EUROPEAN ENERGY FORUM
Online Briefing Session

Exploring low-carbon liquid fuels in transport: from production to applications

In cooperation with the EEF Associate Members

eni ExxonMobil FuelsEurope NESTE TotalEnergies

Chatham House Rule

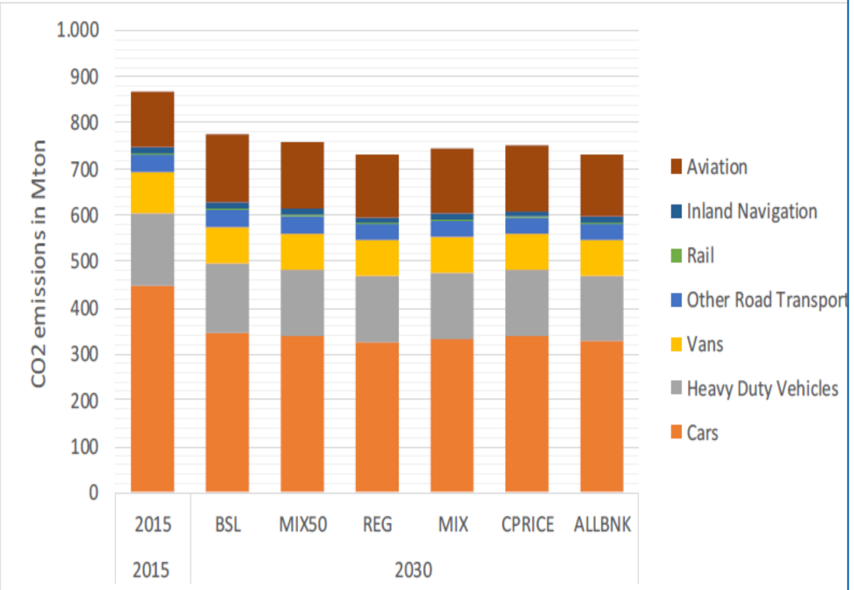
@EEF_EnergyForum #EEF_BriefingSession

I – Low-carbon liquid fuels

Presented by **Alessandro Bartelloni**, Director, FuelsEurope
Alain Mathuren, Communication Director, FuelsEurope and Concawe
Emanuela Sardellitti, Advocacy Executive, FuelsEurope

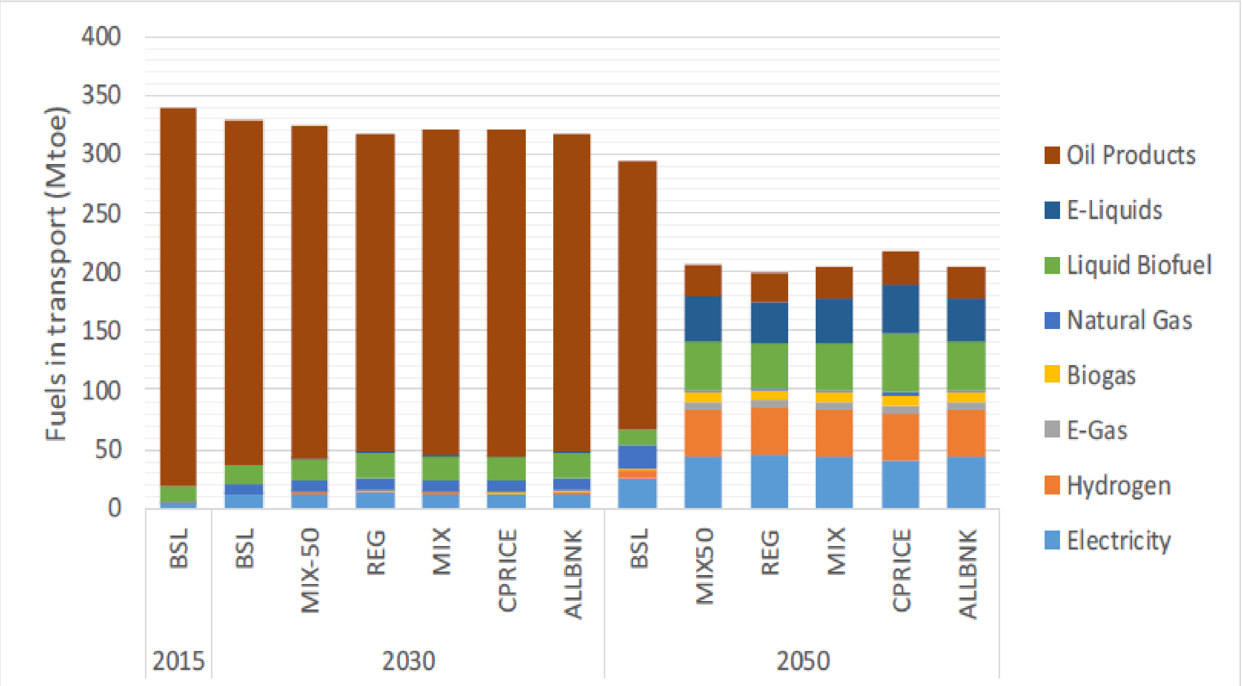
Today's transport energy mix & emissions

Figure 64: CO_2 emissions from Transport



Source: EU Commission – Impact Assessment – Stepping up Europe's 2030 Climate Ambition – Sept 2020

Figure 63: Fuels in transport (including aviation and maritime navigation)



What are “Low-Carbon Liquid Fuels”?

Liquid fuels – mostly of petroleum origin - have been fuelling transport for over 100 years:

- Unrivalled energy density,
- Ease and safety of use,
- Ease of distribution and storage for all transport sectors,
- The existence of an extensive and resilient infrastructure across Europe for their production.

⇨ **FOR TRANSPORT TO CONTRIBUTE TO CLIMATE NEUTRALITY, FOSSIL FUELS NEED TO BE REPLACED BY LOW-CARBON FUELS**

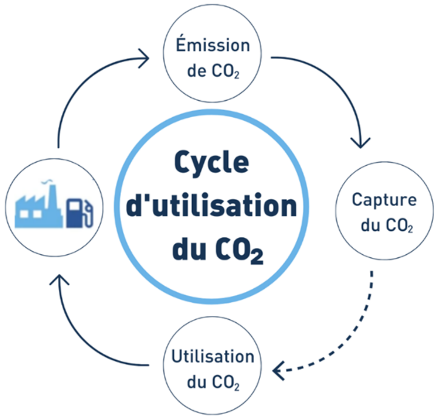
Low-carbon fuels are renewable and sustainable liquid fuels from non-petroleum origin.

- These fuels are produced in a sustainable way from municipal or organic waste, sustainable biomass, renewables and circular CO_2.
- They emit little or no additional CO_2 during their production and use.

Terminology

Drop-in fuel: non-fossil fuels that are physically and chemically identical to conventional (fossil) fuels, and consequentially can be handled / transported / used without need to adapt procedures, infrastructures, specifications and engines.

Low-carbon / zero-carbon liquid fuels: the two definitions apply to the same fuel depending on the methodology. In a "tail-pipe" approach, a renewable fuel is **zero-carbon**, as it emits only recycled (circular) CO2[(1)].
For example, in the ETS, the CO2 from biomass is considered zero CO2.
In a "well-to-wheel" approach, the production phase of the renewable fuels generate some CO2 (similar to the generation of electricity) and is therefore called **low-carbon**.



(1) Either absorbed by plants or captured directly from the air, or from another emission source, this recycled carbon when emitted does not increase the concentration of CO2 in the atmosphere.

What feedstock for low-carbon liquid fuels from biomass?

Renewable low-carbon liquid fuels are produced from non-food feedstocks, such as lignocellulosic biomass, which includes wood and forest residues, agricultural residues and waste (e.g. industrial waste like non-recycle plastics, used oils and fats - e.g. cooking oils - or solid waste).

Used cooking oils

Forestry residues

Agriculture residues

Organic waste

Sustainable biofuels such as Hydrotreated Vegetable Oils, Biomass-to-Liquid and Waste-to-Liquid.

Different technological routes exist:

- Fermentation (Ethanol),
- Hydrogenation (hydrotreated vegetable oils),
- Transesterification of waste oils and fats (FAME), and branches,
- Thermochemical conversion such as BTL (gasification and Fischer-Tropsch synthesis) or hydrothermal pyrolysis/liquefaction (HTL).

What feedstock for low-carbon liquid fuels from renewable energy?

Renewable low-carbon liquid fuels, also called synthetic fuels (eFuels) from Power-to-Liquid are produced from renewable energy such as:

Wind

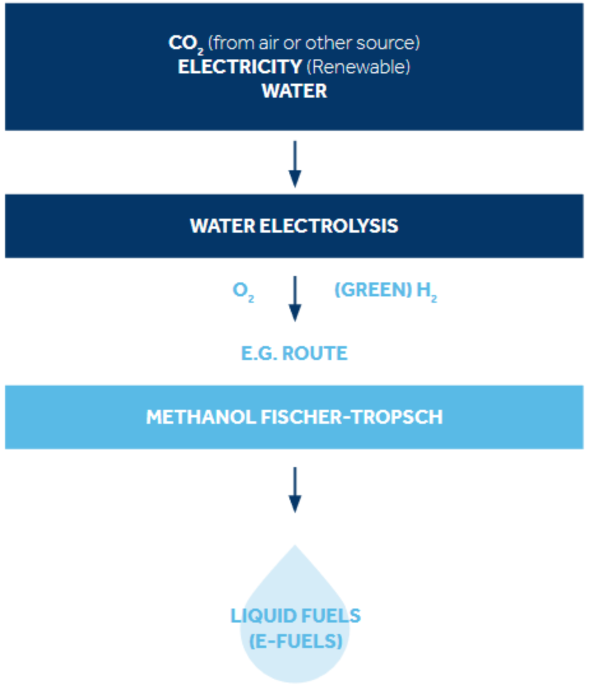
Solar

Hydro

Technology: Electrolysis of water and fuel synthesis *(e.g. Fischer-Tropsch, methanol)*.

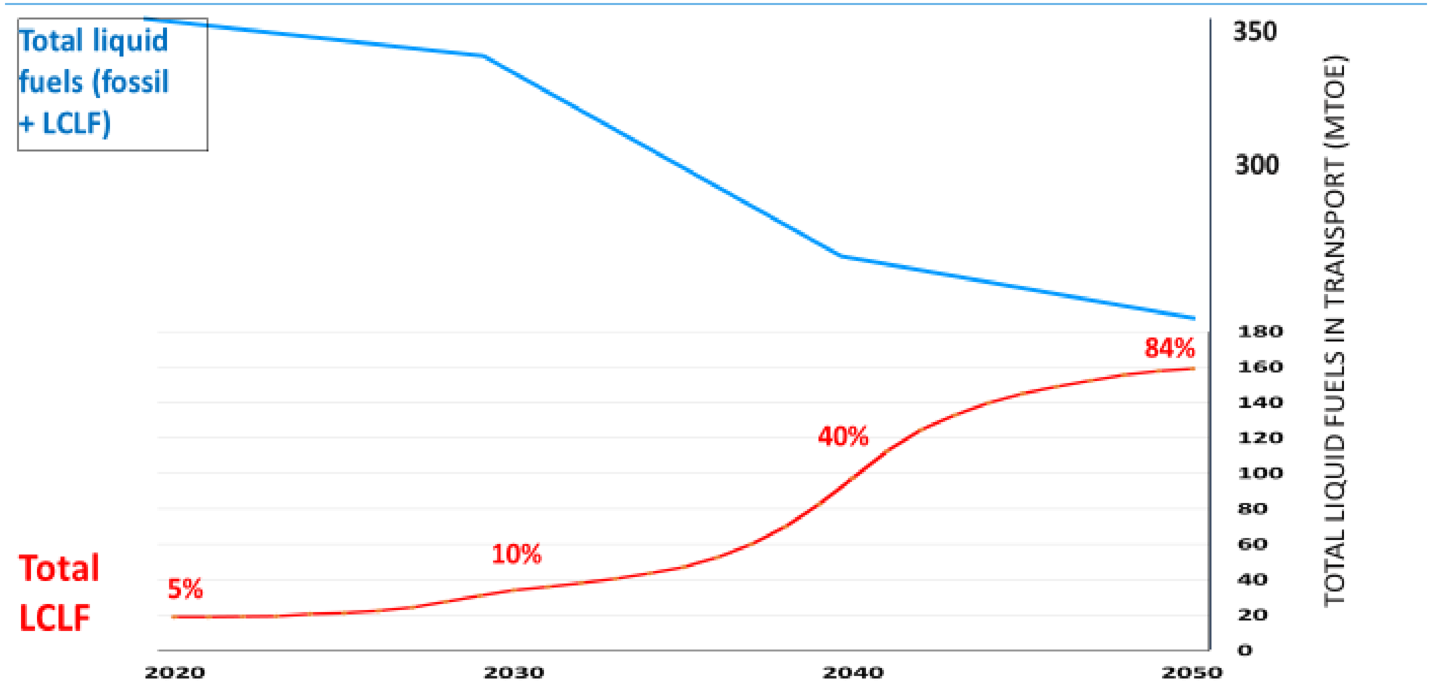
Synthetic fuels (e-fuels) are produced from green hydrogen produced by electrolysis of water, using renewable electricity and carbon dioxide (CO2) captured either from a concentrated source (flue gas from an industrial site) or from the air (direct air capture).

Recycled CO2



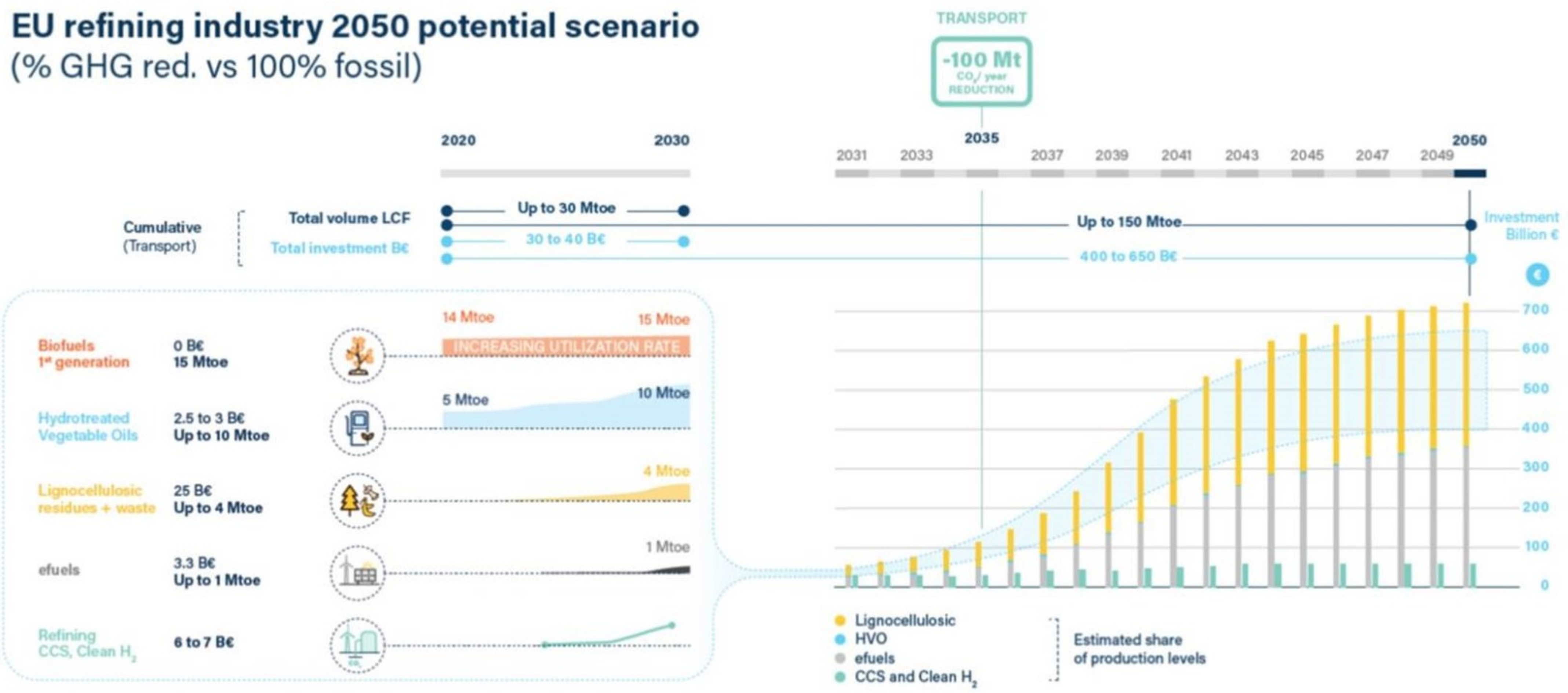
What is the sector potential?

- The EU refining industry's potential pathway to achieve climate neutrality by 2050 in all transport modes.
- By 2050 at the latest, every litre of liquid fuel for transport could be net climate neutral, enabling so the decarbonisation of aviation, maritime and road transport.
- Up to 650 bln€ investment over 30 years.



FuelsEurope's elaboration, based on Concawe's scenario assuming LCLF in all transport modes.

What is the sector potential?

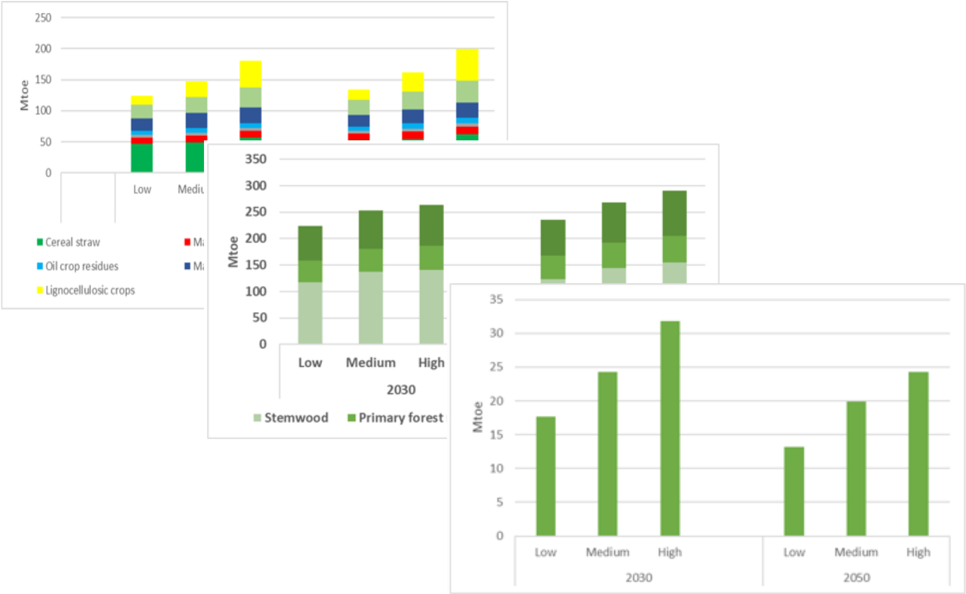


A detailed look into agriculture, forestry, bio

Estimated sustainable biomass potential for all biosectors

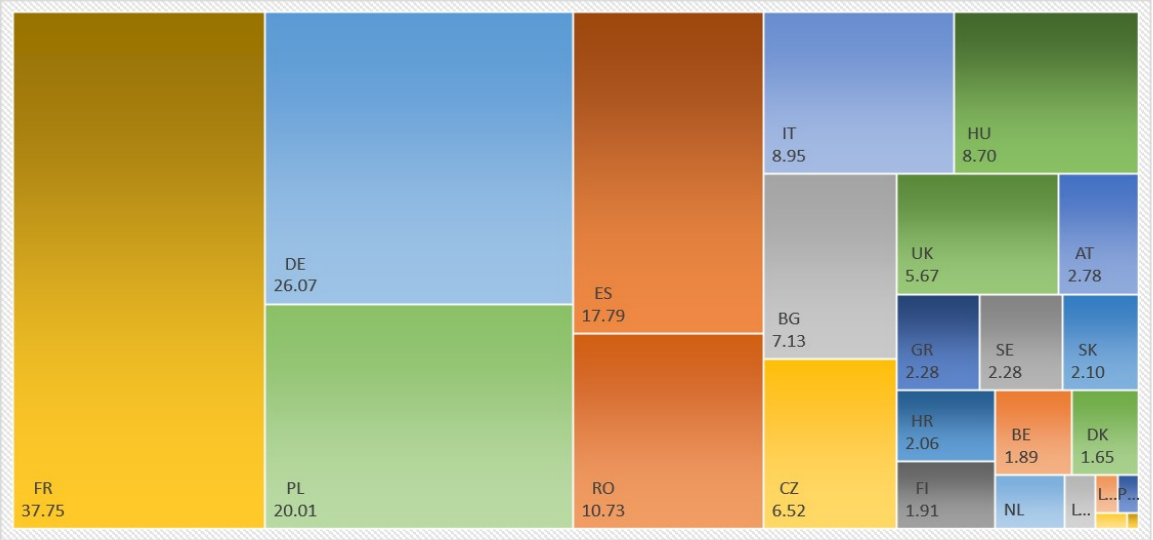
Source: Imperial College London Consultants study for Concawe, 2021

Estimated biomass potential across EU Economy



Regional distribution per category

Example. Regional distribution for agriculture



All biosectors

Bioenergy
Biobased products

ALLOCATION

Subtracting allocation to biobased products

Bioenergy

Power
Industry
Building
Service & Agriculture
Transport sectors

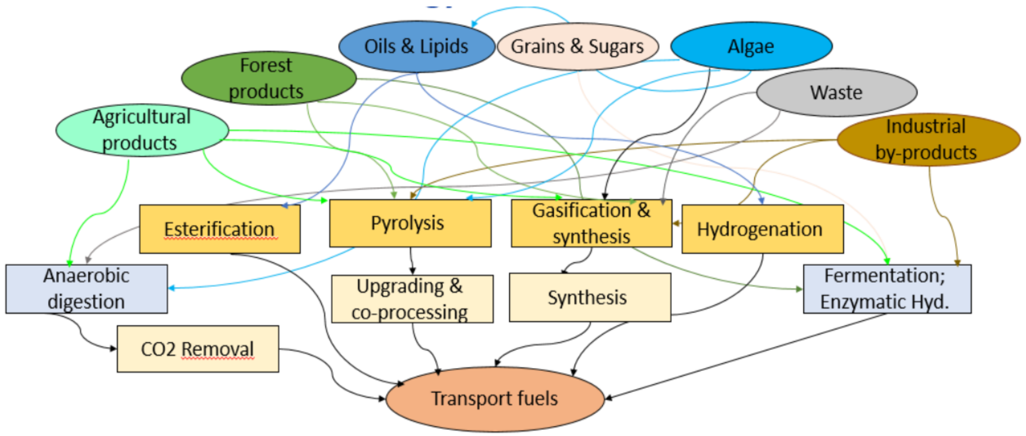
Advanced biofuel production potential

Source: Imperial College London Consultants study for Concawe, 2021

Technologies and maximum adv. Biofuel potential

A max. biofuels potential scenario has been estimated taking into account:

1. The sustainable **biomass availability** per type of feedstock for all **bioenergy** sectors (2030 / 2050 Low / High scenario)
2. The available technologies for advanced biofuels per type of feedstock and TRL in a given timeframe
3. The **max conversion yields** per type of biomass & feedstock (including conversion efficiency maximization due to H_2 enhancement)



No allocation to transport has been done in the absence of an economic model

Biofuel equivalent (MAX YIELD SCENARIO)	Feedstock	Max potential adv biofuel availability (2030)	Max potential adv biofuel availability (2050)
HVO	Waste oil and fats	2	2
	UCO	3	6.5
Cellulosic ethanol	Agricult.residues (straw-like)	21-26	N/A
	Lignocellulosic crops	5.5-16	6.5-19.6
Gasification + FT	Biowaste	9-17	13-24
	Solid industrial waste	28-40	57-84
	Agricult residues (straw-like)	0	54-62
	Agricult residues (woody)	1	2-3
	Lignocellulosic crops (woody)	8-23	17-51
	TOTAL liquid biofuels – All bioenergy	**80-130**	**160-250**

Transition to low-carbon liquid fuels initiatives

FuelsEurope's members pursue a wide range of low-carbon initiatives across at least 12 Member States in different phases of the project cycle, including CCUS, E-Fuels, Green H2, Advanced biofuels, bio-refinery conversions, waste to fuel, etc.

- Well over 20 projects for low-carbon liquids have already been started or are planned until 2030 (in the public domain).
- Projects facilitate industrial clustering though links with Chemicals, Recycling, Steel and Cement Industries, …
- Scaling up and increasing the overall number of projects will be possible with the right enabling framework in place.

Provisional examples*:

- **19 Advanced biofuel projects**, with capacities between 100.000 and 750.000 tonnes of output.
- **12 CCUS projects**, up to 6 mt. of capacity for CO2 sequestration.
- **5 Green Hydrogen Projects**, some of which lower the GHG intensity of manufacturing processes, others combine the green H2 with captured carbon to produce synthetic fuels with a capacity of up to 3.4 million tonnes of output per year.
- **3 Waste-to-fuel projects**, with a capacity of up to 100.000 tonnes per year in output (derived from urban waste).

9.3 MT

Potential quantity of low-carbon liquid fuels produced per year in 2030

29

Projects in Europe

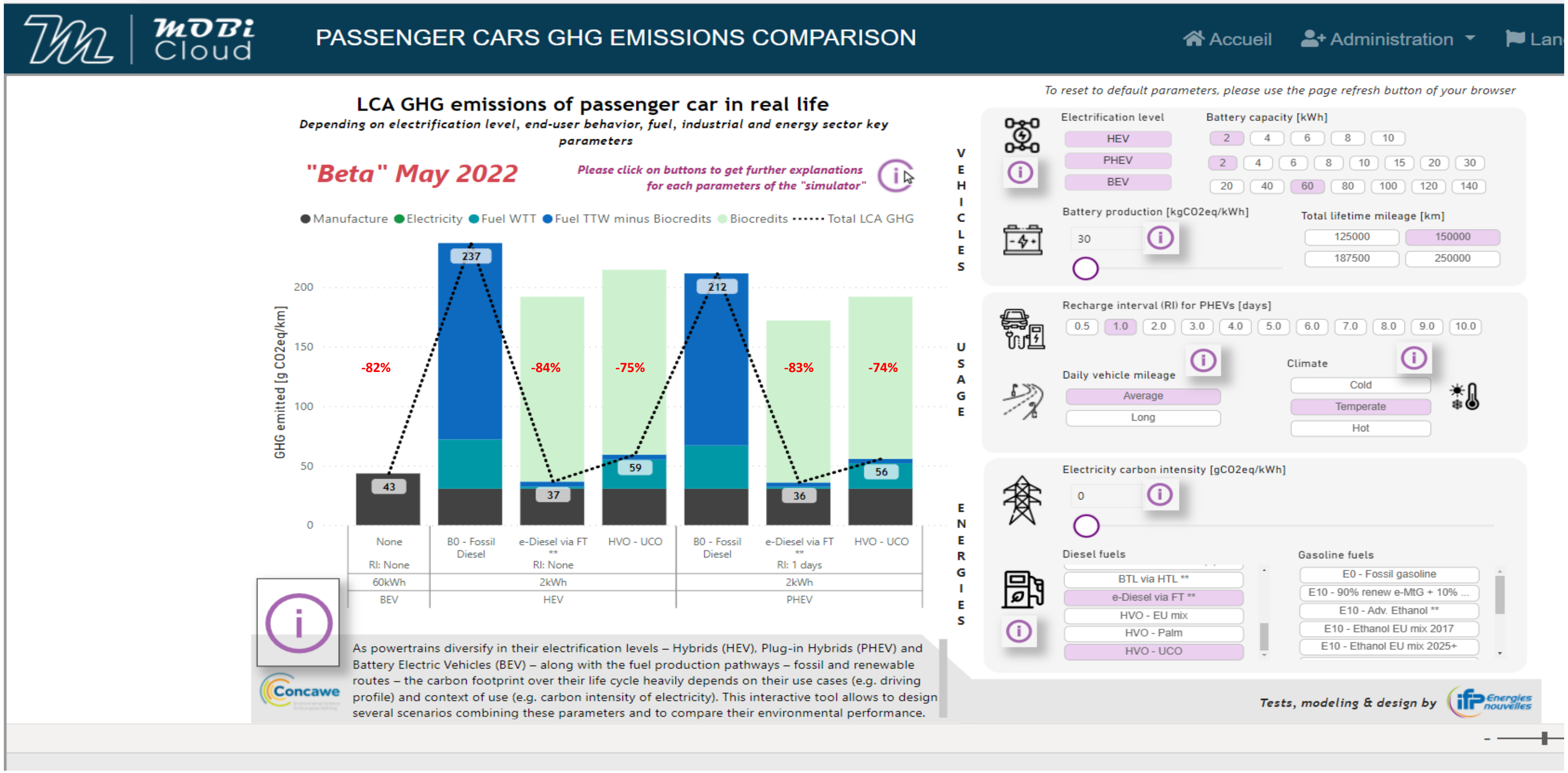
See more:
https://www.cleanfuelsforall.eu/towards-climate-neutrality/

https://www.concawe.eu/low-carbon-pathways/

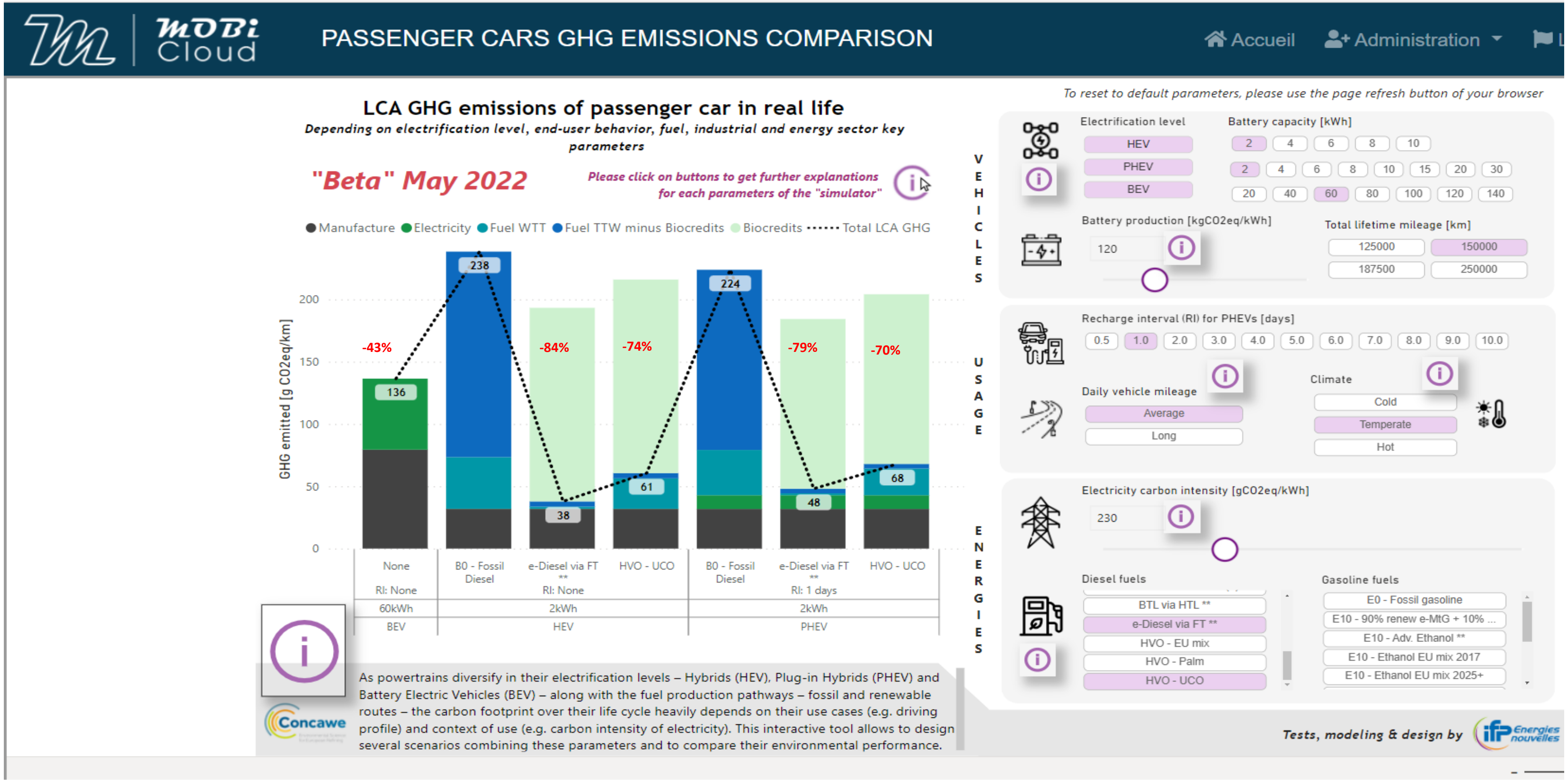
*While the final list of projects may differ from the map or the list shown here, these projects are being considered by FuelsEurope's members to be put forth for support under the EU Recovery Fund.

**9.3 MT figure based on publicly available data, but the actual number is expected to be +/- 10MT for potential quantity of low-carbon liquid fuels produced per year in 2030.

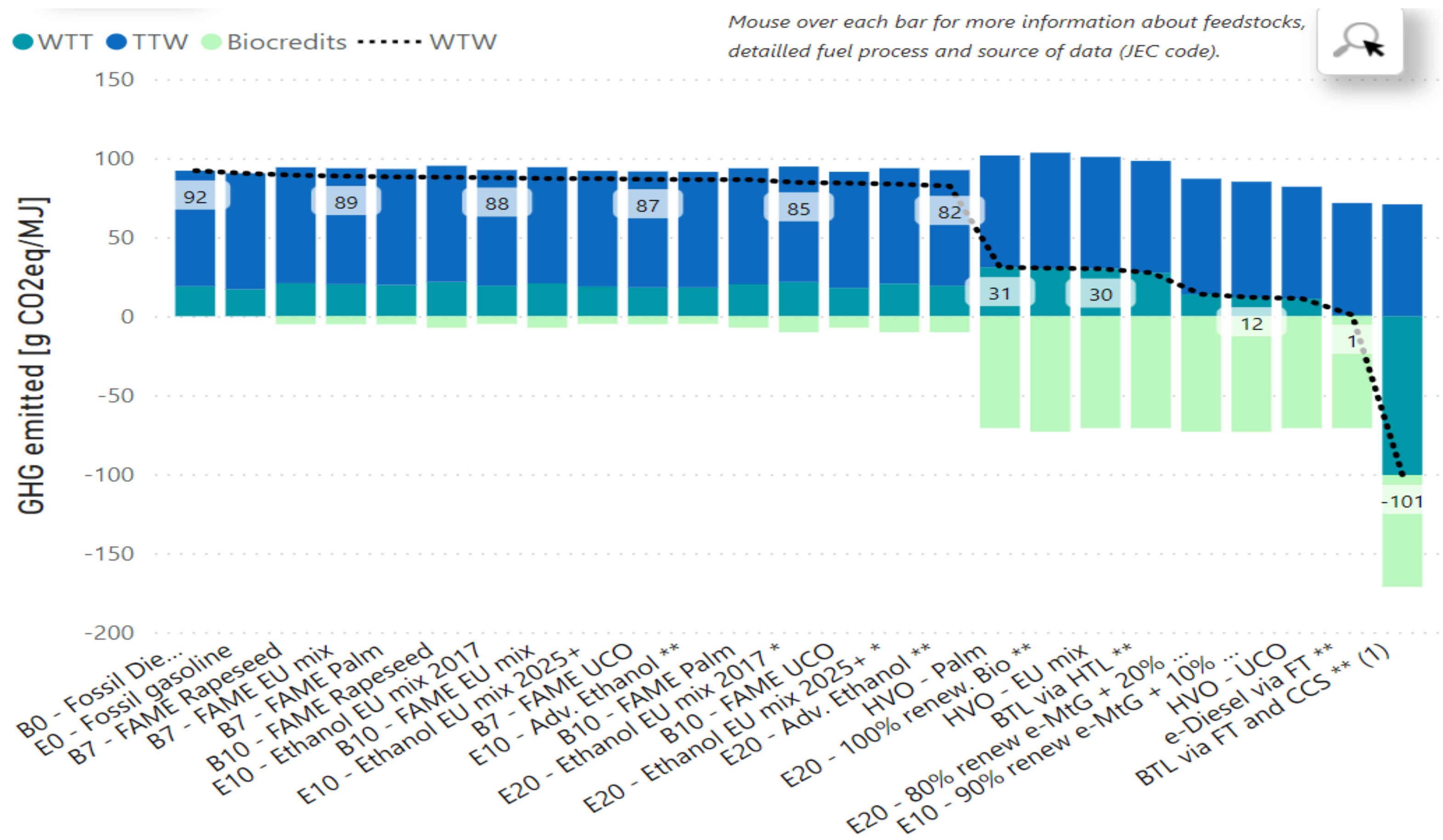
GHG Emissions: Comparison between BEV, HEV & PHEV EU mix 2050



GHG Emissions: Comparison between BEV, HEV & PHEV EU mix 2022



GHG Emissions: life-cycle assessment of liquid fuels performance

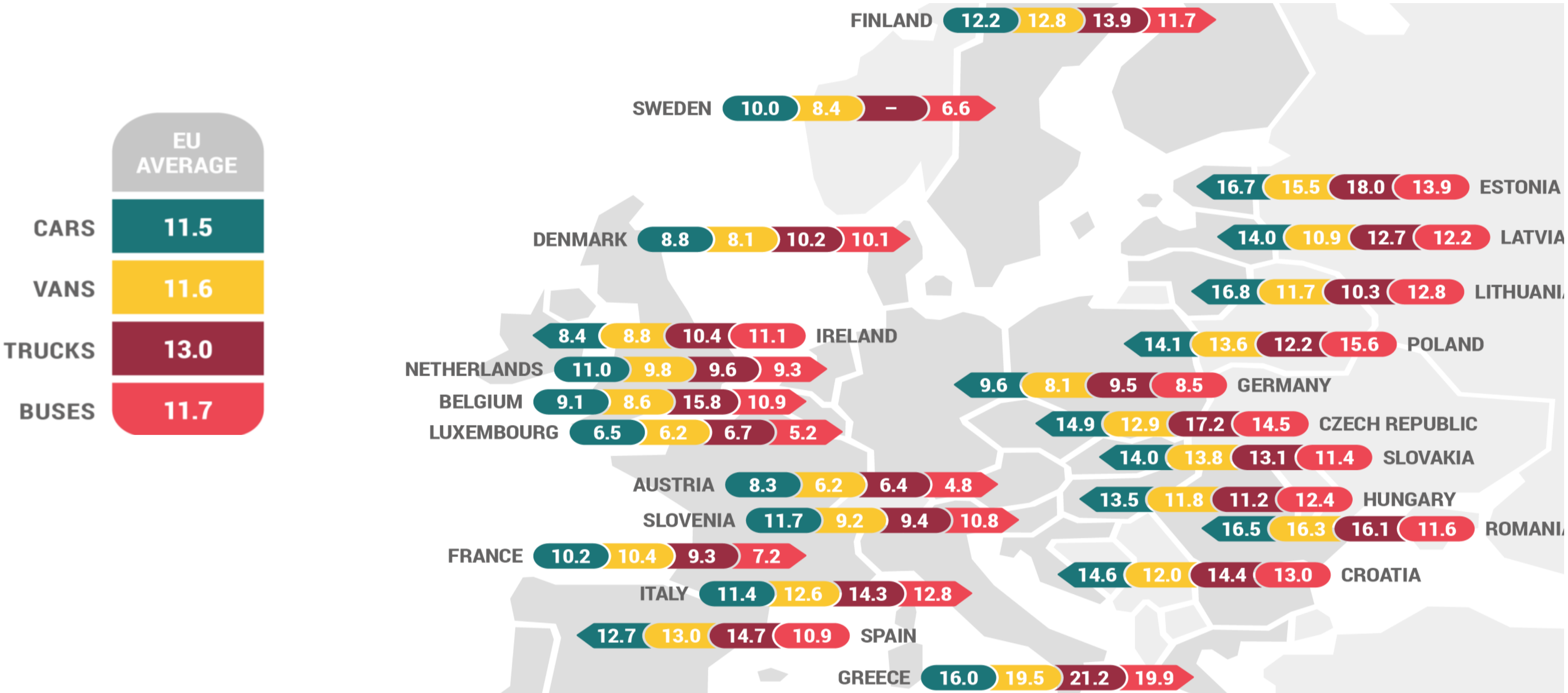


Sources of data : JEC report v5 2020
https://publications.jrc.ec.europa.eu/repository/handle/JRC119036

The role of existing fleet

- The internal combustion engines will remain an important component of the car park in the future.
- The assumption that the progress in GHG reductions in road transport utterly depends on the pace of electrification of the passenger road segment neglects two factors:
  - **The expanding European used-car market and**
  - **The growing average age of the EU fleet (the average age of cars in use is of 10 years but a recent ACEA study shows that the average lifespan of a car is even increasing).**
- **LCLFs immediately contribute to the GHG emissions reduction of the existing fleet:**
  - **By providing flexibility and alternative sources of low-carbon energy using mainly existing facilities, as countries will complete fleet turnover at different paces, LCLFs will support a just transition across Europe.**
  - **Over time, LCLFs volumes will shift to the aviation and maritime sectors, making LCLFs early contributions to decarbonizing road transport a stepping stone for their availability for hard-to-abate transportation sectors.**

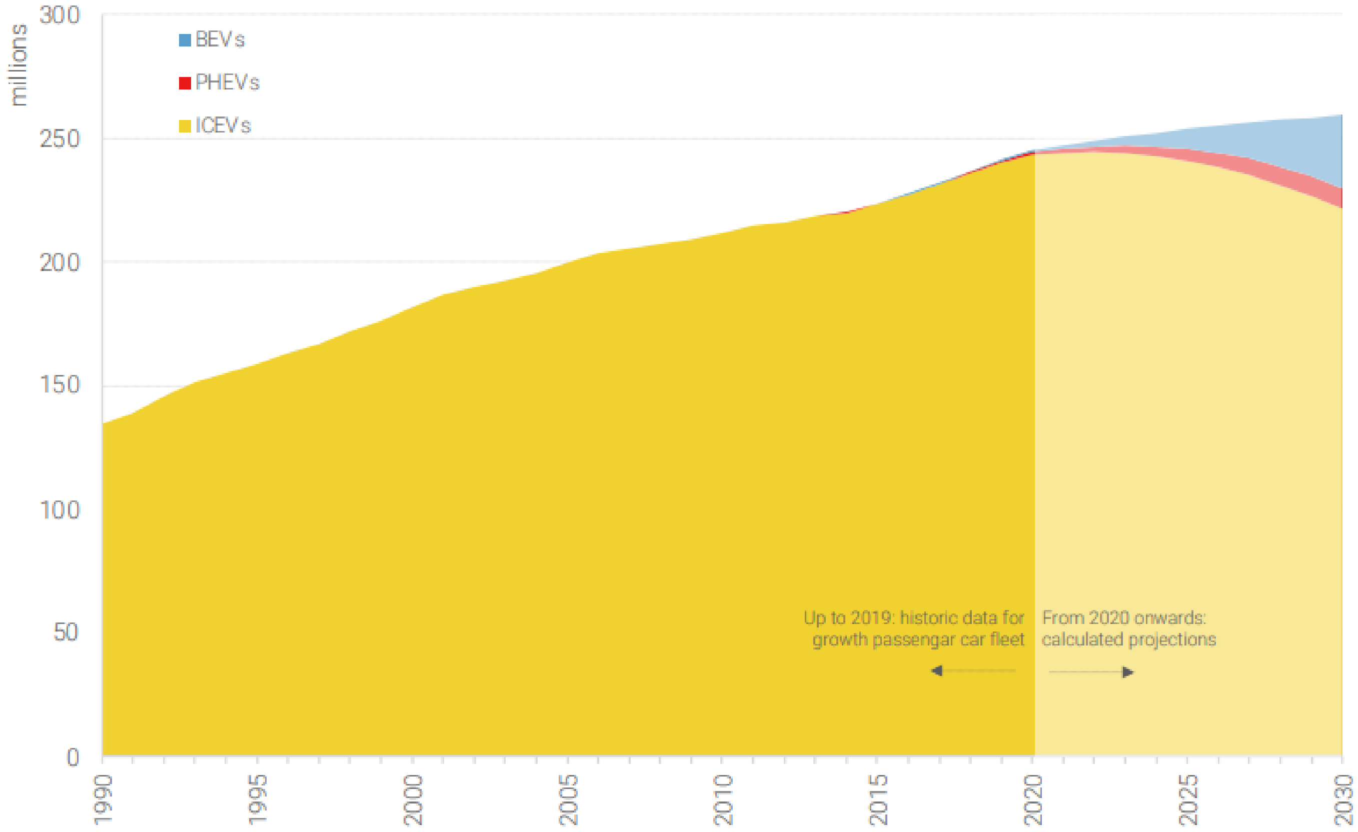
Average age of EU Vehicle fleet – 2019



(source: ACEA, Automobile Industry Pocket Guide 2021-2022)

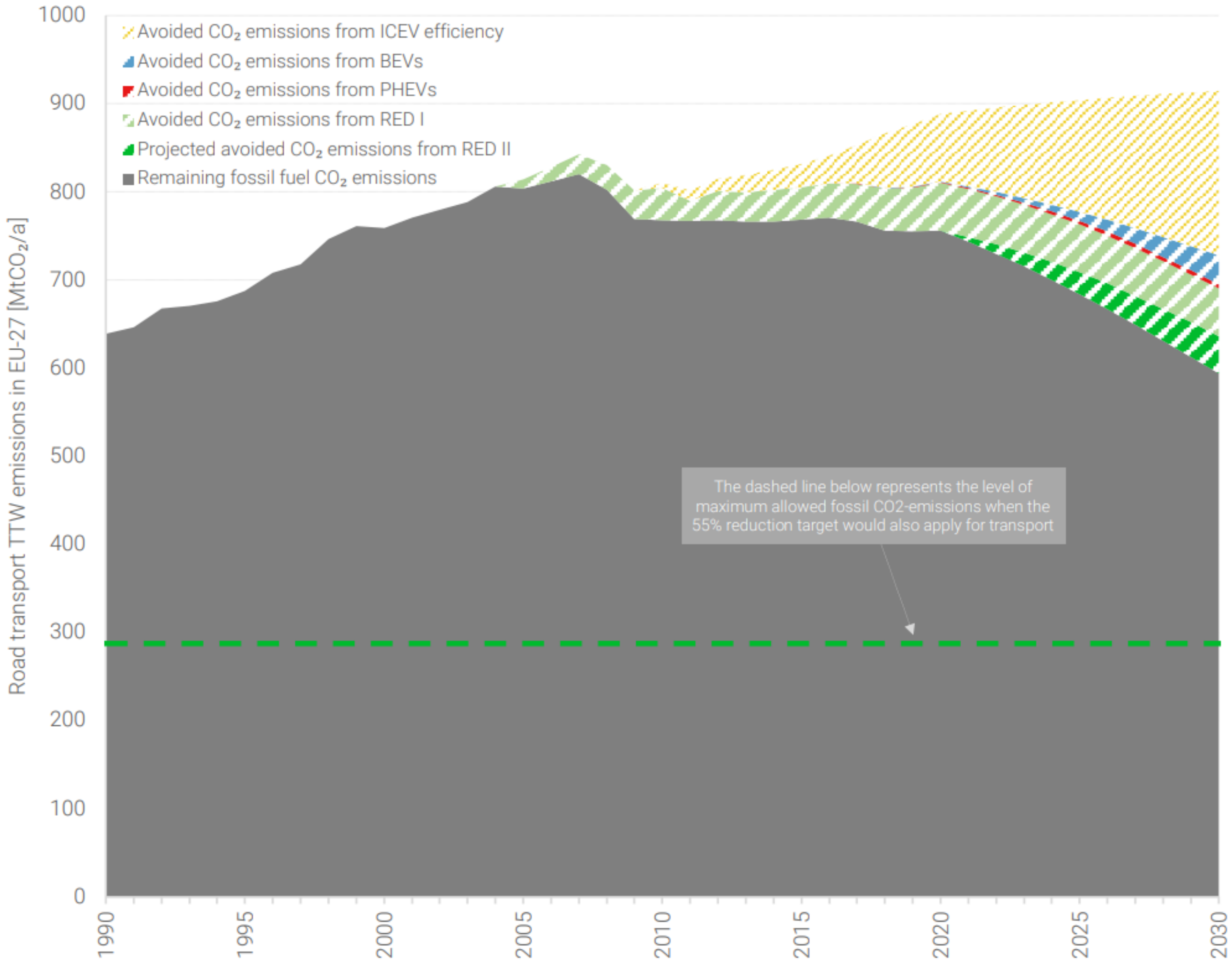
Implications of the CO2 regulation for light duty vehicles (LDVs)

Impact of 30 million BEV on a total park of app. 250 million passegner vehichles in the 27 Member States.



- The **share of BEVs by 2030 will remain small.**
- When/if the intensified CO2 regulation will be adopted, from 2035 onwards the share of BEVs is expected to be higher.

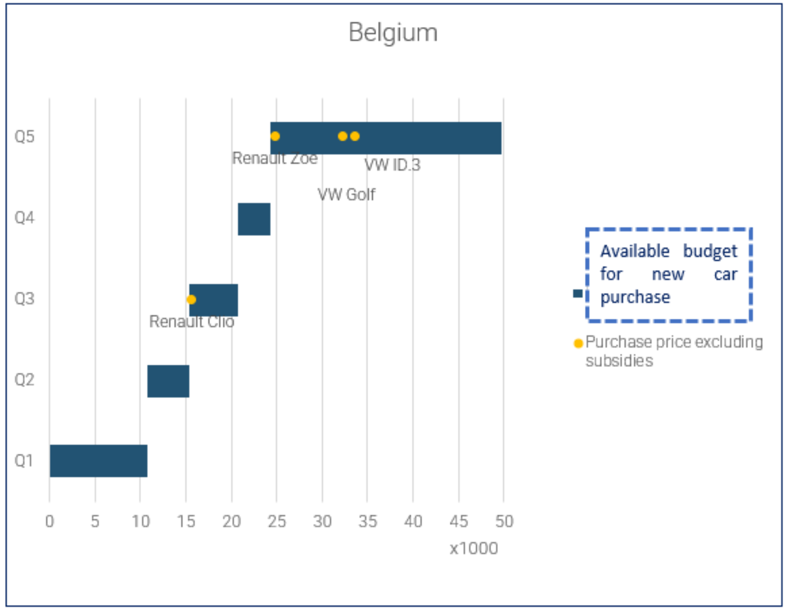
Implications of the CO2 regulation for light duty vehicles (LDVs)

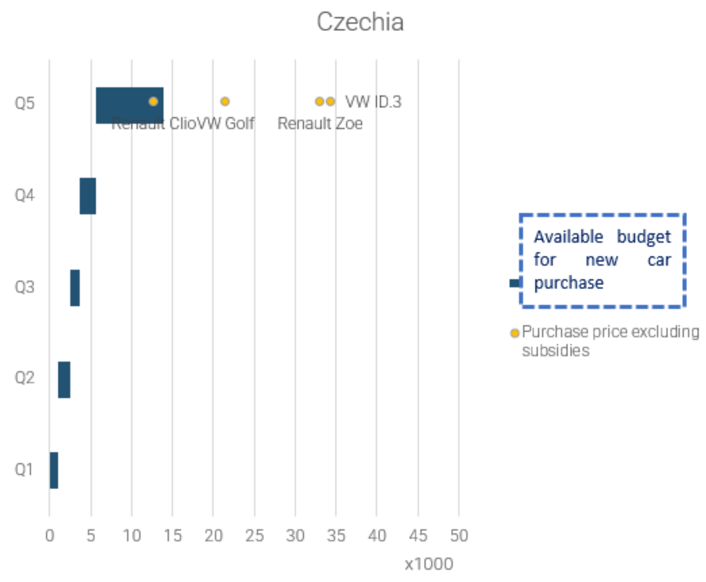


Low-carbon liquid fuels: some considerations on affordability

FuelsEurope comitted to *studio Gear Up* , an independent consultancy firm, a study on «Low carbon mobility with renewable fuels» to investigate the contribution of LCLFs to the decarbonisation of the transport sector and the affordability of battery-electric vehicles in the EU (2021_sGU_Low-carbon mobility with renewable fuels_DEFc (fuelseurope.eu))

National Income Quintiles
vs
Affordability of ICE and EV cars





New cars, especially EVs, are less affordable for citizens in CEE countries, resulting in slower fleet turnover.

Source: Affordability of Battery-Electric Vehicles in the EU, Studio Gear Up, September 2021

The role of the incentives in the EV market (purchase costs)

The Study shows that the comparison of the Total Cost of Ownership (TCO) between Electric Vehicles (Evs) and Internal Combustion Engines (ICEs) is currently influenced by the subsidy schemes, whose long-term continuation is subject to Member States' financial capability.

With incentives

Without incentives

Conclusions on the Affordability

- New cars are not accessible to all citizens.
  In **Western EU Countries** around 40%-60% of the population is able to afford a new car, while in **Central & Eastern EU Countries** less than 20% of the population is.
  This means that a large part of the population in some Countries drive second-hand vehicles.

- Affordability differs across social groups: for the majority of private consumers in the EU-27 market, the initial purchase cost of a new BEV is currently beyond their financial capabilities. The differences in affordability across Europe may negatively impact the inclusiveness of the transition to a lower-carbon transport sector.

- LCLFs will give customers a choice between low-carbon technologies, ensuring that low-carbon transport is accessible to all.

Q&A

II – Low-carbon liquid fuels in the EU: state of play

A holistic approach to sustainable mobility

Presented by **Michele Viglianisi**
Head of biorefining and supply
Eni Spa

A holistic approach to sustainable mobility

TRANSPORT GHG EMISSIONS → 25% of global GHG emissions

Source: IEA 2021

SEVERAL SOLUTIONS, A NEUTRAL APPROACH

LIGHT DUTY
- Urban areas: Electrification
- ExtraUrban: CNG/BioCNG, Biofuels HVO

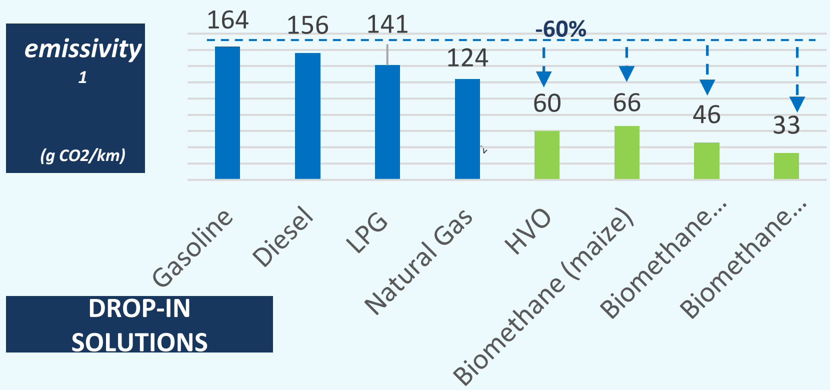
HEAVY DUTY
- Short term: Biofuel (HVO), Bio-CNG, Bio-LNG,
- Long term: Hydrogen

SHIPPING
- Short term: Biofuel (HVO), Bio-LNG,
- Long term: Hydrogen, Ammonia

AVIATION

Sustainable Aviation Fuels (SAF)

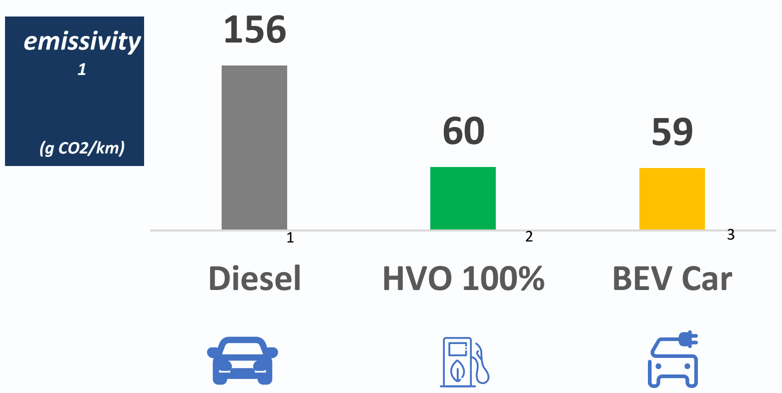
FUELS WELL TO WHEEL CO_2 SPECIFIC EMISSION



DROP-IN SOLUTIONS

CURRENTLY MIXED IN THE EXISTING INFRASTRUCTURE

BIOFUELS ALLOW GHG REDUCTION SIMILAR TO EV VEHICLES



1) Source: Biogas for road vehicle. Irena except for HVO internal calculation 2) Hydrotreated Vegetable Oil, GHG emissions calculated: feedstock basket reduction of 65% 3) WTT emissions related to EE production are calculated considering Italian energy mix

HVO – an immediate solution for sustainable mobility

ENI BIO-REFINERY SYSTEM

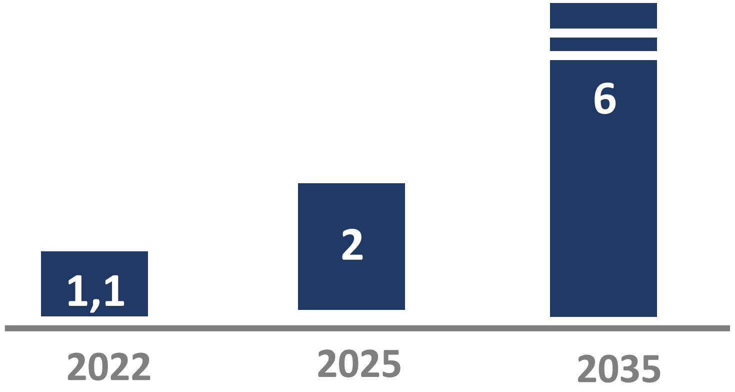
VENICE BIO.REFINERY (2014)

- **Capacity:** 360 kt/y (550 @2024)
- **Products**: Renewable Diesel, Ren, Naphtha and LPG

GELA BIO.REFINERY (2019)

- **Capacity:** 750 kt/y
- **Products**: Renewable Diesel, Ren, Naphtha, LPG, SAF (@2024)

EXPANSION STRATEGY – ORGANIC GROWTH (Mln t/y)



From sustainable feedstock to sustainable biofuels thanks to bio-refinery

FEEDSTOCK


Vegetable Oils


UCO
(Used Cooked Oil)

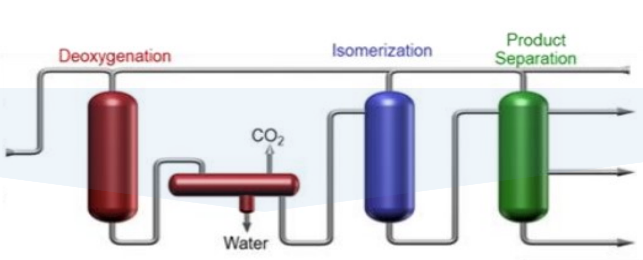

Animal fats

Advanced feedstock

PALM OIL FREE @2023

ECOFINING PROCESS

Eni and UOP developed the ECOFINING™ Process:

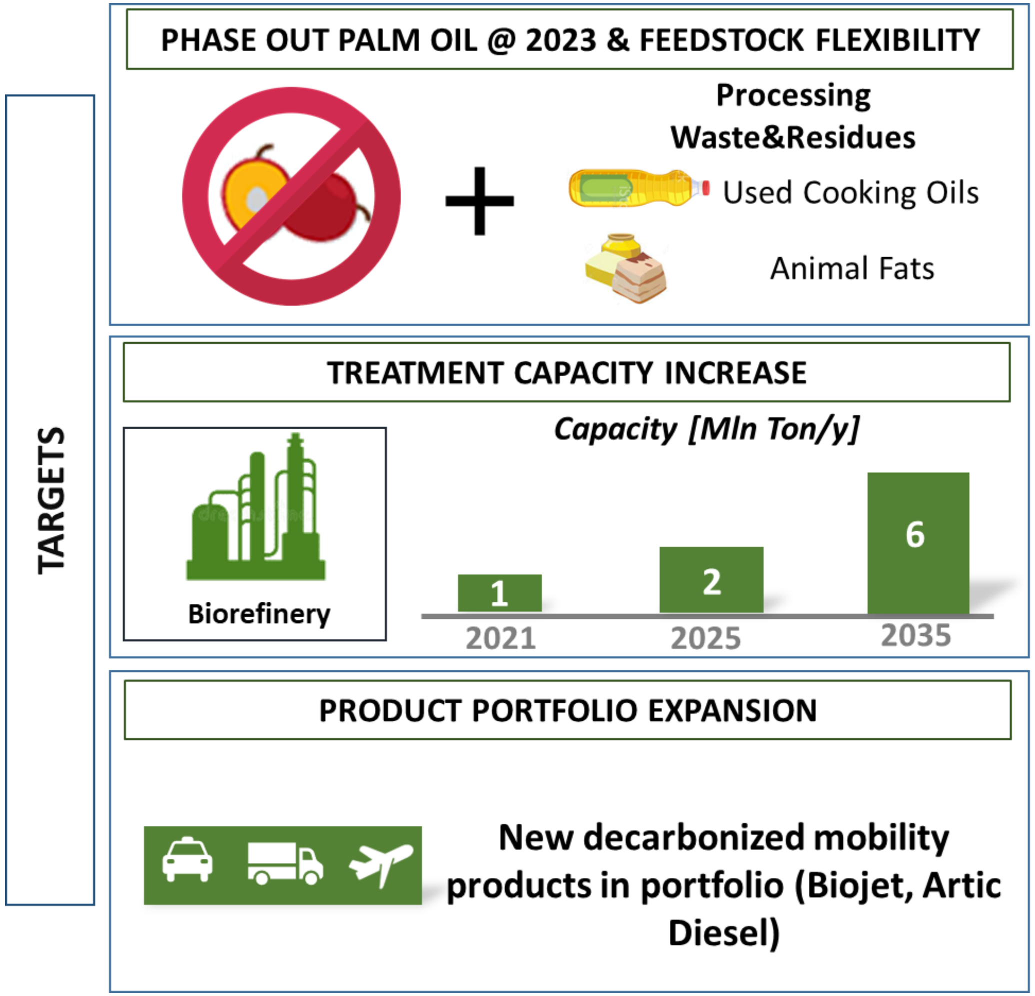


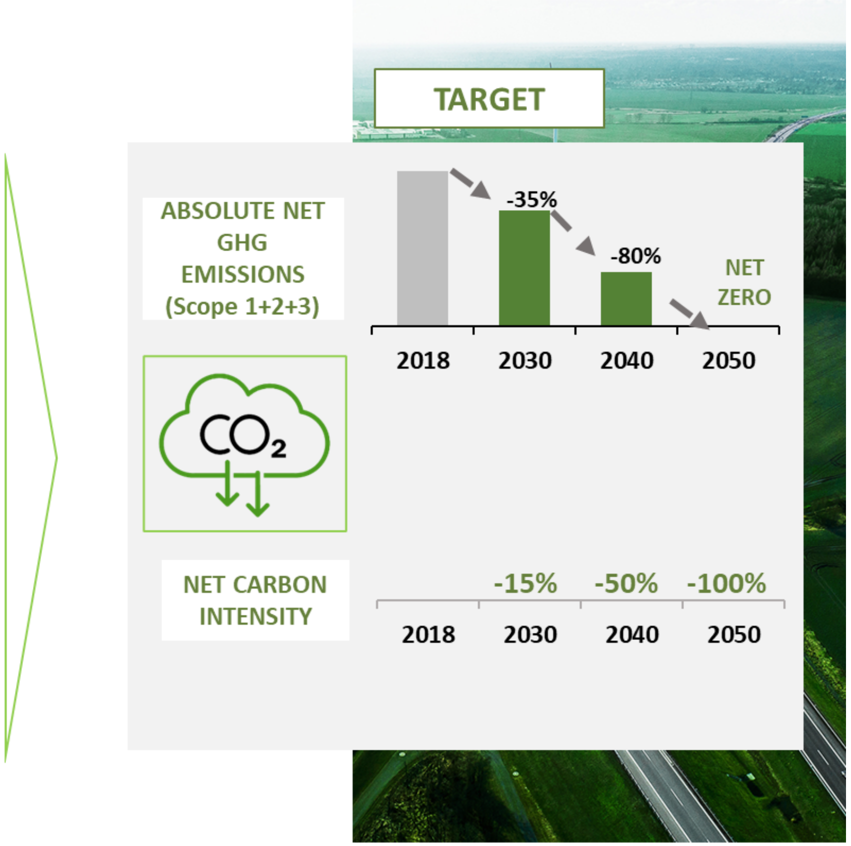
BIOFUELS

- BIO LPG AND NAPHTHA
- BIOJET HEFA (SAF)
- RENEWABLE DIESEL (HVO)

> NO BLENDING WALL <

Eni's strategy: road to carbon neutrality by 2050





ExxoMobil Low-Emission Fuel Activity

Presented by **Massimo Gai**
EU Renewable Energy Strategy Implementation Manager
ExxonMobil

Near-term projects focused on Canada, Europe and California

STRATHCONA (CANADA) RENEWABLE DIESEL

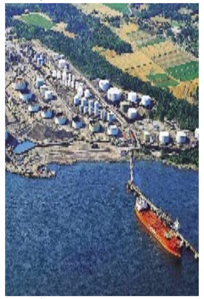
20 kbd (1160 ML/yr), start up 2024

Driven by Canada fuel regulations, local feedstocks, advantaged hydrogen supply, CCS infrastructure, proprietary technology

ACQUIRED STAKE IN BIOJET AS (NORWAY) TO PRODUCE BIOFUELS AND BIOFUELS COMPONENTS

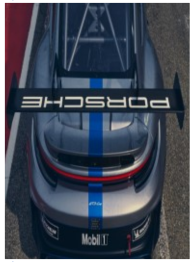
Up to 8 kbd (460 ML/yr), anticipated from 2025

Produced from forestry and wood-based construction waste, distribution to NW Europe from Slagen terminal



GREEN HYDROGEN AND AMMONIA PRODUCTION EVALUATION AT EXXONMOBIL SLAGEN TERMINAL IN NORWAY

Studying potential for up to 20 KTons of green hydrogen potential production and 100 kTons of green ammonia distribution at Slagen Terminal in Norway



E-FUELS FROM GREEN HYDROGEN AND CAPTURED CARBON DIOXIDE

Chile location with one of the best global wind profiles, enabling nearly continuous operation (>65%)

EM catalyst technology and fuel blending know-how

Fuel tested in Porsche's high-performance motorsport engines in the Porsche Mobil 1 Supercup series

Sources:
ExxonMobil affiliate to produce renewable diesel to help reduce transportation emissions in Canada ; ExxonMobil expands plans for renewable diesel ; ExxonMobil expands interest in biofuels, acquires stake in Biojet AS ; ExxonMobil and Porsche test lower-carbon fuel in race conditions; Porsche and Siemens Energy, with partners, advance climate-neutral e-fuel development - Porsche Newsroom ; ExxonMobil-GriegEdge-NorthAmmonia-GreenH-to-assess-low-emission-hub-at-SlagenTerminal-in-Norway

Advanced Biofuel Production – “Biojet AS” (Norway) Project

- **Objective of the project is to further ExxonMobil's efforts to provide lower-emissions products for the transportation sector that can help reduce GHG emissions from passenger vehicles and heavy trucks (mainly Diesel)**
  - Additional opportunities for marine and aviation may develop as market for LEF expands

- **The Bioject AS plans to convert forestry and wood-based wastes into low-emission fuel/components**
  - The sustainability of the feedstock will be verified through a EU recognized certification body

- **The production technology is based on gasification and commercially proven conversion to get the final bio-fuel**
  - The company anticipates commercial production beginning in 2025 for about 1.7 KBD of bio-diesel
  - Biofuels produced from wood waste is expected to help reduce life-cycle greenhouse gas emissions by 85% compared to petroleum-based diesel

- **EM agreement with Biojet AS includes 49.9% stake in Biojet As and offtake for up to 3 million barrels per year (8 KBD) based on potential capacity of five facilities**

Potential production of Green Hydrogen and Ammonia at ExxonMobil Slagen Terminal in Norway

- **Objective of the project is to reduce GHG emission in Maritime transportation producing a lower emission marine fuel at ExxonMobil's Slagen terminal in Norway**

- **Production facility for the production of green hydrogen and ammonia would be powered by Norwegian hydro-electricity**

- **The production technology of green ammonia is made by using renewable power to separate hydrogen from water (electrolysis)**
    - The company will explore the production of 20 KTons of green hydrogen and of 100 kTons of green ammonia per year to achieve emission reductions in maritime sector
    - When used as a fuel, green ammonia has no carbon and generates zero CO2 emissions

- **The agreement between ExxonMobil, Grieg Edge, North Ammonia and GreenH underlines the strategy to make ammonia available where there is market demand**

The grandpuits refinery conversion into saf production

Presented by **Michiel VAN RAEBROECKX**
General Manager Grandpuits Platform (F)
TotalEnergies

Introduction

Sustainable Aviation Fuels (SAFs) are the alternative to Conventional Aviation Fuels (CAFs) as planes continue to need liquid fuels.

SAFs contribute to **reducing drastically CO_2 emissions** (average minimum -65% as defined in RED) and **do not require changes in existing infrastructures / aircraft**.

7 SAF approved pathways (see slide in Back-up) of which HEFA (residual oils hydrotreatment):

- the only commercial technology **available today** at industrial scale
- the **least expensive to produce today** (depending on technology, cost of **SAF is superior to currently min 2-3 times fossil jet**)
- however, its development could be **limited by the feedstock availability** (need to secure oil waste & residues feedstock).

TotalEnergies aiming at net zero in 2050. Renewable fuels are a key element of this strategy.

Grandpuits bio-refinery project to produce **~200kt SAF to fulfill 2025 mandate using HEFA technology.**

TotalEnergies R&D concentrates efforts in developing 3 routes:

(1) **HEFA** to support existing assets development and deliver affordable molecules as soon as possible

(2) New pathways including **AtJ (Alcohol to Jet) and FT (Fischer-Tropsch synthesis)**

(3) **E-fuels (or PtL – Power to Liquid)**, even if currently limited by availability of cheap renewable electricity. TotalEnergies is currently working on e-fuels projects in its Leuna refinery (Germany) and in Masdar (Abu Dhabi)

The Grandpuits Transformation Project:
A major industrial overhaul into a zero crude, low carbon platform

✓ 3 independent industrial projects, invested by distinct legal entities, as part of the renewed TotalEnergies multi-energy and low-carbon platform

PYROLYSIS PROJECT, a 15 kt/y plastic waste recycling unit

PLA PROJECT, a 100 kt/y bioplastics production unit

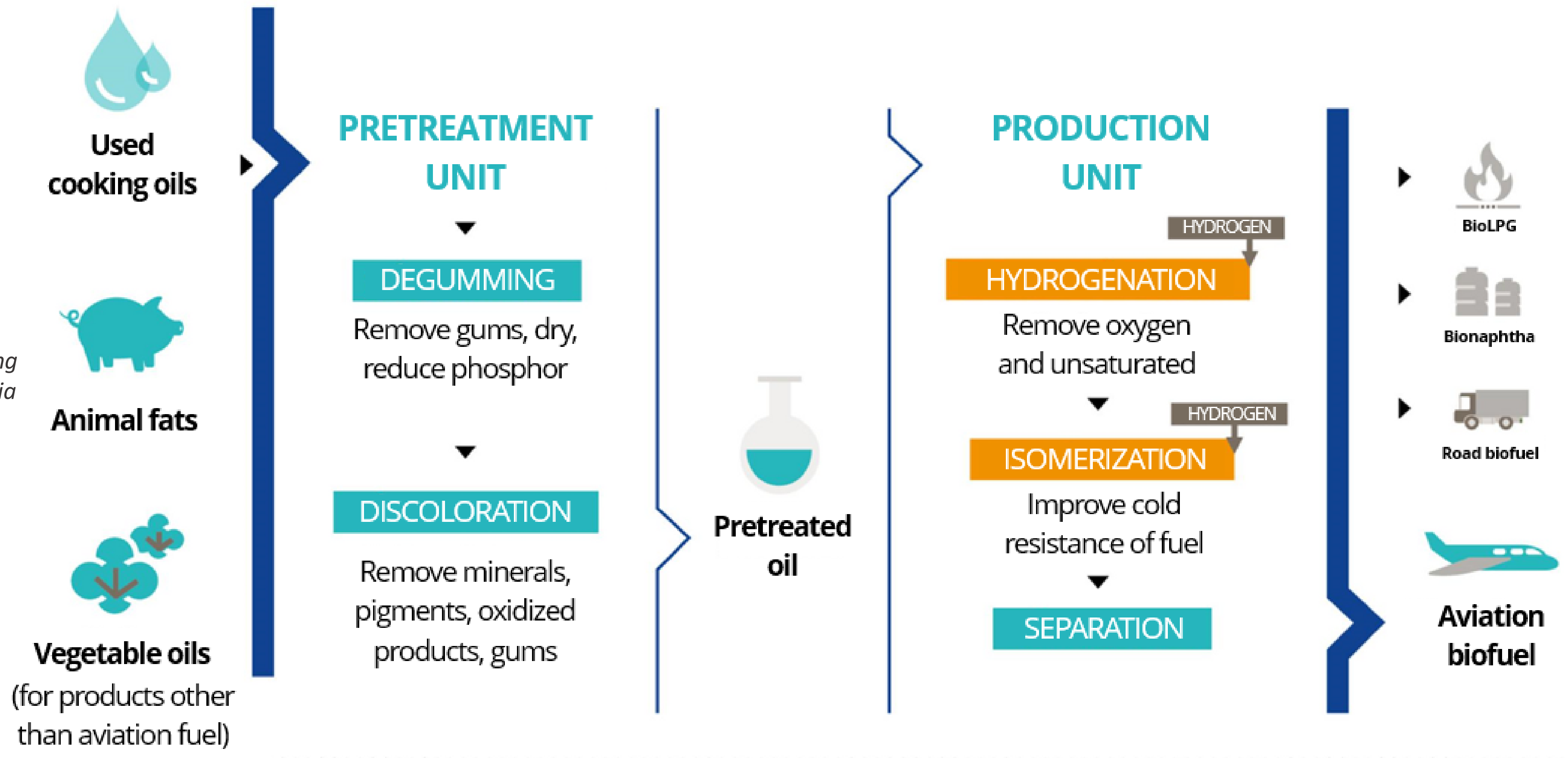
BIOJET-SMR PROJECT, a 400 kt/y biorefinery focussed on SAF production, with associated H2 production unit

GREEN ELECTRICITY: 28MW PV solar plant & 43MW battery storage capacity

A showcase of TotalEnergies' ambition to achieve CO2 neutrality by 2050

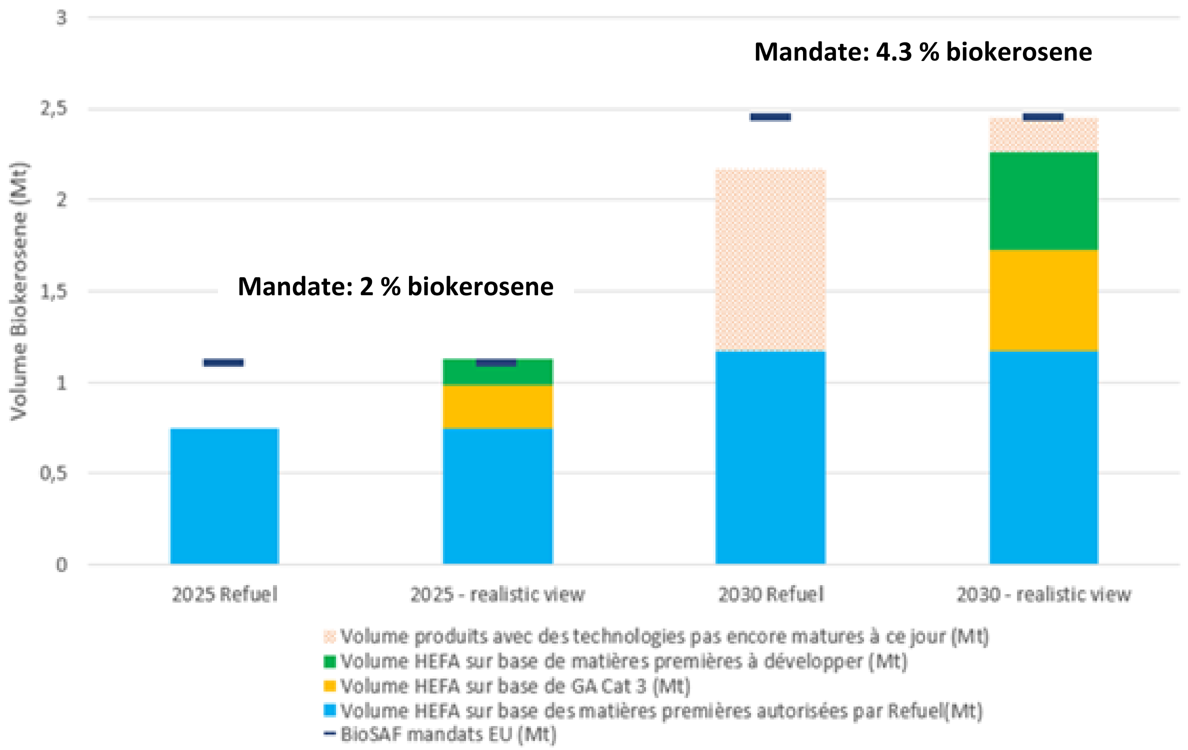
SAF production using HEFA technology at Grandpuits:

~400kta
total feedstock
(certified corresponding to sustainability criteria of RED II)



~200kta

The Challenge of SAF : the technology & feedstock challenge



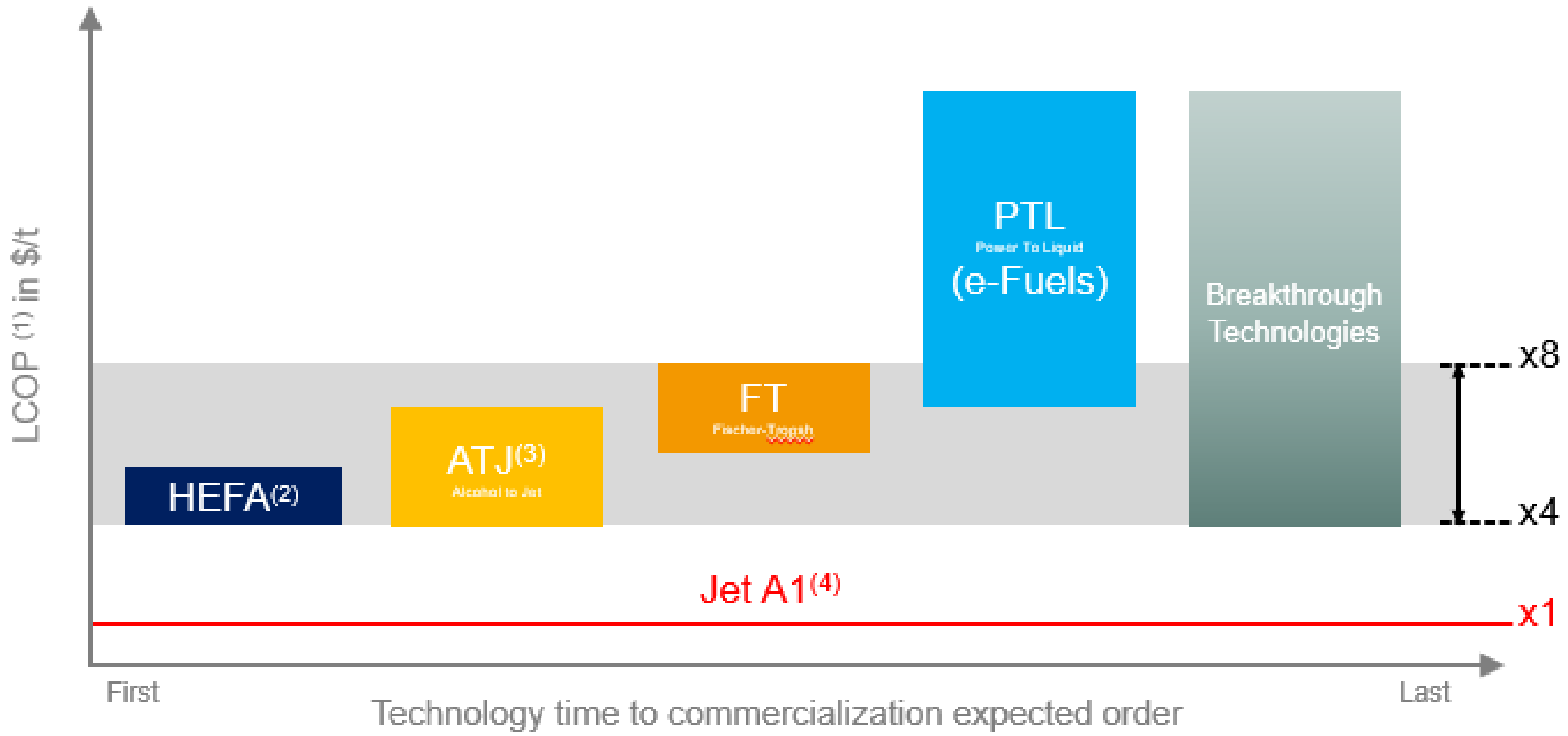
Concerning the availability of feedstock for biobased SAF, the **impact assessment of the Commission** which is based on two hypothesis elements:

1. The main raw material for the fuel production via HEFA (Hydroprocessed Esters and Fatty Acids) would be used cooking oils (UCO)
2. Almost 50 % of SAF to be produced in the EU in 2030 should come from wood residues.

TotalEnergies analysis is however showing some limits of these assumptions:

1. UCO availability in the EU is rather limited with 1 million tons per year and is already largely used for the production of biodiesel for road transport. Increased use of UCO for aviation fuel production would therefore lead to growing dependency on imports, mainly from Asia, including the risk that these countries might use these feedstocks in the future for their own production.
2. Up to now, there is no industrial scale production of SAF from wood residues (Fischer-Tropsch or Alcohol-to-Jet technologies) in the EU.

The Challenge of SAF : the technology & feedstock challenge



(1) Levelized Cost of Production considering grassroot projects, 20-year linear depreciation, 2% inflation, 7% IRR on WACC. All CAPEX Class V (+100%/-50%)
(2) Hydroprocessed Esters and Fatty Acids – Typical unit size >300Kt
(3) Typical unit size~100Kt
(4) Based on a barrel @60$

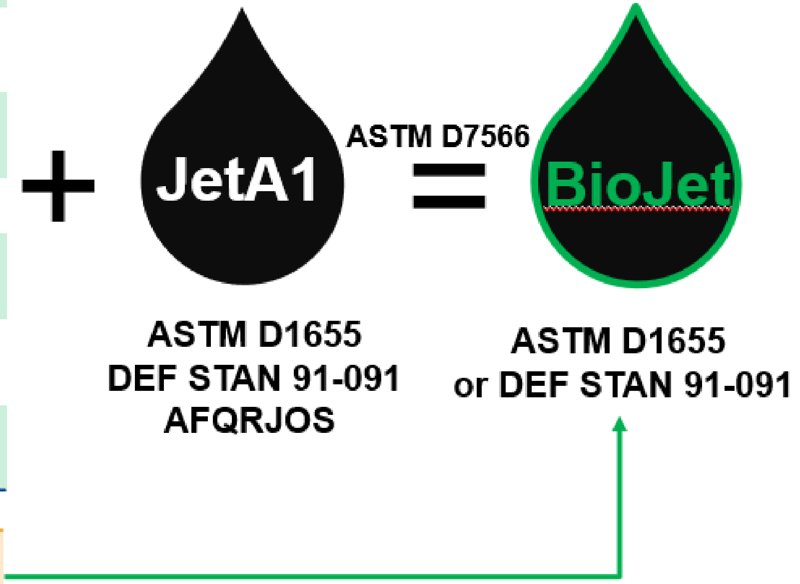
BACK-UP

SAF APPROVED PATHWAYS

7 TECHNICAL PATHWAYS TO-DATE…

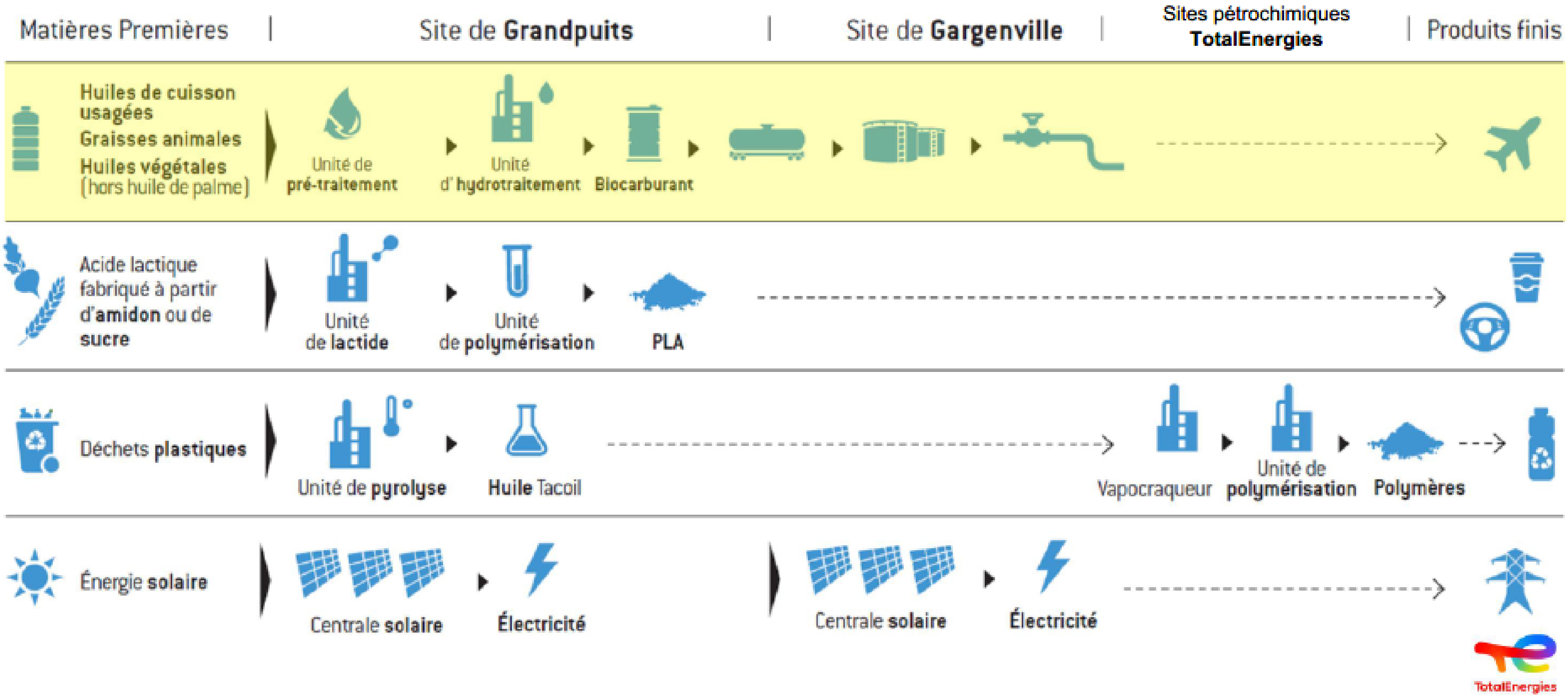
ASTM D7566 approved pathways		Blend limit
FT	Fischer-Tropsch Synthesized Paraffinic Kerosene (FT-SPK)	50%
HEFA	Hydroprocessed Esters and Fatty Acids (HEFA-SPK)	50%
SIP	Hydroprocessed Fermented Sugars Synthesized Isoparaffins (HFS-SIP)	10%
FT-A	ST SPK with Aromatics (FT-SPK/A)	50%
ATJ	Alcohol to Jet Synthesized Paraffinic Kerosene (ATJ-SPK) Isobutanol and Ethanol	50%
CHJ	Catalytic hydrothermolysis jet fuel (CHJ), a type of synthetic kerosene	50%
HHC	HHC-SPK: similar to HEFA but utilizes biological derived hydrocarbons from algae	10%

Co processing of renewable content with crude oil-derived middle distillates	5%



… and a dozen new pathways actively pursuing certification

The Grandpuits Transformation Project – detailed



Strategically linked through rail & pipe to Paris Airports

The Grandpuits Transformation Project on the move…!

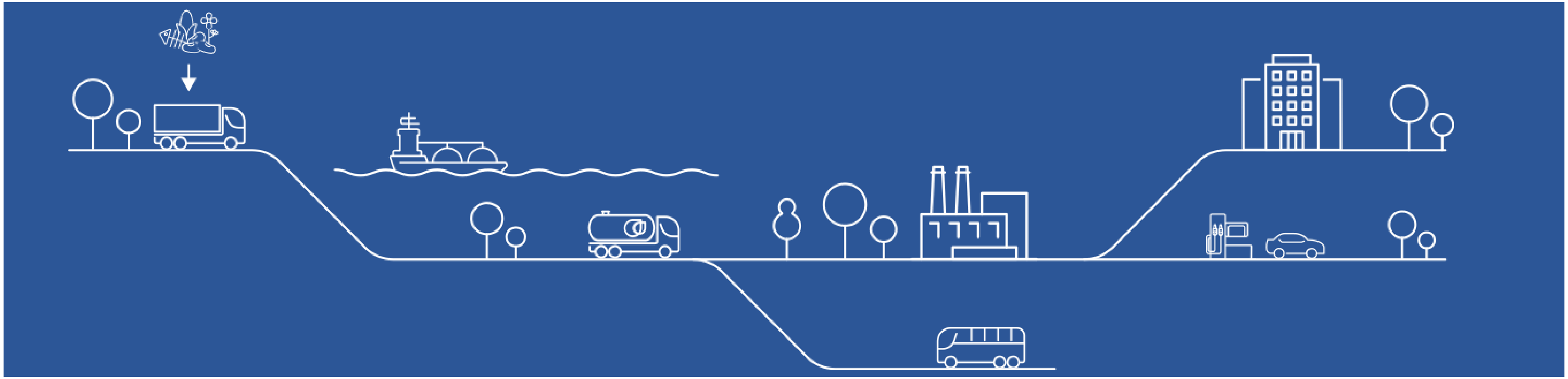
The Grandpuits Transformation Project on the move…!

(site simulation with new solar, plastics recycling, bioplastics production and biorefinery activities)

Debottlenecking the renewable fuels

Presented by **Dr. Teemu Sarjovaara**
Head of R&D
Neste

Turning renewable raw materials into a variety of renewable products with NEXBTL technology



Raw materials

- More than 10 different renewable raw materials are sourced around the world

- Neste's renewables refineries technically capable of running on 100% waste and residues

Pre-treatment

- Pre-treatment of the renewable raw materials ensures impurities are removed before refining

NEXBTL process

- Pre-treated renewable raw materials are processed with Neste's proprietary NEXBTL technology at 4 production units globally

- Hydrogen added to remove oxygen. CO_2 and renewable propane can be recovered for commercial use

Output

- 3.2 million tons of Neste renewables per year

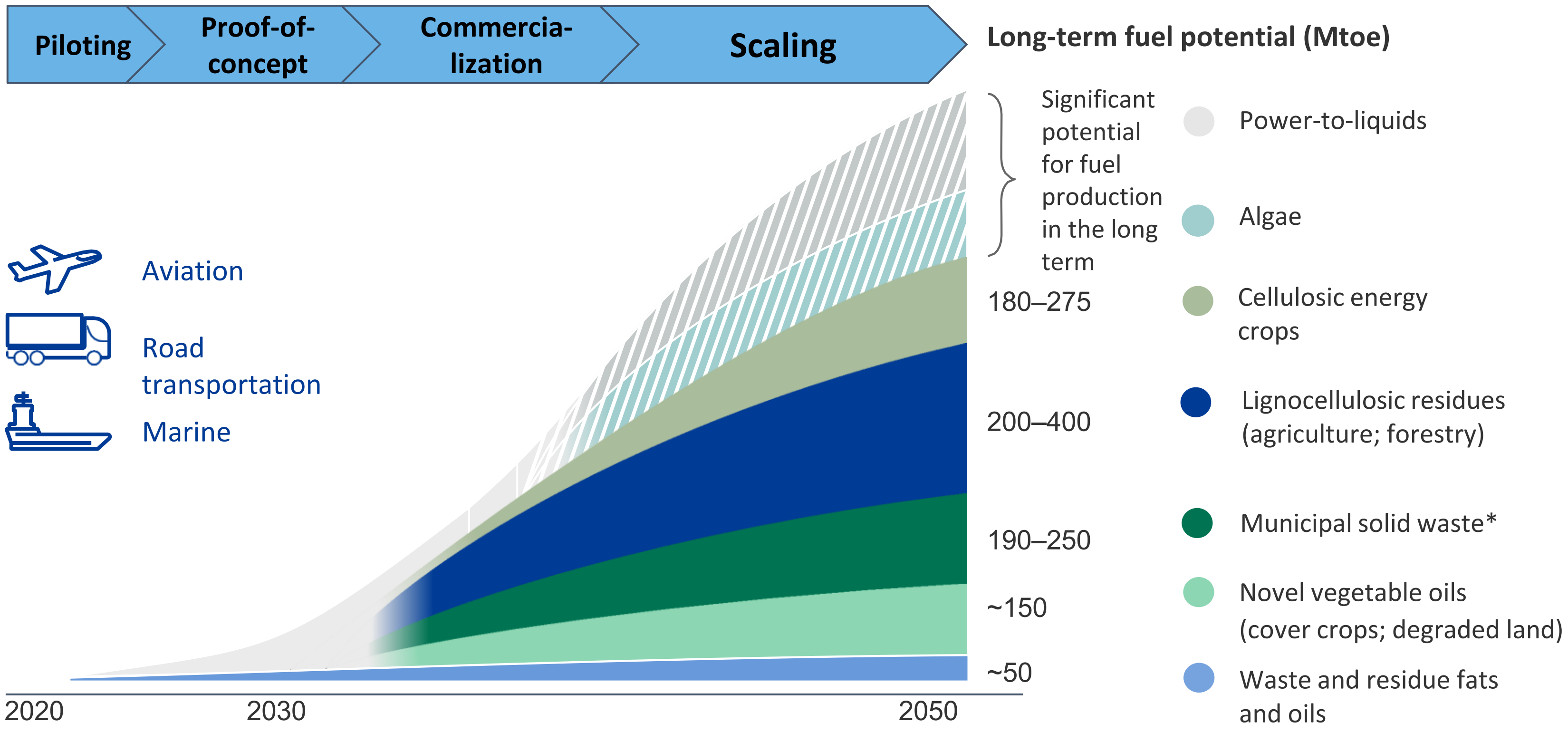
→ 4.5 million tons in 2023

Renewable raw materials

Continued to increase share of waste and residues to a level of **92%** in 2021

All renewable raw materials Neste uses are sustainably produced, meeting or exceeding EU RED requirements and traceable to the point of origin.

Unlocking new raw material pools with innovation to accelerate emission reductions in transportation



Global raw material potential for renewable fuels (Mtoe)

- Renewable raw materials hold significant potential to accelerate the reduction of CO_2 emissions, in particular in the transportation sector.
- Regulators hold the key to enable a broad renewable raw material pool to unlock the full emission reduction potential in transport and beyond.
- The new raw materials require dedicated technologies that could be commercialized in 5-10 years..

Source: 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.

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

Same feedstock can be applied to multiple sectors
And a single regulatory framework would enable this

CARBON SOURCES

- Fatty acids (NEXBTL) — Now
- Recycled waste plastic* — 3–5 years
- Ligno-cellulosics, Municipal solid waste — 5–10 years
- Algae, Power-to-X — > 10 years

RENEWABLE AND RECYCLED HYDROCARBONS

*A feedstock only for polymers, i.e. plastic production

To sum up

- Feedstock are scalable but a wide and **open portfolio of pathways** is necessary to enable the scalability

- **The development at industrial scale** of innovative products is only expected to start in the next **5-10 years** in a sector where EU-based companies currently are global leaders. Early phase-out would compromise this potential

- A **single regulatory framework** clearly identifying the sustainability criteria for the feedstock for all the different sectors to ensure the certainty of investments and for the economic operators on the market

Neste invests in Europe to increase renewable product volumes

- Neste Rotterdam renewable diesel refinery is the largest in Europe
- Current production capacity 1.4 Mton annually
- Expansion investment of EUR 1.9 billion announced on 27/06
- The expansion will bring the total renewable product capacity to 2.7 Mton annually
- On top of Neste MY Renewable Diesel and biopropane,
- sustainable aviation fuel (SAF) production capability will increase from 500.000 tons to 1.2 million tons annually.
- The target is to start up the new production unit during the first half of 2026.

Watch the video

NESTE