REACH

CO2PATH

Dependable calculation & reporting of logistics emissions

Dimitrios Kourtesis, PhD

Ideas Forward

The team

Dimitrios Kourtesis, PhD

Consultant - transport emissions data, EC JRC & DG CLIMA I Startup advisor I Angel investor

PhD Comp Sci I MSc Software Eng I BSc Com Sci

Harry Kakoulidis, BSc

Full-stack Software Engineer, Ideas Forward I Entrepreneur

BSc Economics

Nikolaos Tsoniotis, MEng

Consultant - sustainable transport, EC JRC I Startup advisor I Angel investor

MEng Electronic Engineering

Nikiforos Zacharof, PhD

Consultant - transport emissions modelling, EC JRC & Inter. Council on Clean Transportation
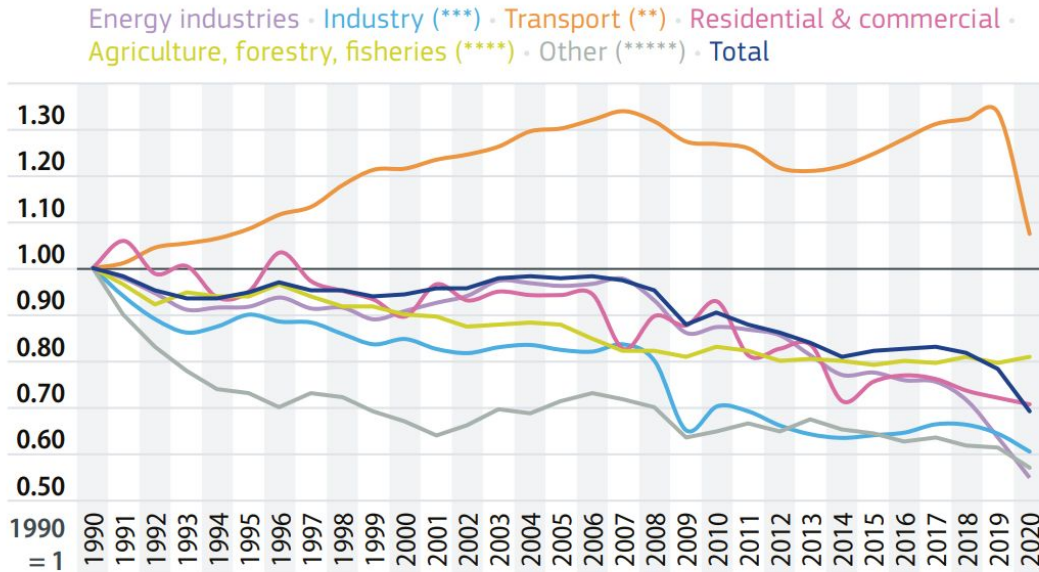
PhD Mech Eng I MEng Environmental Protection

Argiris Paraskevas

UX Designer, Ideas Forward

Fedra Lougiaki, PhD cand.

Analyst, Ideas Forward I Researcher, Aristotle University

PhD cand. Chemistry, MSc Biochemistry

Transport emissions

Energy industries · Industry (***) · Transport (**) · Residential & commercial · Agriculture, forestry, fisheries (****) · Other (*****) · Total

Fastest-**growing** source of GHG, globally

23% of EU emissions

Reduction is "*a formidable task*"

Transport chains are complex

Transport activity data value chain

Shipper	Freight Forwarder	Carrier(s)	Fleet(s)
Cargo data	*Consignment data*	*Vehicle data*	*Fuel & route data*

Transport activity data silos

Shipper

Freight Forwarder

Carrier(s)

Fleet(s)

Consignment data

Vehicle data

Fuel & route data

Transport activity data silos

Shipper

Freight Forwarder

Carrier(s)

Fleet(s)

Way out:
industry-average
carbon intensity
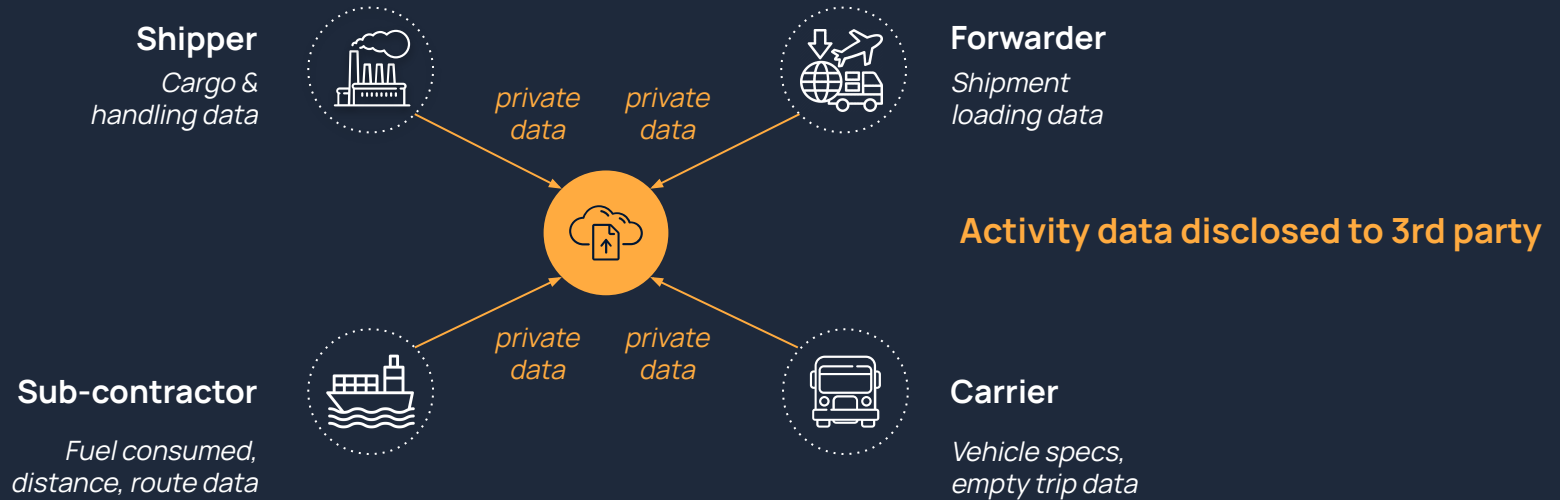
**52 g CO2e
per tonne-km**

*Consignment
data*

*Vehicle
data*

*Fuel & route
data*
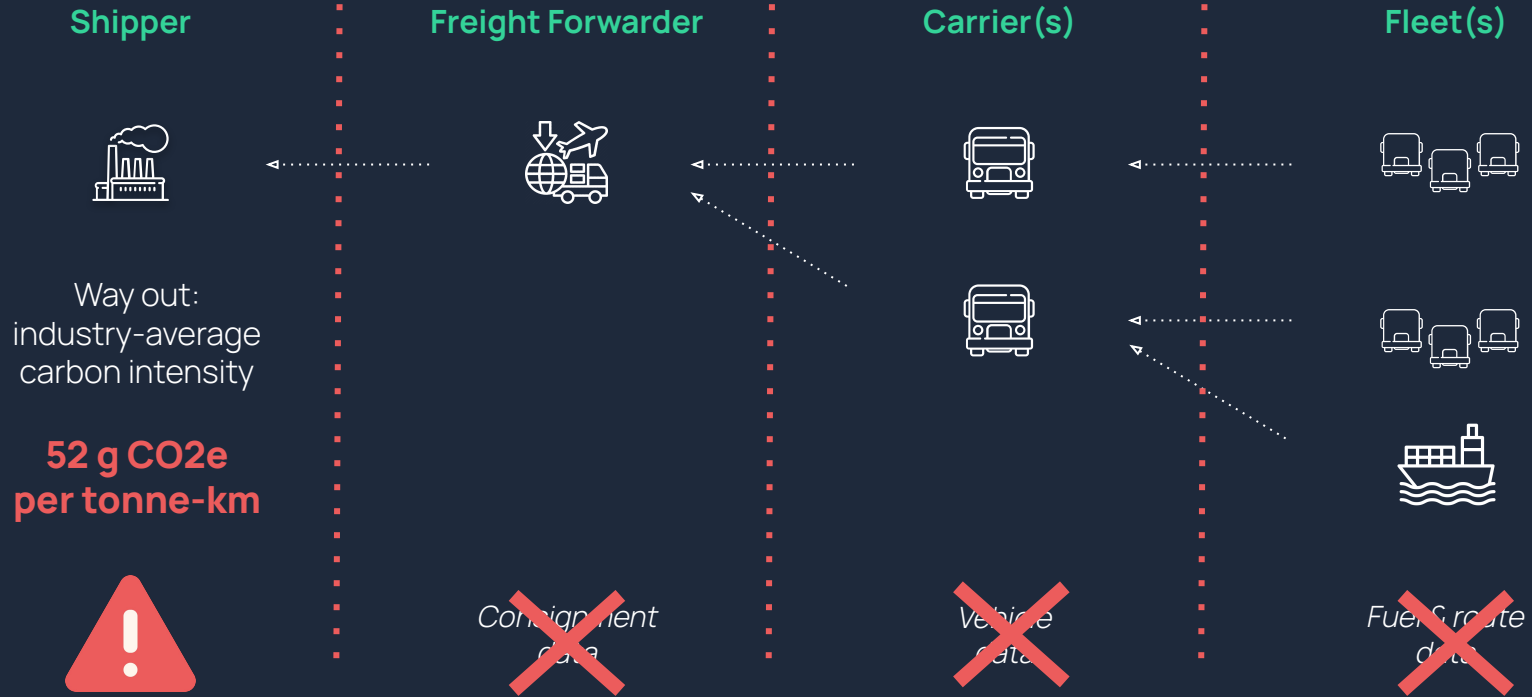
"If you cannot measure it, you cannot improve it"

— Lord Kelvin (1824-1907)

Centralized emissions calculation

Shipper
Cargo & handling data

Forwarder
Shipment loading data

private data

private data

Activity data disclosed to 3rd party

Sub-contractor
Fuel consumed, distance, route data

private data

private data

Carrier
Vehicle specs, empty trip data

Primary activity data: Why not shared?

Data collection and exchange

Digitalisation and transparency are critical to understand the carbon footprint of logistics related activities. Ultimately companies need to have process in place for data collection and data exchange that facilitate an automated exchange of GHG logistics emissions. This requires systems in support of digital data collection and transfer technologies that will support the overall process. Currently, the reporting format, data transfer protocols and assurance requirements remain confusing for many companies. Harmonisation of the information format and transmission methods is therefore crucial. This will ultimately support companies in making business decisions in support of decarbonisation.

Requirements for effective data exchange across the transport chain are as follows:

- Data must be easily transferable from a carrier to customers/LSP and/or governments and supported by clear rules/protocols
- Type and depth of data should support the use by customers and/or governments while not compromising the carrier's commercial position
- Integration with existing platforms or ICT transfer systems in logistics
- Recognition of the role that the nature of the data input (e.g. own fleet data, carrier direct data, carrier data from programs, data from models/tools, default-factor based data) and level of detail (e.g. level of aggregation) can have on the type of decisions. This is a factor that must be borne in mind when relating reported emissions to their subsequent use.

The market should be allowed to provide the services that meet the specifications on the format of the required data and associated verification mechanism. CLECAT is of the view that there could be a

Key concern for carriers:

Business confidentiality

Source: CLECAT (2022) – CountEmissions EU: setting out a common framework on transport-related greenhouse gas emissions
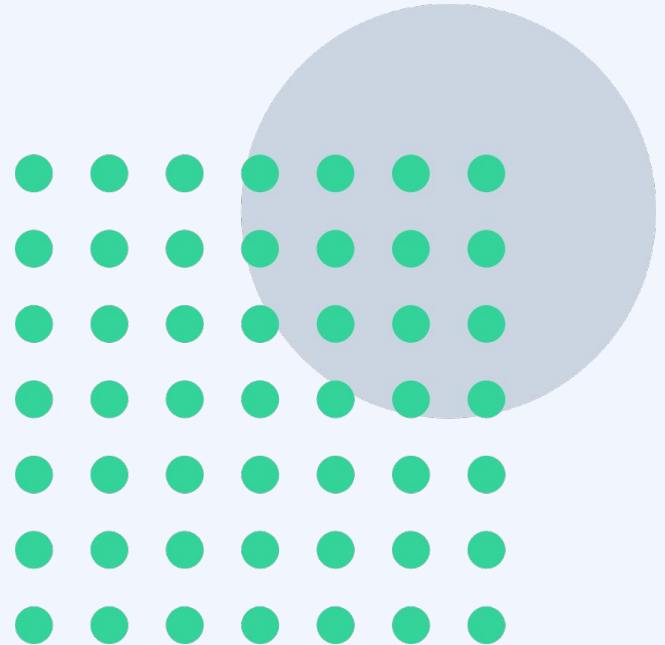
Decentralized emissions calculation
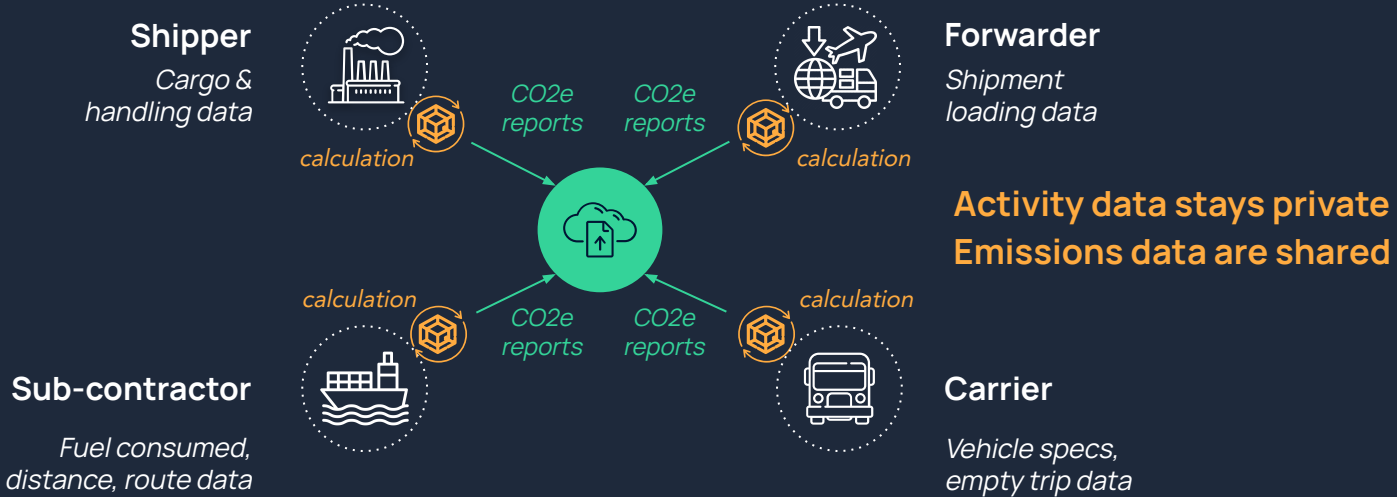
Data provider

International freight forwarding across EU

Specialization: fresh & frozen foods

10,000 shipments / €15m sales in 2022

Solution objectives

1. **Preserving activity data sovereignty**

   Emissions calculated without private data disclosures

2. **Facilitating emissions data sharing**

   Transport chain partners exchange/monetize data via IDS Connector
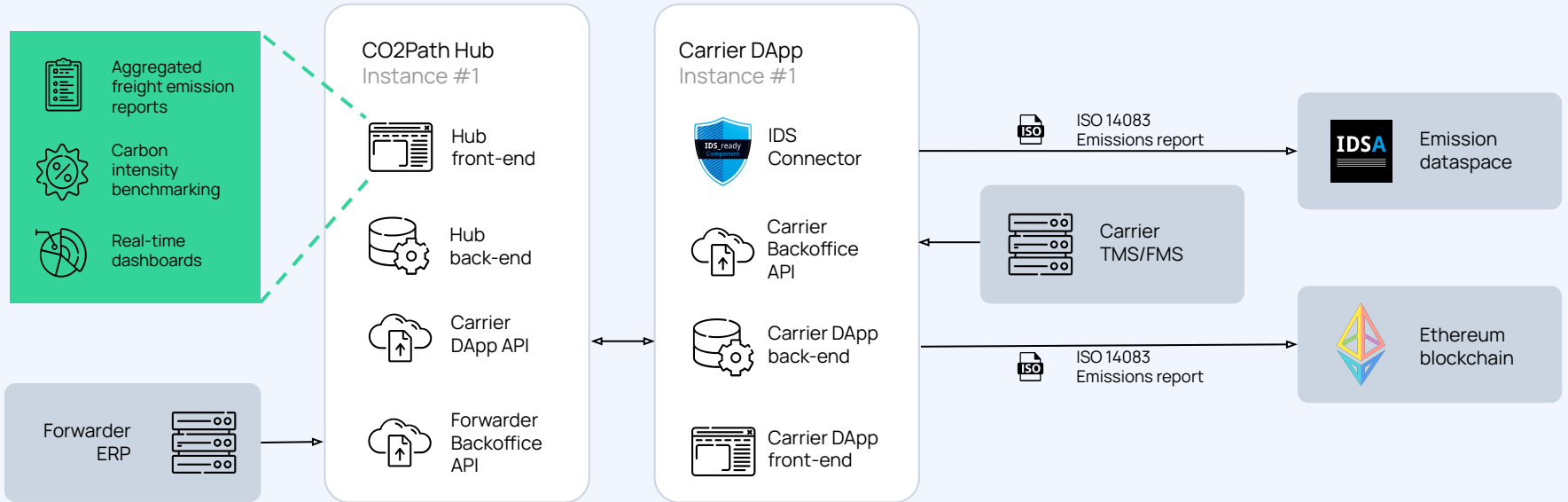
3. **Enabling emissions data auditability**

   Pseudonymized emission reports on public blockchain for certifier audits + open datasets

CO2Path.io

Forwarder Users

Shipper Users

Carrier Users

Aggregated freight emission reports

Carbon intensity benchmarking

Real-time dashboards

CO2Path Hub
Instance #1

- Hub front-end
- Hub back-end
- Carrier DApp API
- Forwarder Backoffice API

Carrier DApp
Instance #1

- IDS Connector
- Carrier Backoffice API
- Carrier DApp back-end
- Carrier DApp front-end

Forwarder ERP

ISO 14083 Emissions report

IDSA Emission dataspace

Carrier TMS/FMS

ISO 14083 Emissions report

Ethereum blockchain

CO2PATH

Monthly emissions report
According to ISO 14083

August 2023
Month

BLQ Global Freight
Transport service organizer

Zeus Exports S.A.
Transport service user
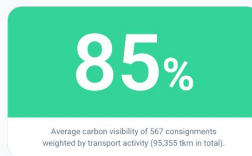
12/09/2023 16:58
Issuing date (CET)

Overview

2,947 kg	**38,839** MJ	**31.90** g/tkm
Total WtW emissions (CO2e)	Total WtW energy	Carbon intensity (CO2e)
95,355 tkm	**1,234** t	**567**
Total transport activity	Total freight weight	Total consignments

Carbon intensity benchmarks

Compared to industry average of 52.00 g CO2e/tkm	**-38.65**%
Compared to yearly goal set to 39.00 g CO2e/tkm	**-18.20**%

Carbon visibility rating

85%

Average carbon visibility of 567 consignments weighted by transport activity (95,355 tkm in total).

Emissions data provenance

- Primary data (58%)
- Energy-based modeling (27%)
- Activity-based modeling (7%)
- Default values (8%)

Freight condition

- Temperature controlled (32%)
- Ambient temperature (68%)

Transport location

Showing destination postal codes

Destination | Origin

GR-54231 IT-67890 BE-52521 DE-45673 ES-35822 PO-24761
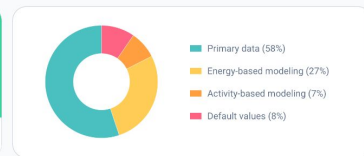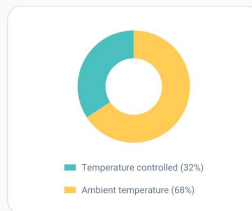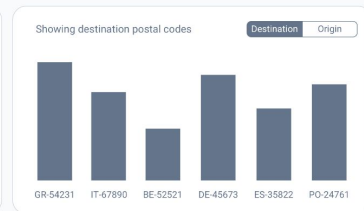
Consignments list

ID	Origin	Destination	Loaded	Delivered	Weight (kg)	Condition	Activity (tkm)	Emissions (kg)	Intensity (g/tkm)
CNS001	GR-15432	IT-28873	10/08/23	18/08/23	1000	Frigo	3000	20	12.4
CNS002	GR-76592	ES-4672	02/08/23	14/08/23	2000	Dry	2500	15	24.6
CNS003	SE-42621	DE-23156	01/08/23	08/08/23	1500	Dry	1000	5	32.5

Dashboard
BLQ Global Freight

Month | Quarter | Year

Overview

22,947 kg	**438,839** MJ	**31.90** g/tkm
Total WtW emissions (CO2e)	Total WtW energy	Carbon intensity (CO2e)
295,355 tkm	**11,234** t	**5,673**
Total transport activity	Total freight weight	Total consignments

Carbon visibility rating

89%

Average carbon visibility of 5,673 consignments weighted by transport activity (295,355 tkm).
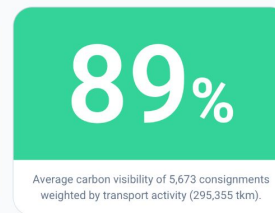
Top 10 carriers (by carbon intensity)

Carrier name	Carbon Intensity (g/tkm)	Visibility Rating	
SwiftMove Logistics	22.30		82%
TransOcean Carriers	24.80		91%
GlobeTrek Shipping	28.36		24%
Skyline Freight Co.	28.92		13%
Horizon Transporters	32.22		66%
PeakCargo Services	32.35		37%
Jetstream Couriers	34.55		88%
Unity Hauling Corp.	38.41		52%
ApexParcel Enterprises	40.27		20%
Nebula Express	41.32		59%

Carriers

163

Carriers, with 120 of them integrated

Shippers

52

Shippers

Transport mode

Road 24,20%
Air 28,72%
Sea 20,52%
Rail 18,42%

Search…

Home
Shipments
Vehicles
Shippers
Forwarders
Carriers
Reporting
  Dashboards
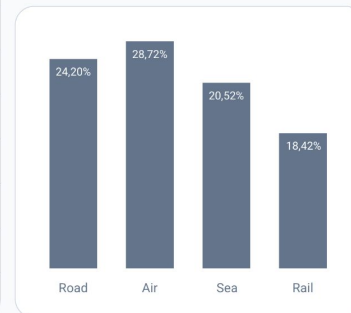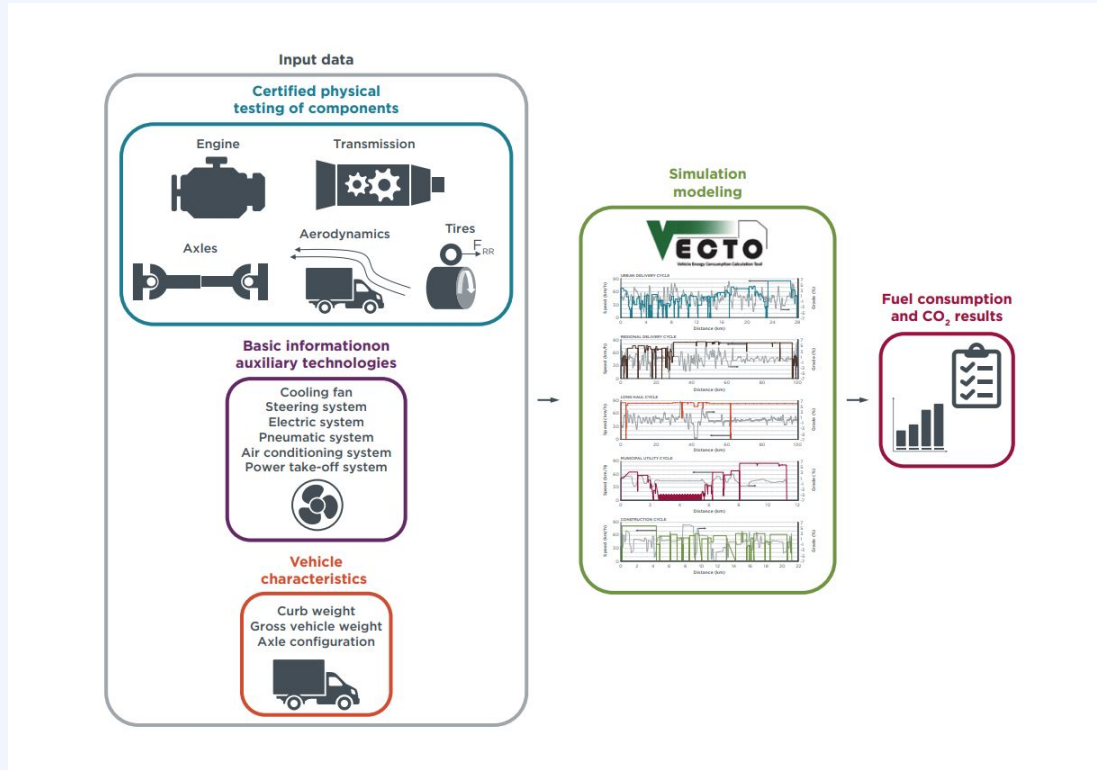 Reports
Settings

Model-based plausibility validation

VECTO simulation system:

European Union's official reference system for the calculation of CO_2 emissions from Heavy-Duty Vehicles

Highest possible accuracy for vehicle fuel consumption estimation

Extensive team experience with VECTO

CO2Path.io emission reports

Standardised

Compliant with
ISO 14083
& EN 16258

Transparent

Full visibility into
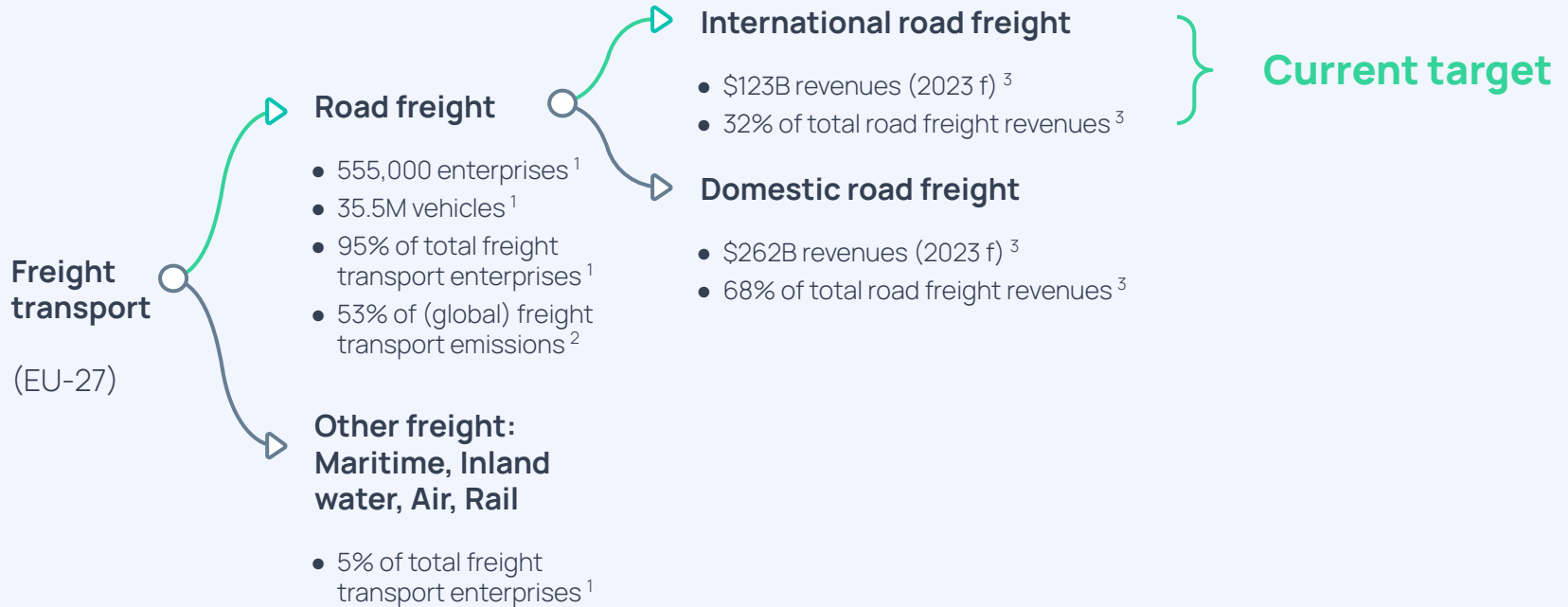calculation process
+ data types used

Quality-rated

Based on the quality
of report's input data

Verifiable

Audit-ready with
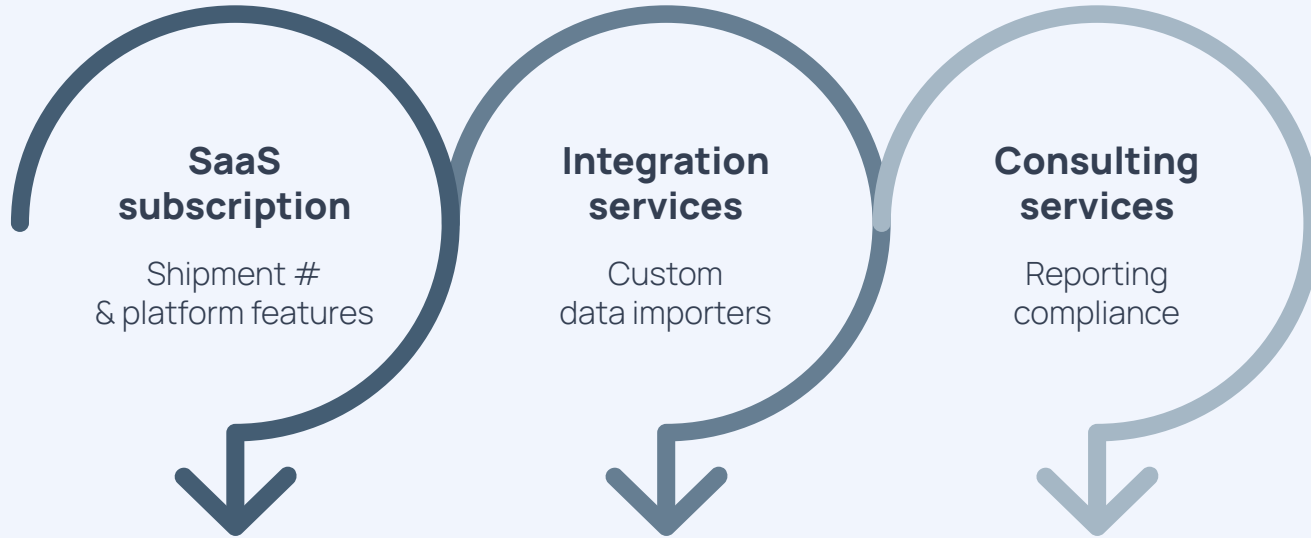immutable data trail
for external verifiers

Go-to-market

International road freight

- $123B revenues (2023 f) [3]
- 32% of total road freight revenues [3]

Current target

Road freight

- 555,000 enterprises [1]
- 35.5M vehicles [1]
- 95% of total freight transport enterprises [1]
- 53% of (global) freight transport emissions [2]

Domestic road freight

- $262B revenues (2023 f) [3]
- 68% of total road freight revenues [3]

Freight transport

(EU-27)

Other freight: Maritime, Inland water, Air, Rail

- 5% of total freight transport enterprises [1]

Sources:
[1] DG MOVE, EU transport in figures (2022) – Number of enterprises by mode of transport
[2] McKinsey, Road freight global pathways report (2022)
[3] Nordic Transport Group, European Freight Forwarding Market Study (2019) – European Road Freight Market Size
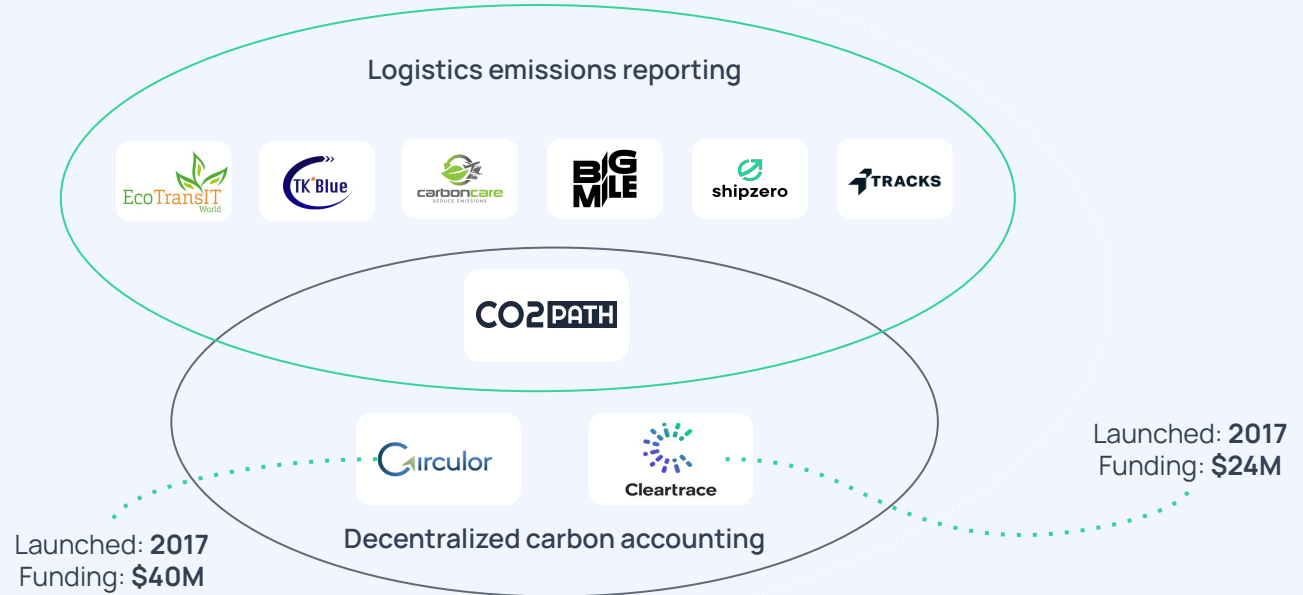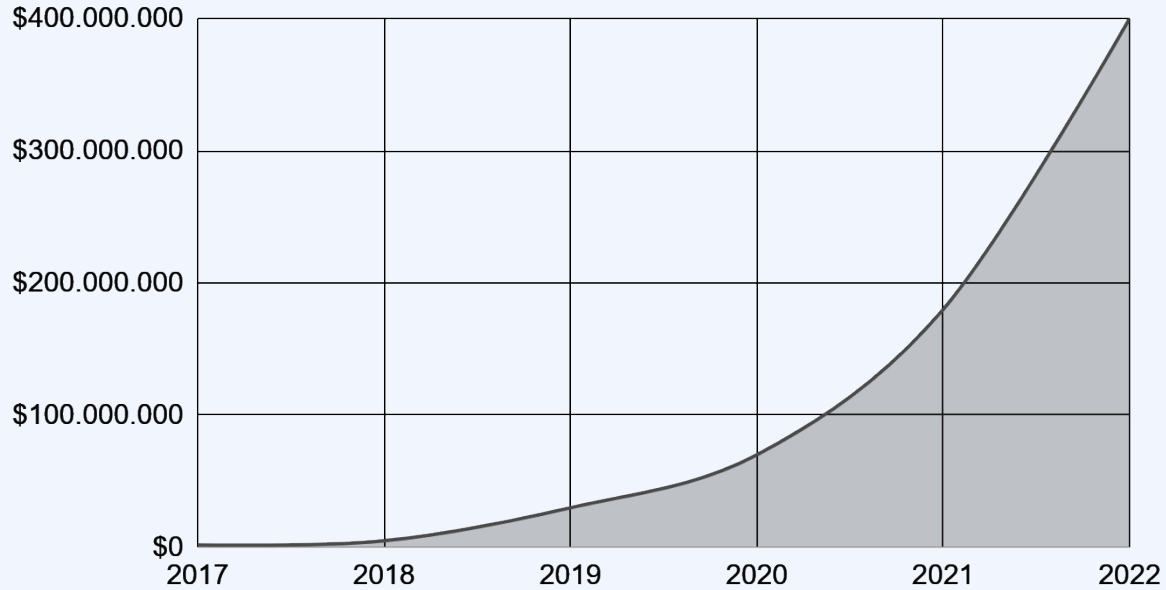
Revenue model

SaaS subscription

Shipment #
& platform features

Integration services

Custom
data importers

Consulting services

Reporting
compliance

Market positioning

Carbon accounting software

Market size 2022: **$13B**
CAGR: **+23%**
Projected in 2030: **$64B**

Logistics emissions reporting

EcoTransIT World

TK Blue

carboncare REDUCE EMISSIONS

BIG MILE

shipzero

TRACKS

CO2 PATH

Circulor

Cleartrace

Decentralized carbon accounting

Launched: **2017**
Funding: **$40M**

Launched: **2017**
Funding: **$24M**

Source: Carbon Accounting Market Size,
Fortune Business Insights (March 2023)

Venture capital invested in carbon accounting

Our mission

Help logistics professionals play their part
in mitigating the climate emergency,
by bringing high quality data
into freight emissions reporting.

Thank you

Dimitrios Kourtesis, PhD

Managing Partner, Ideas Forward

dimitrios@ideasforward.com

ideasforward.com

Technology Venture studio in Thessaloniki - Greece

- Opportunity Lab: building business models

- Curiosity Lab: building technology

- Community Lab: building communities