



**Renewable fuels  
take us closer to the  
climate goals  
already today**

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A3PS Eco Mobility Conference 2021

**NESTE**

# Neste in brief

Founded in

**1948**

to secure oil supply for  
the state of  
Finland

**4<sup>th</sup>**

most sustainable  
company in the  
world (2021 Global  
100)

World's

**#1**

producer of Renewable  
Diesel & Jet Fuel from  
waste and residue

In 2020,  
our renewable  
products helped our  
customers reduce  
GHG emissions by

**10 Mt**

Renewable  
products production  
capacity

**3.2** →

**4.5 Mt/a**

in 2023

**70%**

of R&D budget  
invested in  
researching and  
testing future raw  
materials

**Renewable Diesel  
HVO 100**



**Fossil  
Diesel**



# Renewable raw materials

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



# Availability is increasing rapidly



**28**

countries served since 2020  
across the world with Neste  
renewable diesel

**~600**

fueling stations across our  
growing global network

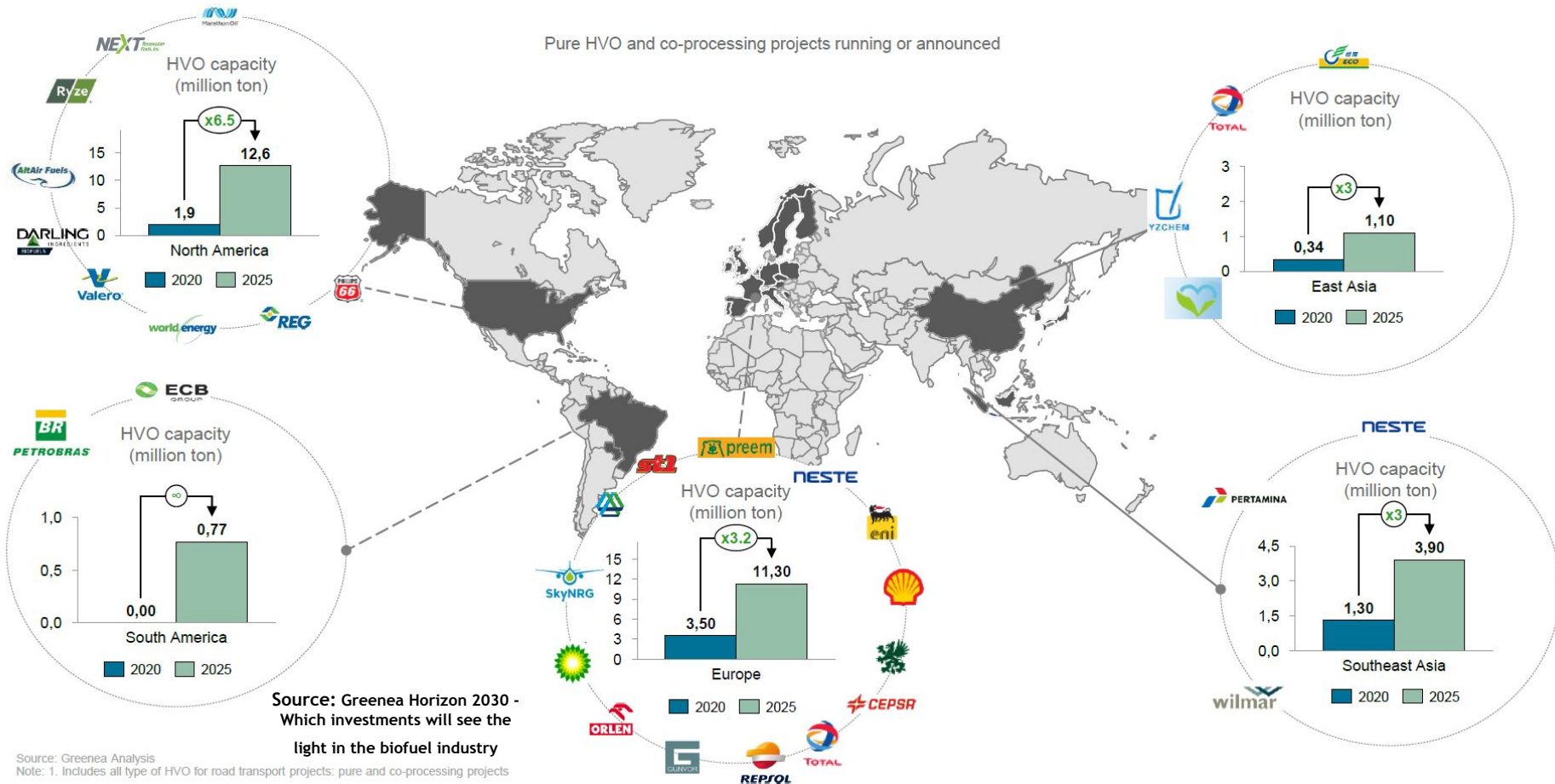
**>4,000**

B2B customers served  
worldwide through our sales  
force and network of channel  
partners

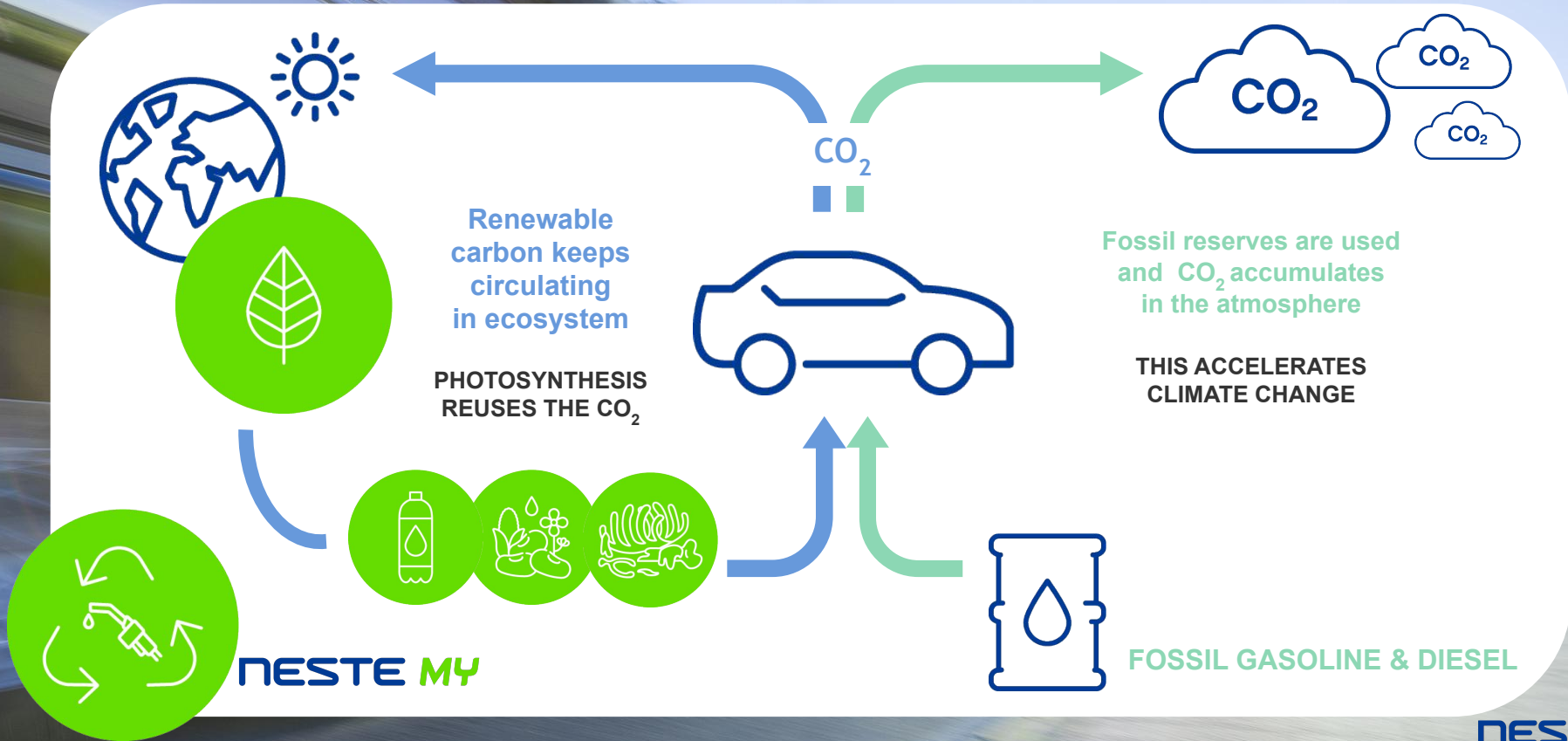


# Global HVO production is expected to reach 30 Mton by 2025

Pure HVO and co-processing projects running or announced

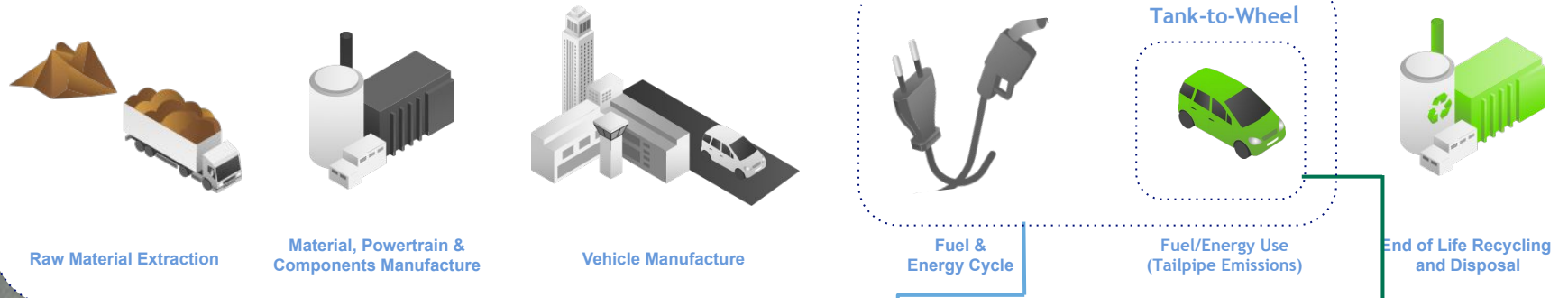


# In the case of Neste renewable diesel, renewable carbon keeps circulating in the ecosystem



# The current vehicle CO2 regulation is not telling the whole truth

## Life-cycle analysis



Recognizes the GHG advantages of biofuel, and takes GHG of electricity generation into account.

Current Vehicle Emissions Regulatory Focus



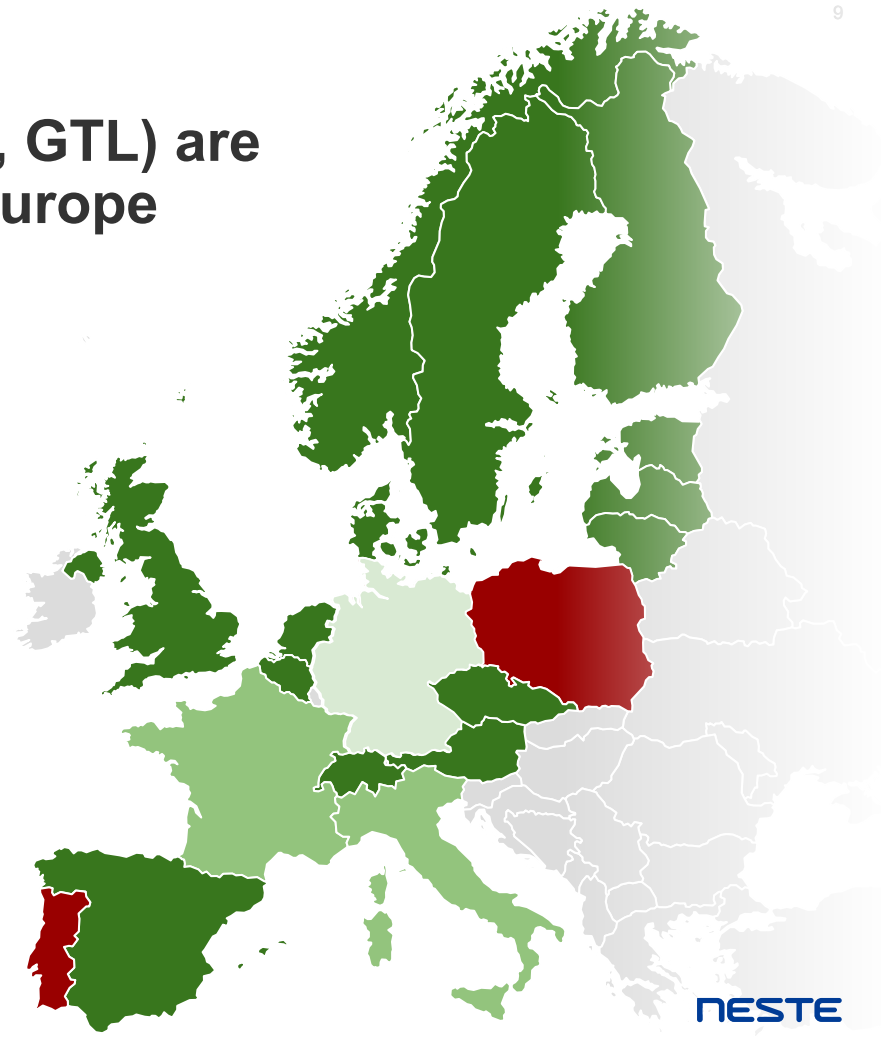
# DIN EN 15940 fuels (HVO100, efuels, GTL) are already proven and widespread in Europe

Several EU directives (AFID, REDII, CVD) recognize the role of EN 15940 compliant fuels, such as HVO100 and efuels, to combat climate change.

Many EU Member States widely allow sales of DIN EN 15940 fuels.

## Status of permission to market DIN EN 15940 for road applications






- Public sale permitted
- Sale limited to public & private captive fleets
- Sale limited to CVD obligated parties
- Sale not permitted
- Market not yet explored



# Ambition level to reduce transport emissions remains high in both Europe and North America






## NORTH AMERICA







Carbon intensity reductions		2020	2030
	British Columbia	9.1%	20%
	Oregon	2.5%	20%
	California	7.5%	20%
	Canada		13% *Proposal
	United States	Ongoing initiatives in Washington State and New York to pass Clean Fuels Programs in the near term	

1) Volumetric mandate. 2) GHG reduction mandate for diesel. 3) Energy content based mandate. 4) 2030 ambition for renewables share for road and rail

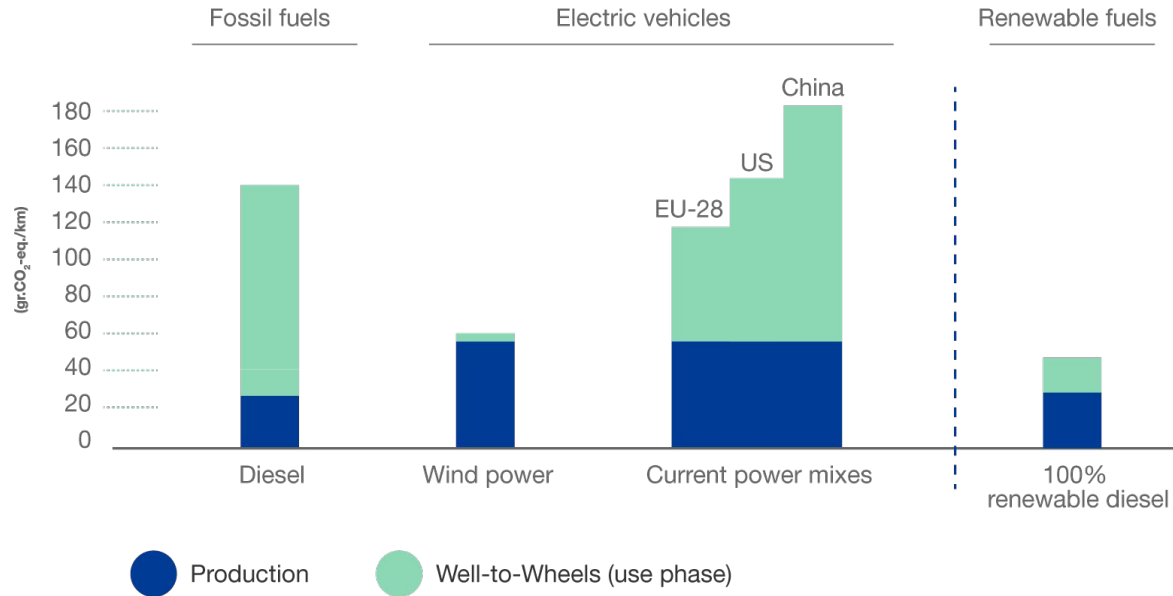
## NORDICS

Mandate obligations		2020	2030
	Norway <sup>1</sup>	20%	40% *Ambition
	Sweden <sup>2</sup>	21%	66% *Proposal
	Finland <sup>3</sup>	20%	30%

## REST OF EUROPE

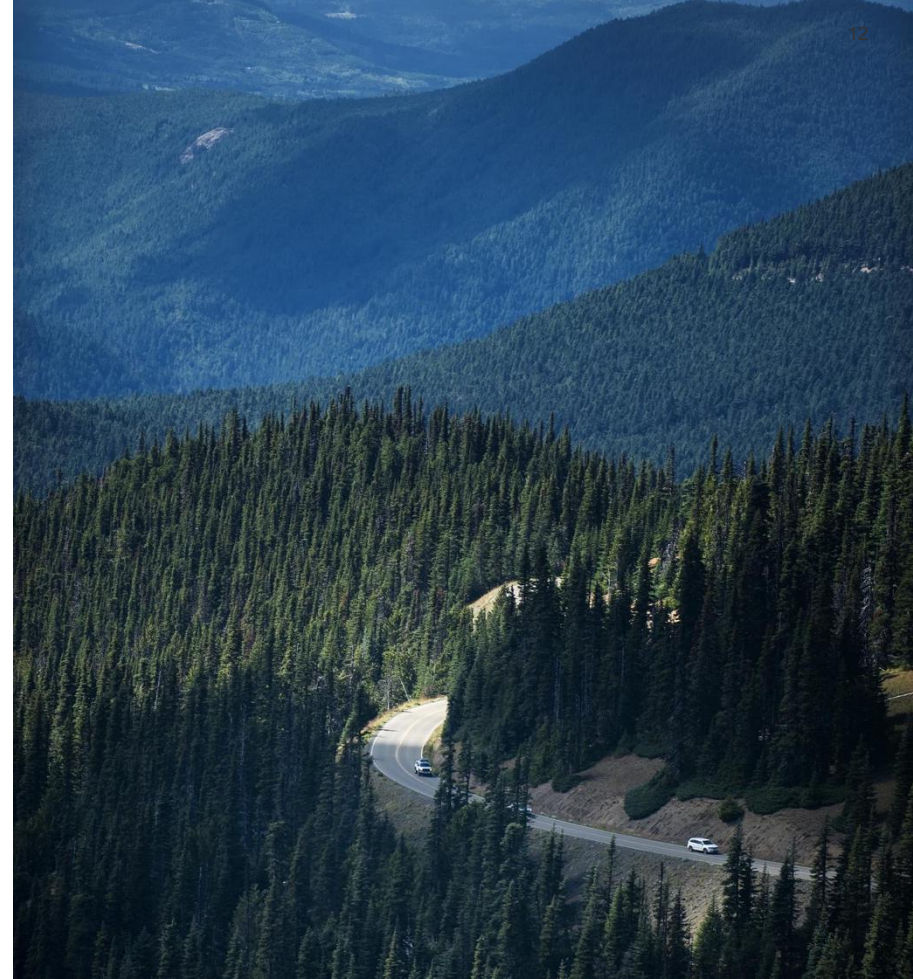
Carbon intensity reductions		2020 Mandate	2030 Ambition
	France <sup>3,4</sup>	8%	15%
	Germany <sup>2</sup>	6%	25%
	Italy <sup>3,4</sup>	9%	22%
	Netherlands <sup>3</sup>	16.4%	27.1%
	Spain <sup>3,4</sup>	8.5%	28%
	EU RED II <sup>4</sup>		14%
	EU Green Deal		Carbon-neutrality 2050

# Life cycle analysis of different powertrain options in a passenger car



**Source:** Volkswagen and European Commission JEC 2020 data  
Waste and residue based (UCO) renewable diesel  
Based on a 200,000km use phase.

**The society  
aims to stop the  
climate change  
through  
regulation**



# Fuel regulation

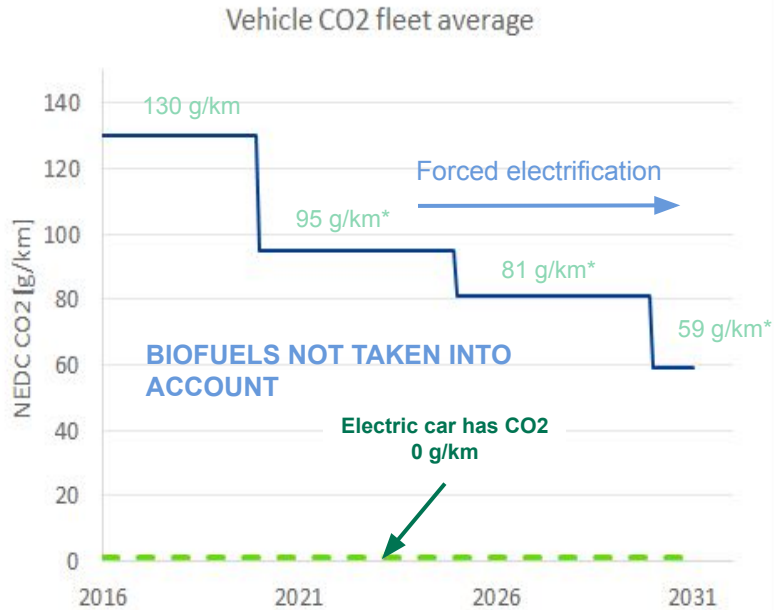
- **RED II** defines rules for the biofuels and sets minimum mandates
- **NON-ETS** gives targets for member states' biomandates and electrification and thus can support significantly biofuel markets
- **Fuel quality directive (FQD)** aims to ensure that vehicles can operate everywhere in the EU on the basis of compatible fuels e.g. maximum ethanol content of gasoline. It also sets minimum GHG intensity reduction goal.



# Vehicle regulation

- **Vehicle CO2 regulation** defines what vehicles will be available. Especially challenging for light duty vehicles and drives aggressively towards electrification.
- **Clean vehicles directive** set guidelines for public transportation procurement. Forces governments and cities to move towards electrification. For light duty vehicles the electricity is the only measure to reach the target. For heavy duty regulation recognizes also 100% alternative fuels, but still requires electrification.
- **EURO 7/VII** future local emission limits. There is a risk that regulation will be so tight that it would in practice “terminate” the combustion engines

# EU car CO2 regulation



Regulation defines what new vehicles there will be available in the future

An aerial photograph of a complex, multi-level highway interchange. The roads are filled with cars, and the interchange is surrounded by urban buildings and green spaces. The text is overlaid on the central part of the image.

**Regulation is on a driver's seat**  
- **But the route is not quite optimized**

# Neste's way forward





# Our approach

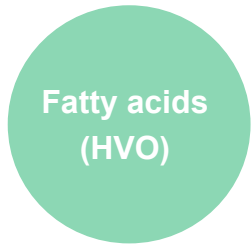
**Low  
quality  
feedstock**

World-class  
technologies  
and know-how

**High quality  
drop-in  
solutions**



## ENERGY SOURCES



Fatty acids  
(HVO)

Now



Recycled  
waste  
plastic

3–5 years



Ligno-  
cellulosics

5–10 years



Municipal  
solid  
waste



Algae



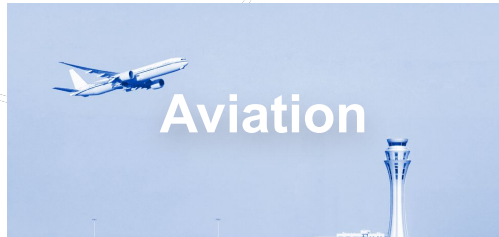
Power-to-X

> 10 years

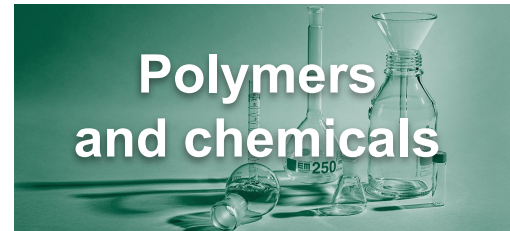
## RENEWABLE AND RECYCLED HYDROCARBONS



Road  
transportation

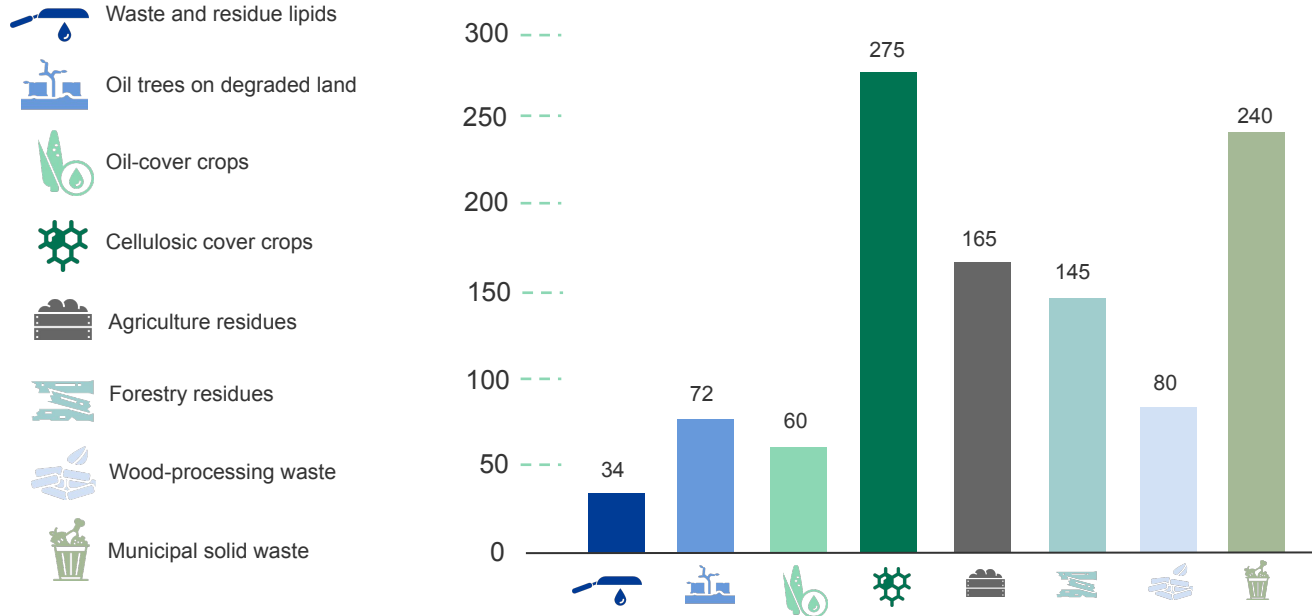


Aviation



Polymers  
and chemicals

# Global potential of biomass based biofuels Mtoe/a



Source: Neste based on WEF McKinsey

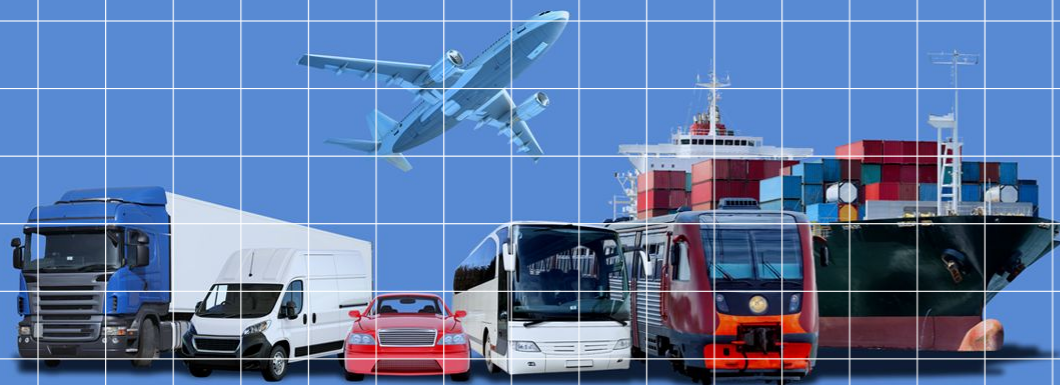
\*Converted from Mt to Mt fuel equivalent based on 85% conversion efficiency from biomass to fuel

\*\*Converted from Mt to Mt fuel equivalent based on 25% conversion efficiency from biomass to fuel (Source: Neste internal)

**But why do we  
need fuels  
when we have  
electrification?**



**Global oil consumption today  
4,525 Mtoe/a (2019)**



**Global oil demand  
for transport  
2,668 Mtoe/a (2019)**

# 2020

**10 million electric vehicles  
6 Mtoe/a oil displacement**

**Global renewable fuel  
consumption  
98 Mtoe/a oil displacement**



# 2040

**600 million electric vehicles  
360 Mtoe/a oil displacement**

**Feedstock\* availability  
for renewable fuel production  
1071 Mtoe/a oil displacement**

**EVs and renewable fuels\* can  
substitute more than 50% of  
crude oil in transportation**

**Smart regulation is needed  
to make it happen!**



# Conclusions

**The climate needs  
smart regulation**

**Renewable fuels  
have significant  
scalability**

**Both electrification  
and renewable fuels  
are needed**



# NESTE

Change runs on renewables