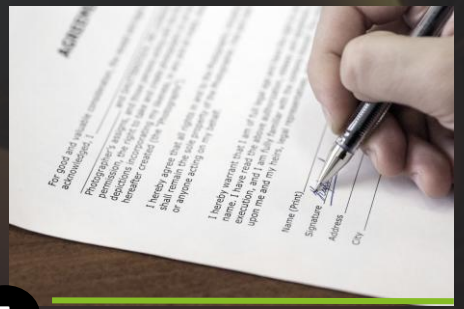
2. *Intermodal transport*

3. *Right size packaging & truck fill rate*

4. Alternative fuels

5. *Route Optimization*

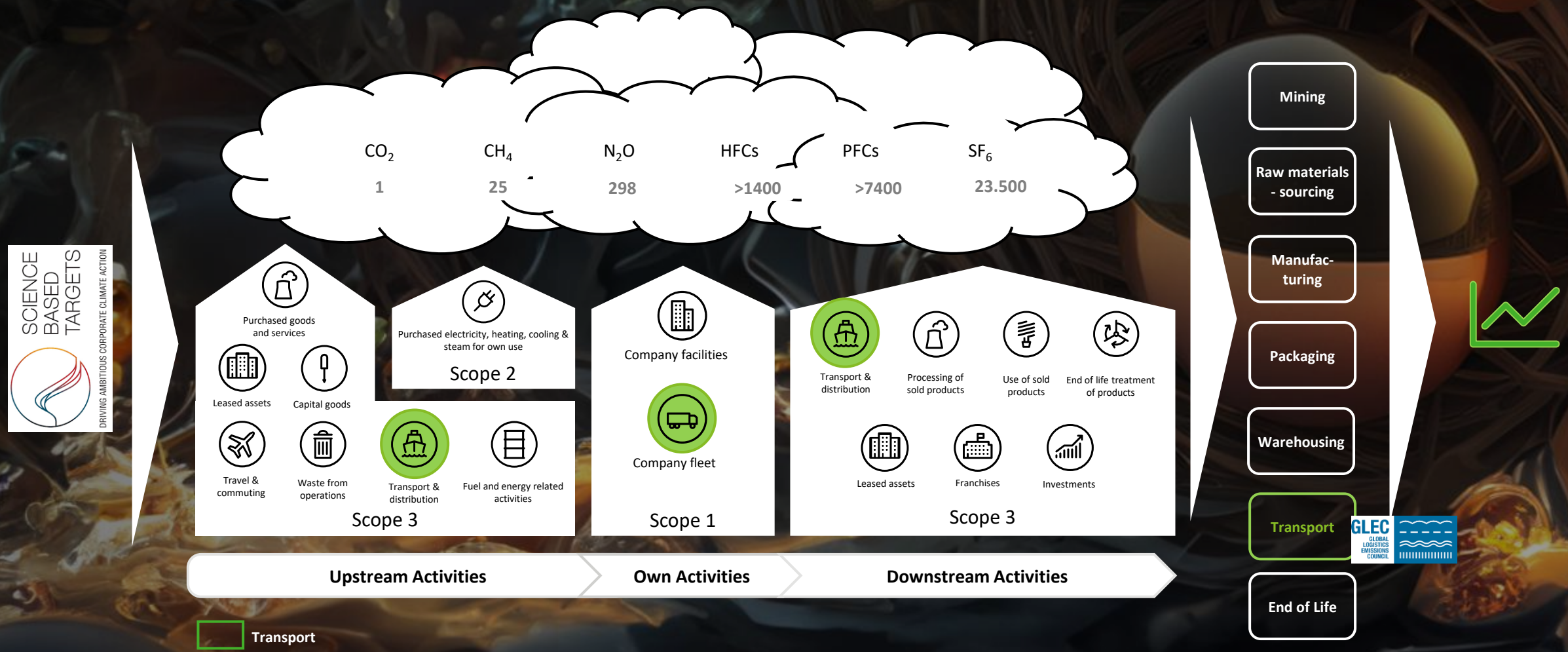
6. Circular supply chain



7. *Data capture & optimization*

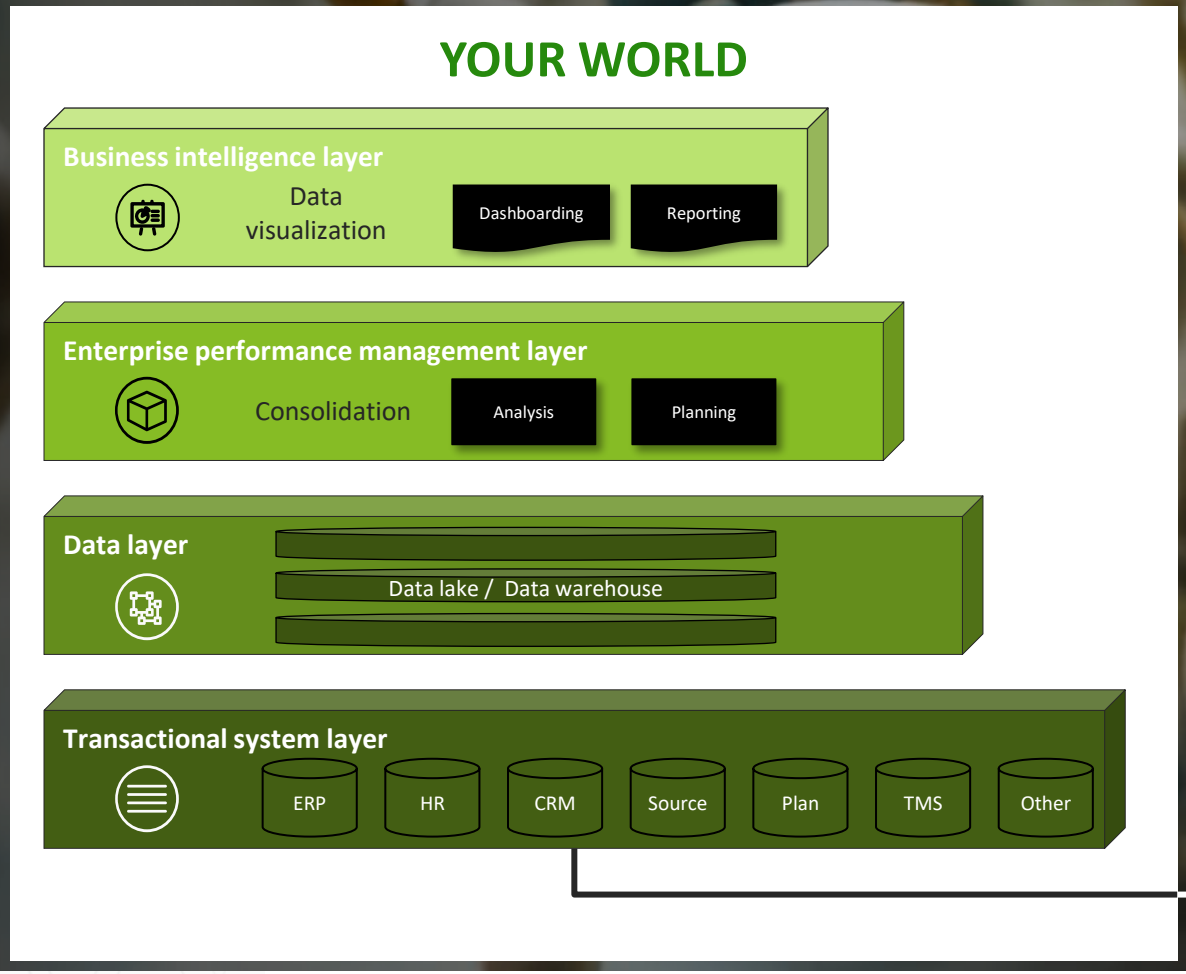
Quantification of emissions is not an easy challange

Sustainability reporting is essential to set the baseline, mobilize, measure success and define improvement



Measuring emissions is key to embed sustainability in your organization

Companies need a clear methodology to calculate emissions for different categories like packaging, distribution of finished goods, upstream transport, etc. + **Be prepared to connect to an ecosystem of data providers**



&

Deloitte.

Frederick Dobbelaere

Manager

Supply Chain & Network Operations

E fdobbelaere@deloitte.com

M + 32 471 62 73 45

Arne Devriendt

Specialist Leader

Supply Chain & Network Operations

EMEA Transportation consulting lead

E adevriendt@deloitte.com

M + 32 499 56 77 98

Deloitte.