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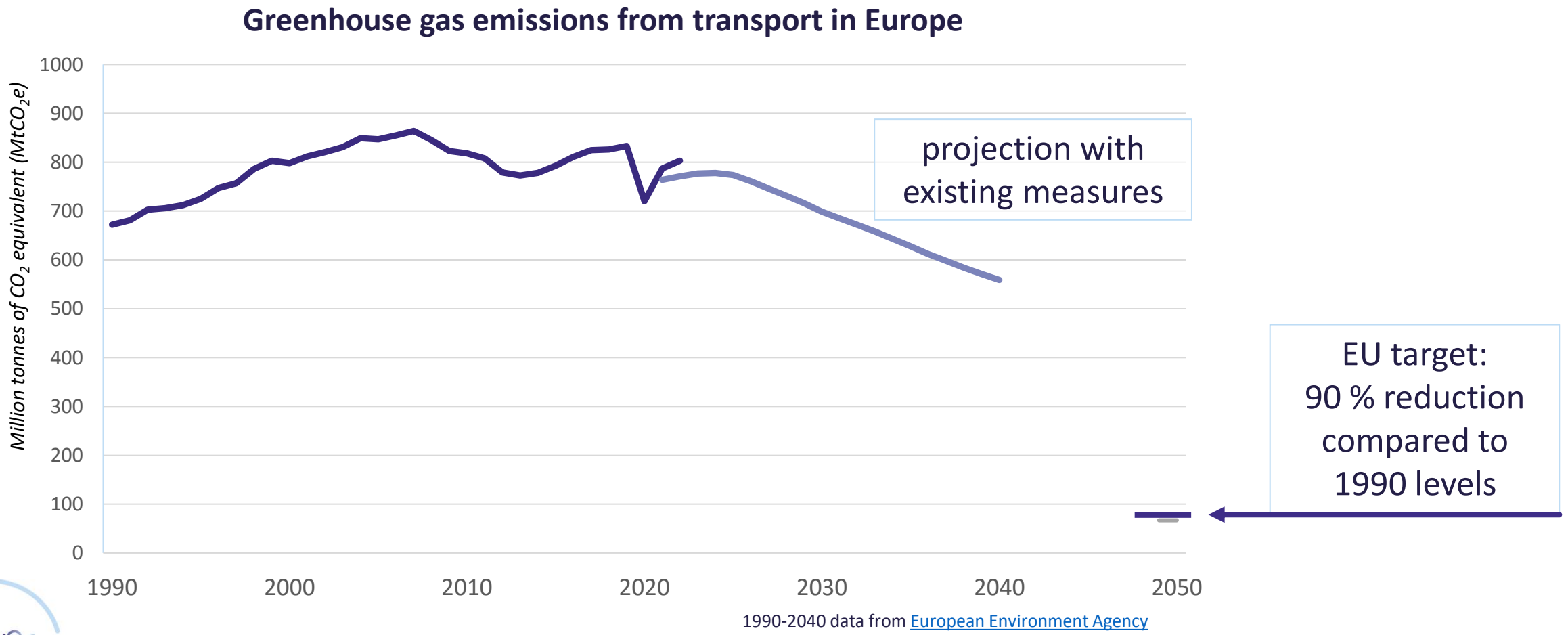
Speakers:
Ing. Martin Kubů, PhD., zástupce ČAPPO v asociaci Fuels Europe (Brusel)

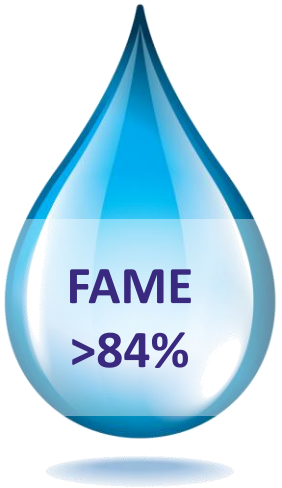
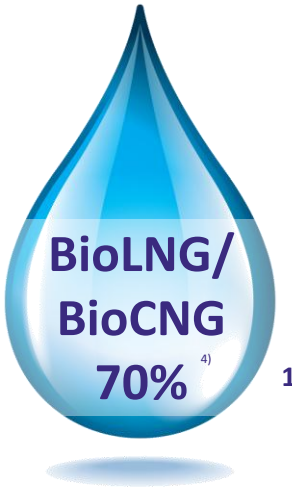
Renewable fuels have a crucial role to play in decarbonizing road transport



1990-2040 data from European Environment Agency

Tours d'Europe
DRIVING DECARBONISATION WITH RENEWABLE FUELS

Renewable fuels contribute to climate targets

type of vehicle:	Diesel		Gasoline		Natural gas powered vehicles
CO_2 reduction (well-to-wheel):					 133% in case of prevention of biological methane emissions 5)
availability today at:	>5000 stations		>5500 stations	market entry 2024 at first public filling stations	>1500 stations

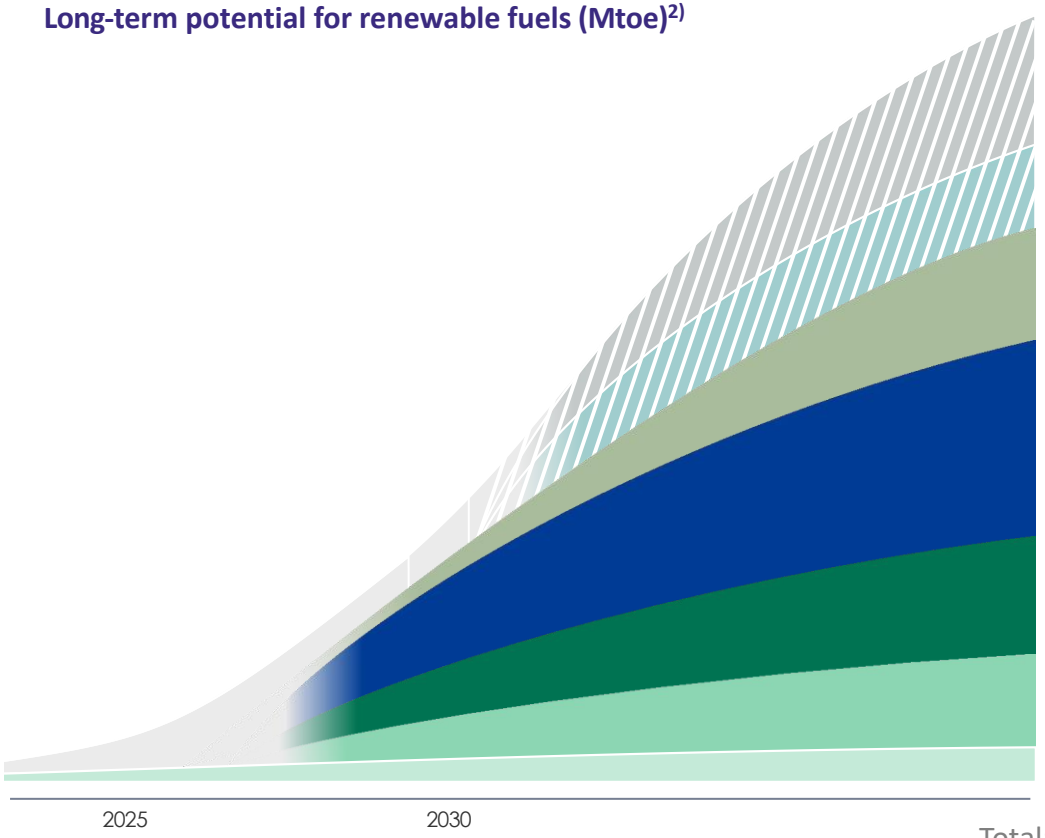
1) from waste based feedstocks
2) https://www.epure.org/resources-statistics/statistics-infographics/; Fully renewable E85 fuel (bioethanol + bionaphta or e-naphta) will be above 70% GHG reduction.
3) RED II:Directive (EU) 2018/2001, mínimum value https://www.repsol.es/content/dam/images-ecommerce/particulares/vehiculos/combustibles-renovables/ficha-gasolina-renovable-octubre-24.pdf
4) "RED III" Directive (EU) 2018/2001 of the European Parliament and of the Council, typical value Biowaste, close digestate, no off-gas combustion
5) "RED III" Directive (EU) 2018/2001 of the European Parliament and of the Council, typical value for wet manure, open digestate, off-gas combustion

Global raw material potential for renewable fuels

ca. 2500 Mtoe [1)]

Global gasoline and diesel consumption 2022

Long-term potential for renewable fuels (Mtoe)[2)]



230-355	Power-to-liquids; Algae
180-275	Cellulosic energy crops
200-400	Lignocellulosic residues (agriculture; forestry)
190-250	Municipal solid waste [3)]
150	Novel vegetable oils (cover crops; degraded land) [3)]
50	waste and residue fats and oils

Significant potential for fuel production in the long term

Total: 770 – 1125 Mtoe

Source:

1) Statista, Development of global crude oil demand for petroleum products in the period from 2022 to 2045, gasoline and diesel consuption 2022 expressed in Mtoe

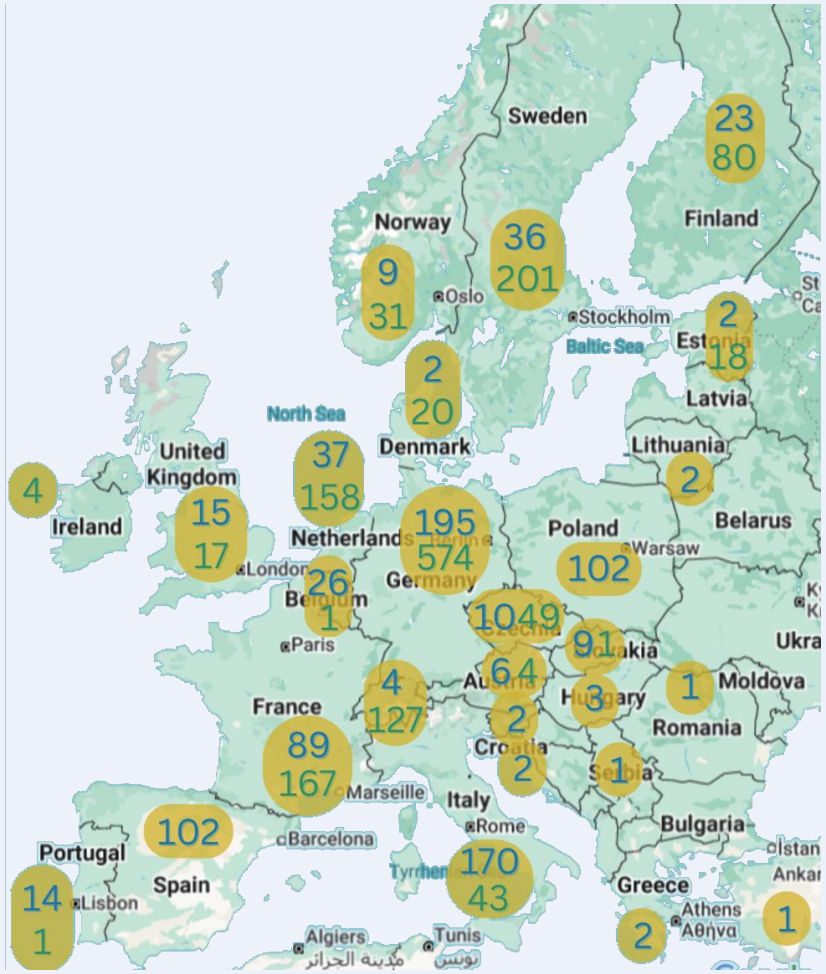
2) Neste analysis based on WEF Clean Skies for Tomorrow and other sources.
Biomass potential converted to fuel potential, using around 85% conversion efficiency (weight-based) for fats and oils and novel vegetable oils; around 25% efficiency for lignocellulosic biomass and municipal solid waste.

3) 80% organic waste, with 20% non-reusable, non-separable plastic waste

Availability of renewable fuels in Europe

Nr. of BioLNG stations

Nr. of BioCNG stations



HVO blend (10 - 15%)

HVO blend (20 - 35%)

HVO blend (36 - 50%)

HVO (100%)

Renewable Gasoline

E85 Gasoline fuel

source: bioethanolcarburant.com, efuelsnow.de

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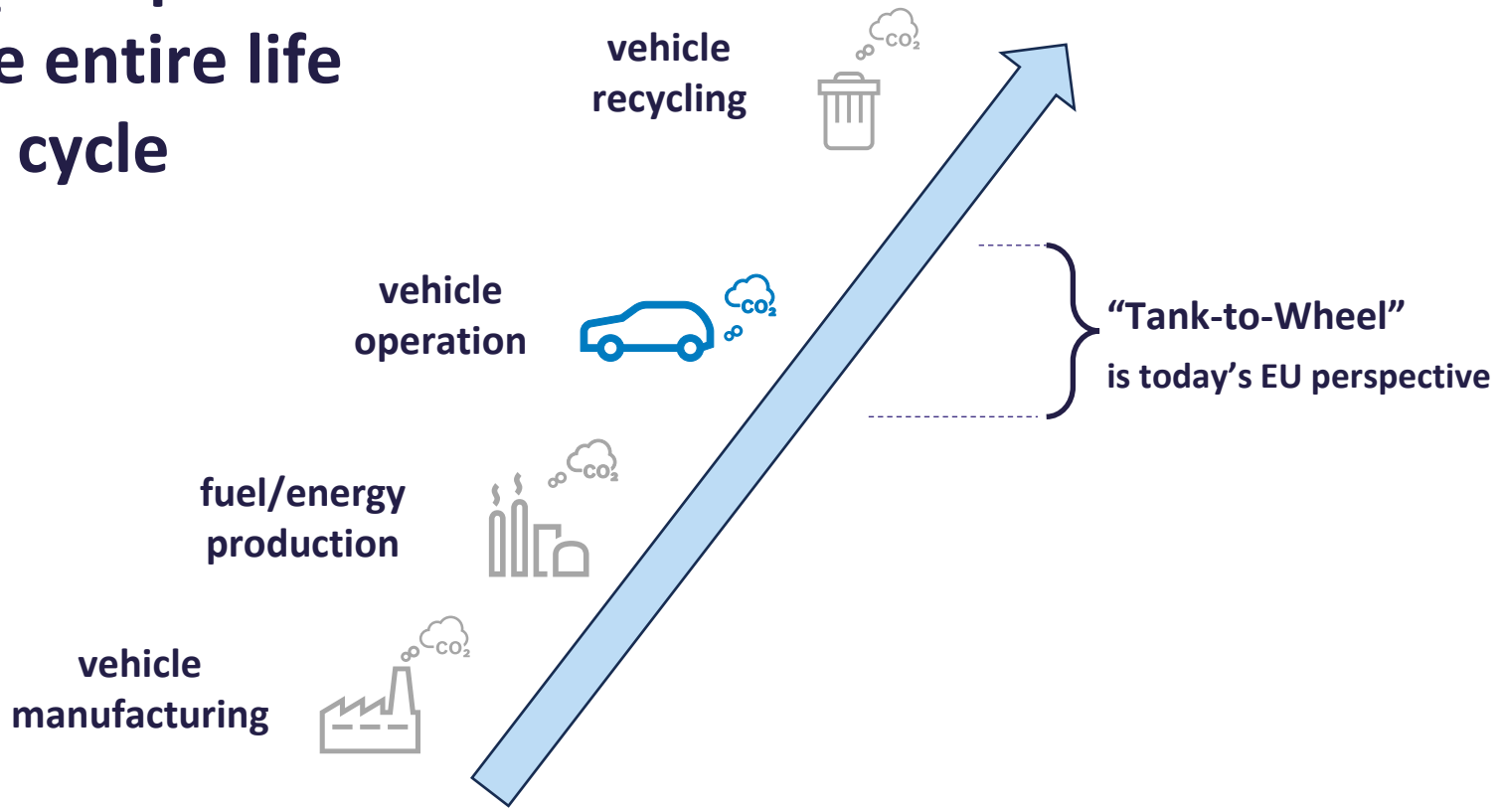
Fuel source must be taken into account in CO_2 emissions

CO_2 footprint of the entire life cycle



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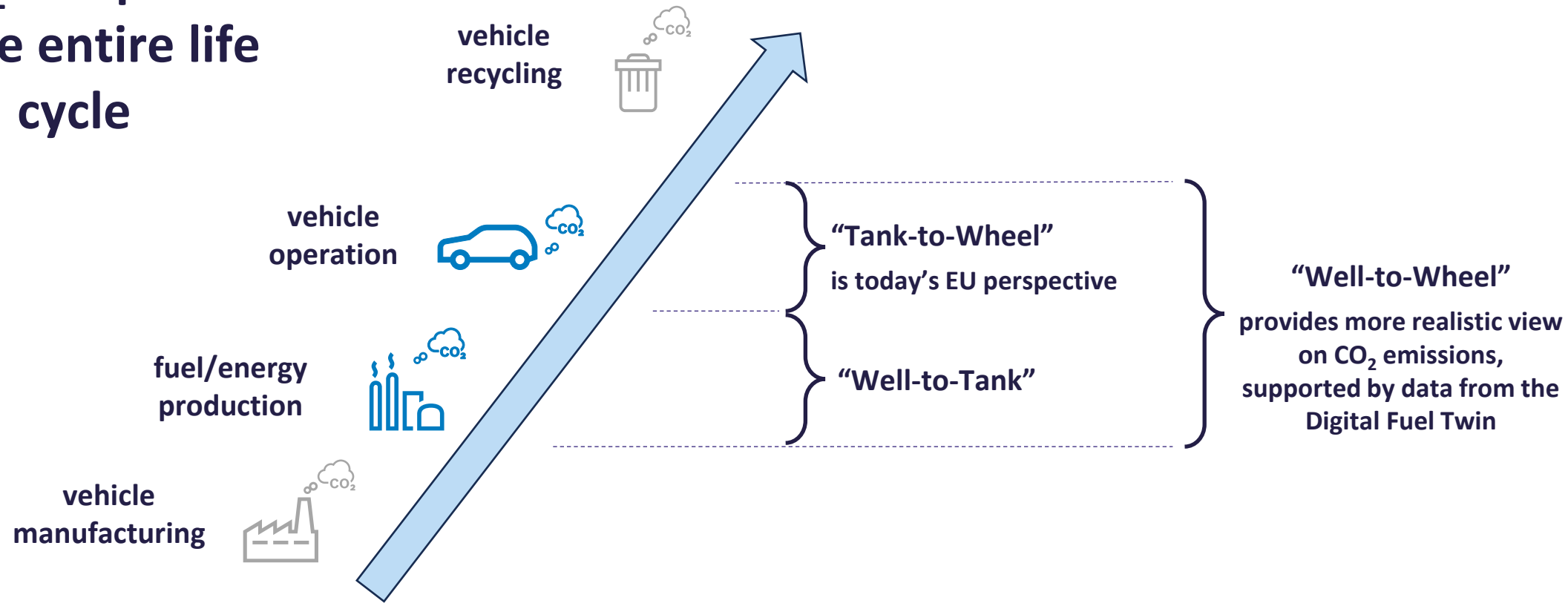
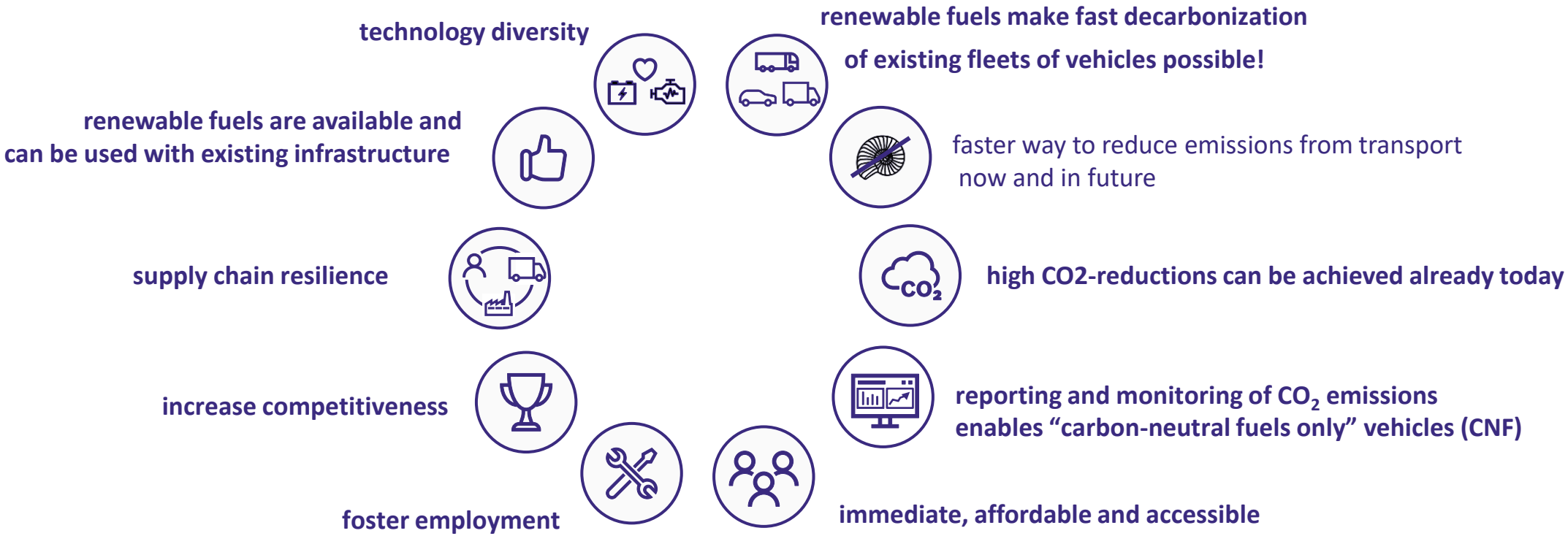


Creating new opportunities



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DRIVING DECARBONISATION WITH RENEWABLE FUELS

CNF = carbon-neutral fuel

Tour d'Europe

important

9 passenger cars

3 trucks + commercial fleet

6 major fuel producer & retailers

5 automotive OEMs (passenger car)

9 fuel producers associations

4 automotive OEMs (truck)

are demonstrating that…

- renewable fuels are already widely available across Europe today!
- significant CO_2 reductions are possible today, by using renewable fuels!
- well-to-wheel data is available for the individual vehicle
- the infrastructure for the "carbon neutral fuel-only" vehicle is available today
  (as required as of 2035)

at >70 Events across Europe

9 Asssociations

>20 countries visited

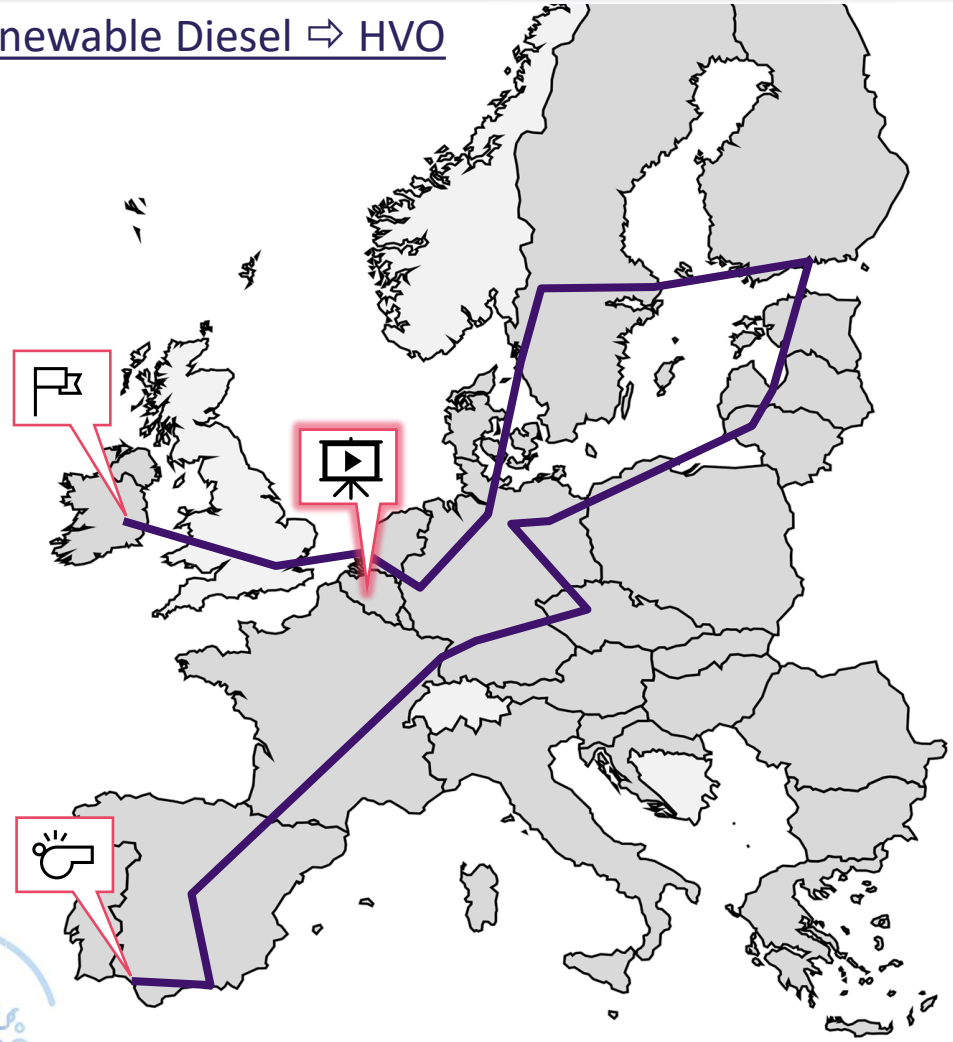
2 universities

Tour d'Europe
DRIVING DECARBONISATION WITH RENEWABLE FUELS

Tour Routes

Convoi #1

Renewable Diesel ⇨ HVO



Date	Place	Event
18 March	Huelva	Visit to HVO plant
20 March	Cartagena	HVO production visit / Biorefinery visit
24 March	Madrid	film shooting event at filling station
25 March	Madrid	Policy Event / Institutional Event
31 March	Strasbourg	EP Plenary
08 April	Stuttgart	UNITI Mineral Oil Technology Congress
10 April	Stuttgart	Media event at VSL + EDI
14 April	Prague	Policy event (+ poss. visit to Motor fuel depot)
15 April	Brunswick	media event
16 April	Berlin	Policy event
22 April	Kaunas	Neste event
23 April	Riga	Neste event
24 April	Katowice	European Economic Congress
25 April	Pärnu	Neste event
29 April	Porvoo	Neste Porvoo refinery visit - media event
05 May	Stockholm	Policy event
06 May	Udevalla	HVO100 Service station in SE
07 May	Gothenburg	SAE Heavy-Duty Sust. Transp. Symposium
09 May	Berlin	Policy event
12 May	Hamburg	Policy event
13 May	Brunswick	media event
14 May	Cologne	Deutz Plant in Cologne
19 May	Rotterdam	HVO plant
26 May	Steyr	possible event at BMW Steyr
28 May	Stuttgart	Town Hall or Plenum ("Landtag")
27 May	Munich	policy event
30 May	Homburg/Saar	Plant visit
05 June	Dublin	Policy event
11 June	London	Policy event
18 June	Beinheim	Biorefinery visit (near Strasbourg)
23 June	Brussels	Closing Event

Vehicles sharing stops on this route

2-3

1

Tours d'Europe

DRIVING DECARBONISATION WITH RENEWABLE FUELS

tourdeurope.eu

Speakers:

Milan Šlachta, Representative of Bosch Group in Czech Republic and Slovakia

Andreas Beck, Acquisition Management/Sales Connected Services, Robert Bosch GmbH (Germany)

Tour d'Europe is demonstrating how…

today

fuel supply

renewable fuels are

- already widely available
- and can be used for existing fleets today.

automotive

the digital fuel twin provides

- transparency and precise market data
- carbon footprint declarations and transport related CO2 reporting

CO_2 emissions & savings report

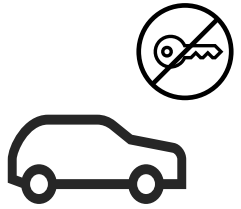
in future

fuel supply

additional production capacities for CNF can be installed - if investment signals are provided today

automotive

a combustion-engine vehicle, that is running exclusively on renewable fuels, is technically possible with the digital fuel twin!

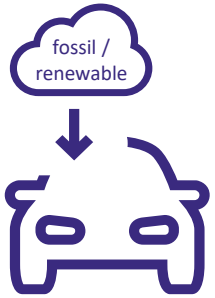


fossil fuelled

Tour d'Europe
DRIVING DECARBONISATION WITH RENEWABLE FUELS

“Carbon-Neutral Fuels Only”-Vehicle:

Tour d’Europe demonstrates, how refuelling of exclusively renewable fuels can be ensured:



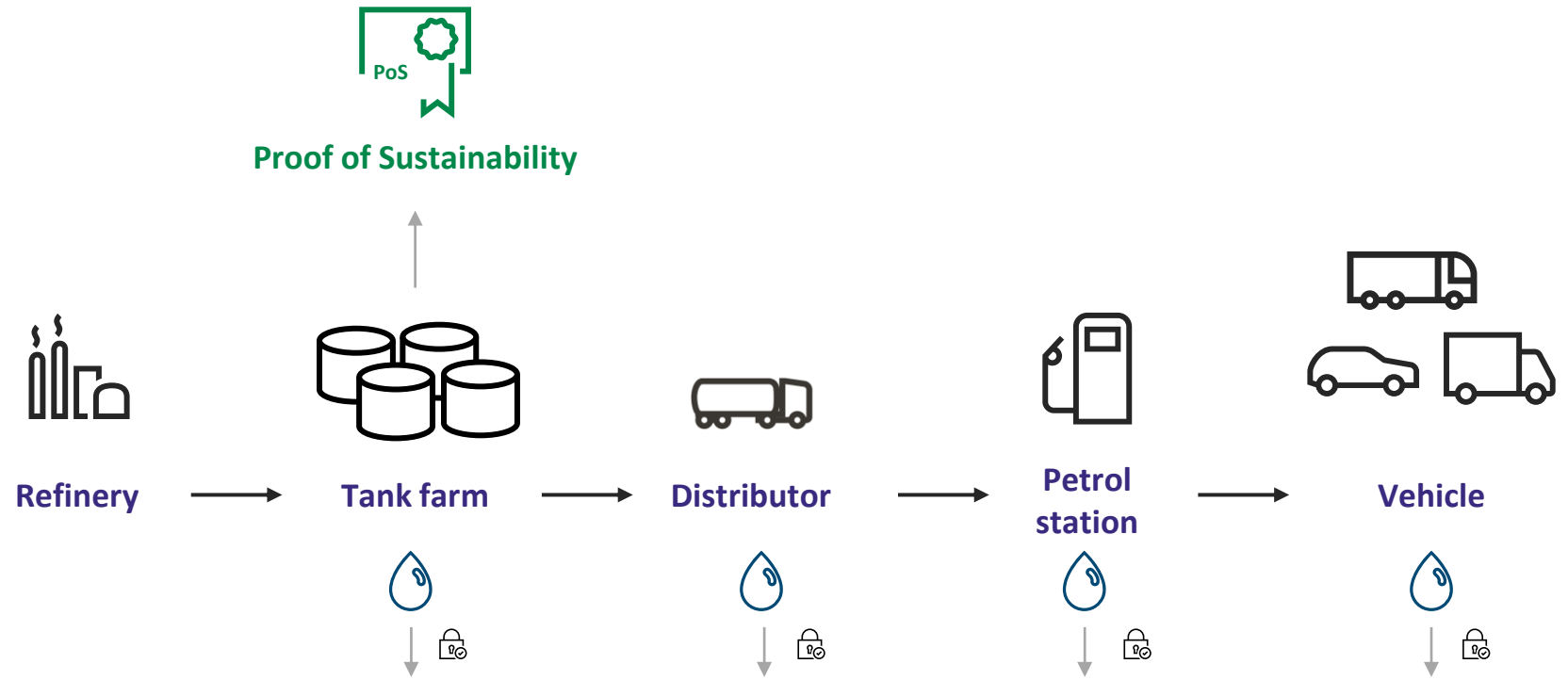
- Fuelling monitor:
  the infrastructure is deployed for a tampering-proof software solution which provides the information about the refilled fuel type to the vehicle

- Outlook: “Inducement”
  if fossil fueling is detected, a sanctioning mechanism can be triggered

Financial Compensation		Maximum Mileage Allowed	
Progressive Performance Reduction		Prevention to Start Engine	
others	many other options are thinkable		

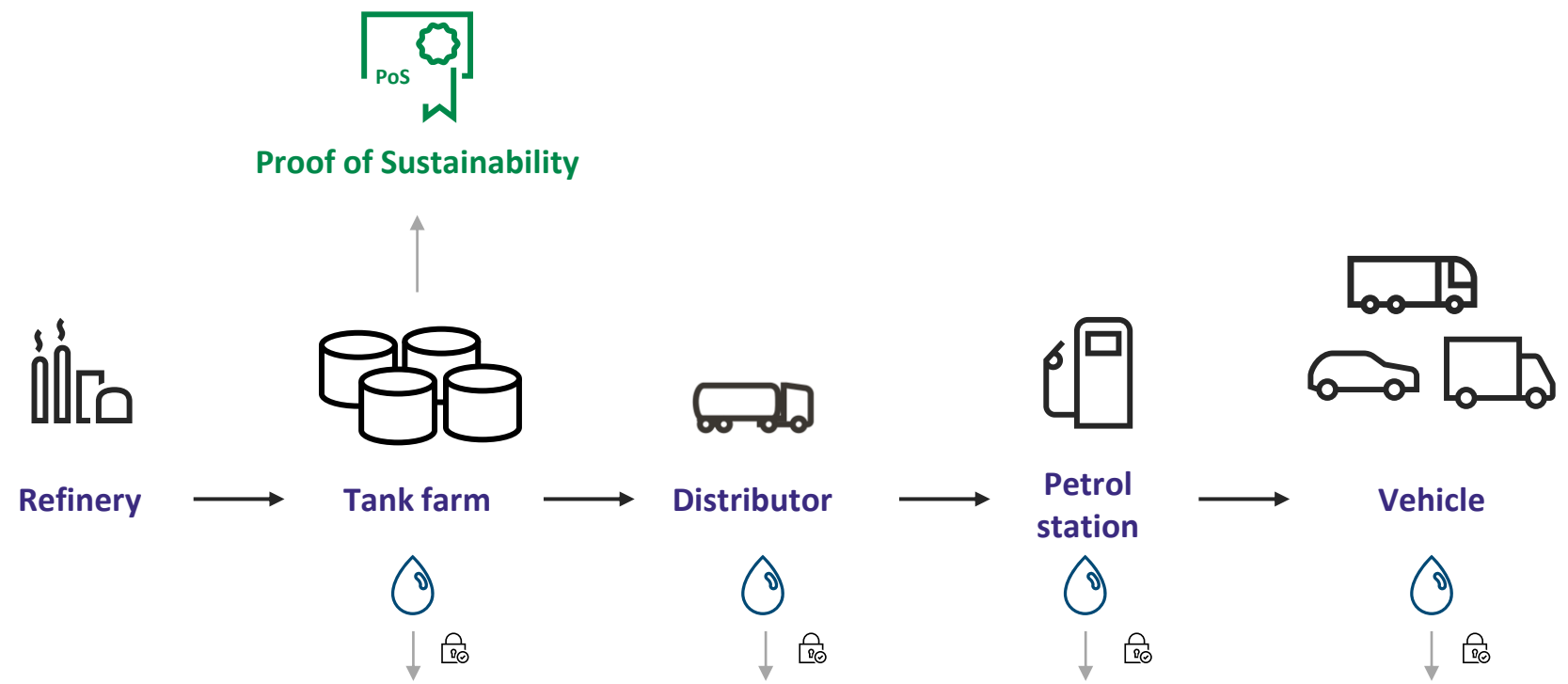
Inducement is not part of Tour d’Europe, but can be part of a follow-on project (e.g. with OEM’s)

Monitoring and certifying the use of renewable fuels



Digital Fuel Twin (DFT) platform and services:
Along the supply chain, a digital tag is attached to every step of fuel delivery

Monitoring and certifying the use of renewable fuels



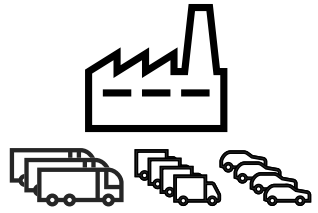
Digital Fuel Twin (DFT) platform and services:
Along the supply chain, a digital tag is attached to every step of fuel delivery

Lawmaker

CO_2 emissions & savings report

"Carbon-Neutral Fuels Only" vehicle (CNFO)

"fossil / renewable" signal for sanctioning fossil refuelling ("inducement")



Fleet operator

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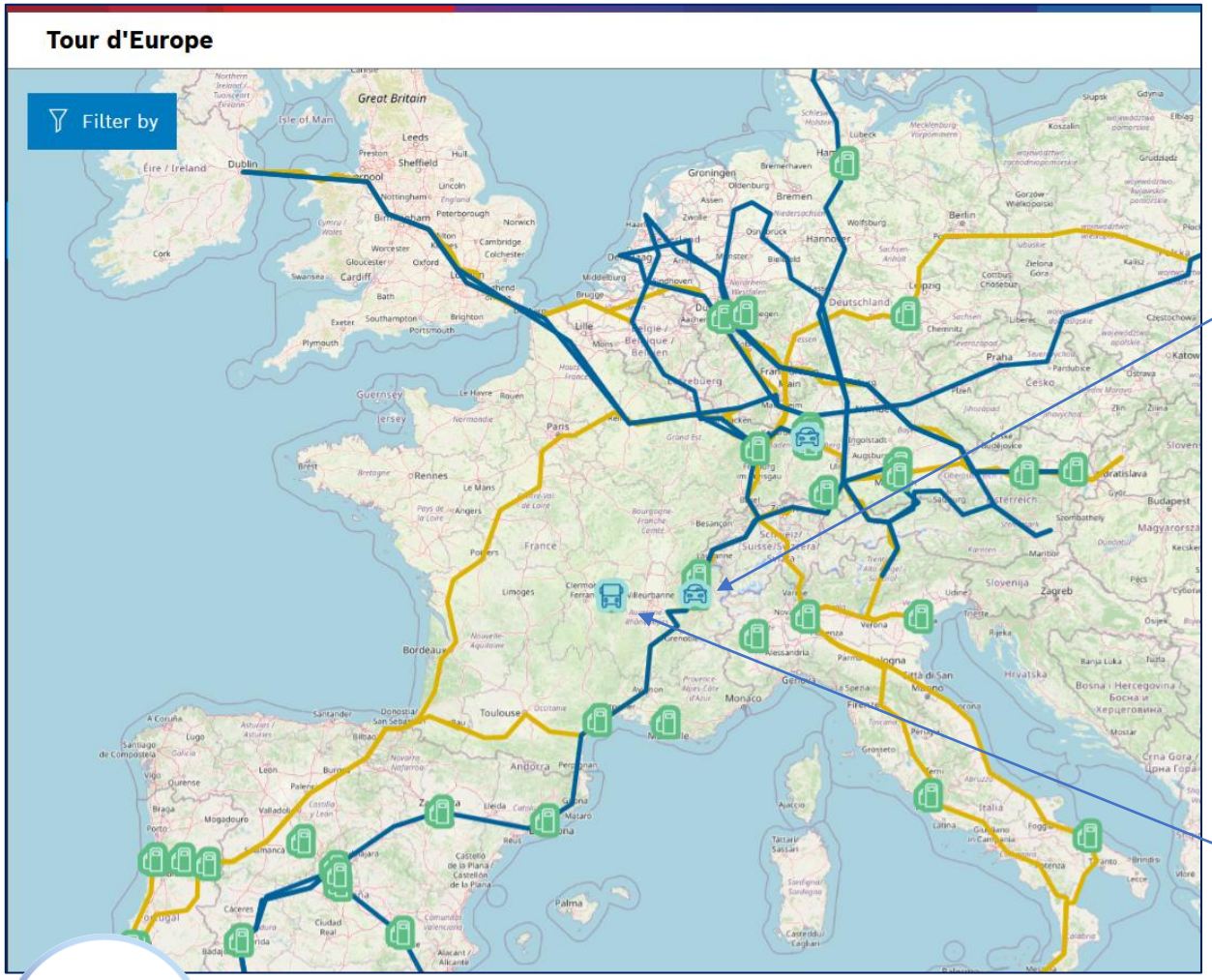
Digital Fuel Twin

BOSCH



DTAG_ACTROS5_TdEU

Fuel type:	**Diesel**
Vehicle segment:	**Heavy Duty**
Refuel amount:	**1162.35 l**
Saved CO2 (REDII):	**3330.13 kgCO2eq - 85.01 %**

Last Refueling Events:

Timestamp	Quantity	Coordinates	Mileage	Inducement Rec.
2025-03-27, 12:06	69.29 L	45.8552, 3.8119	5999 km	GO
2025-03-26, 11:05	60.36 L	41.6096, -0.8819	5007 km	GO
2025-03-25, 16:31	15.65 L	40.4610, -3.7580	4674 km	GO
2025-03-25, 14:59	69.29 L	40.4611, -3.7582	4673 km	GO
2025-03-24, 16:14	33.53 L	40.2970, -3.6919	4357 km	GO

VW_GOLF8_TSI_TdEU

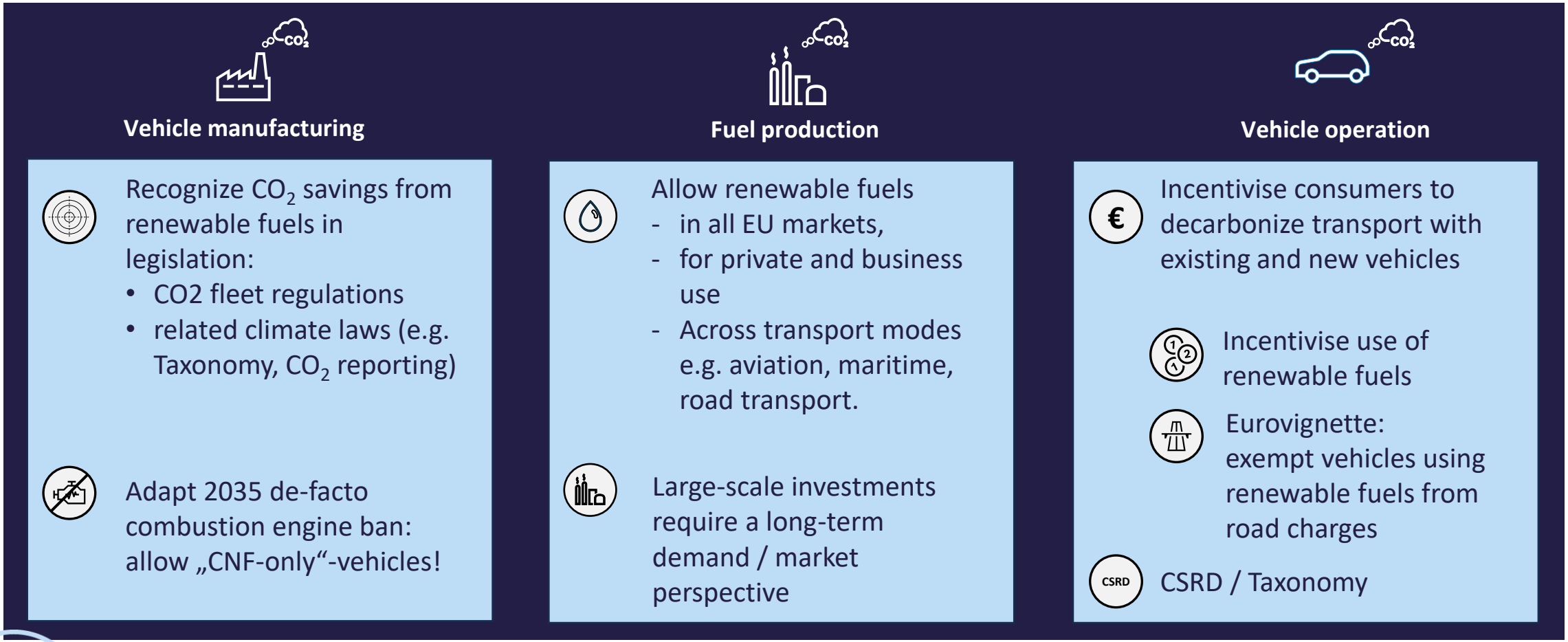
Fuel type:	**Gasoline**
Vehicle segment:	**Passenger Car**
Refuel amount:	**256.56 l**
Saved CO2 (REDII):	**138.29 kgCO2eq - 18.48 %**

Last Refueling Events:

Timestamp	Quantity	Coordinates	Mileage	Inducement Rec.
2025-04-03, 13:40	14.29 L	48.8129, 9.1793	6751 km	GO
2025-03-29, 09:42	19.41 L	47.0826, 8.3077	6464 km	NO_GO
2025-03-27, 17:30	32.47 L	43.7320, 7.4180	5848 km	NO_GO
2025-03-27, 09:40	34.23 L	41.1152, 1.2222	5066 km	NO_GO
2025-03-25, 16:02	38.82 L	40.4612, -3.7580	4479 km	GO

Tour d'Europe
DRIVING DECARBONISATION WITH RENEWABLE FUELS

What is needed for renewable fuels to contribute to climate targets



CNF = carbon-neutral fuel
CSRD = Corporate Sustainability Reporting Directive