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ETIP Webinar 10<sup>th</sup> March 2023

Higher renewable blends in gasoline: compatibility

A view from EU car industry

Dorothee Lahaussais

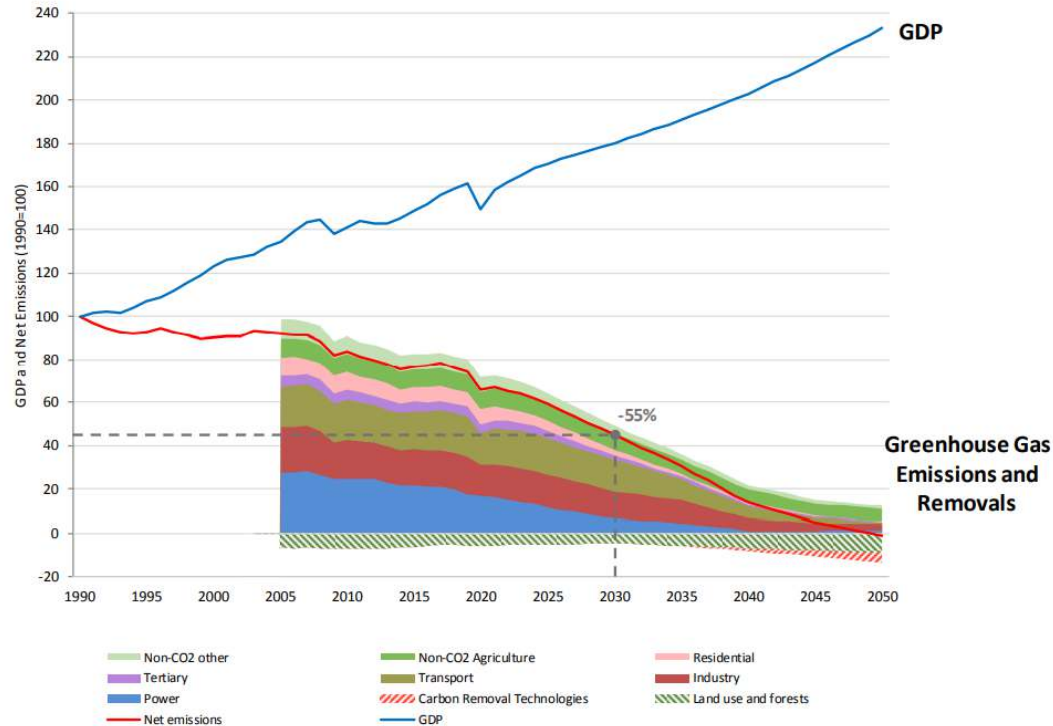
Toyota Motor Europe

# Agenda

1. EU CN goal by 2050
2. Status of decarbonisation of EU road transport now
3. Options to decarbonise EU gasoline fleet
4. Toyota sustainable mobility

# EU Green Deal (2020): to become carbon neutral by 2050

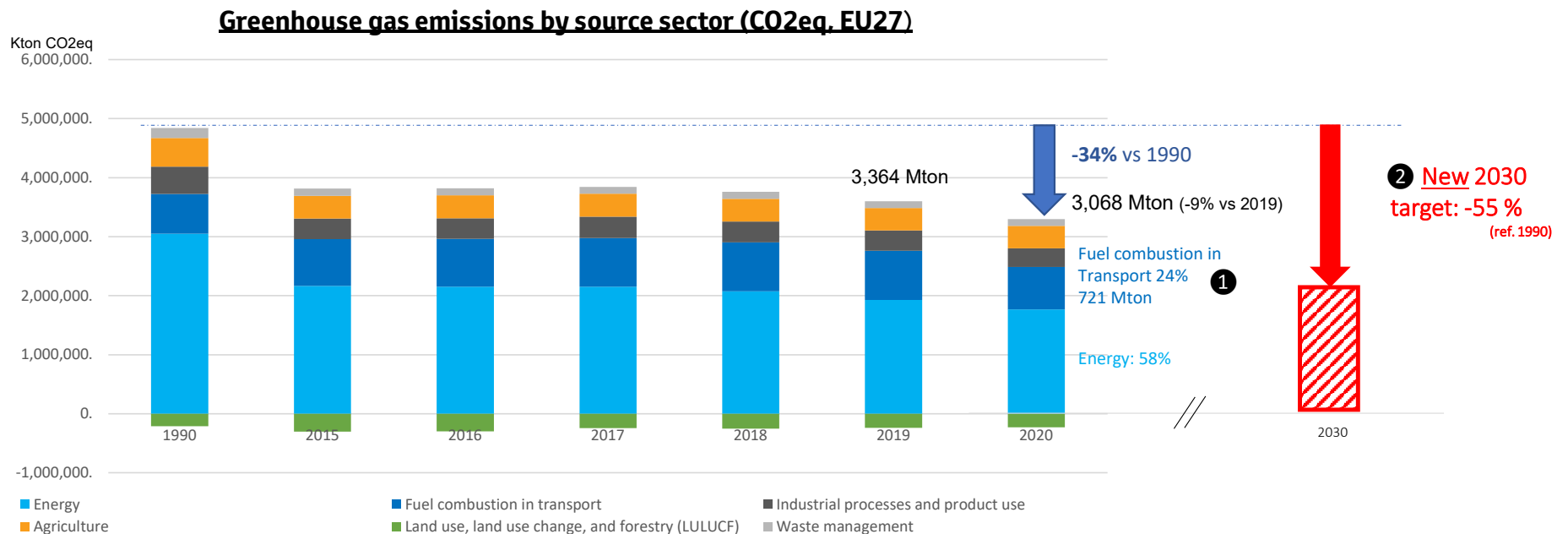
-55% GHG reduction by 2030 (vs 1990). Transport under pressure: #1 GHG emitter sectc



# GHG emissions by sectors

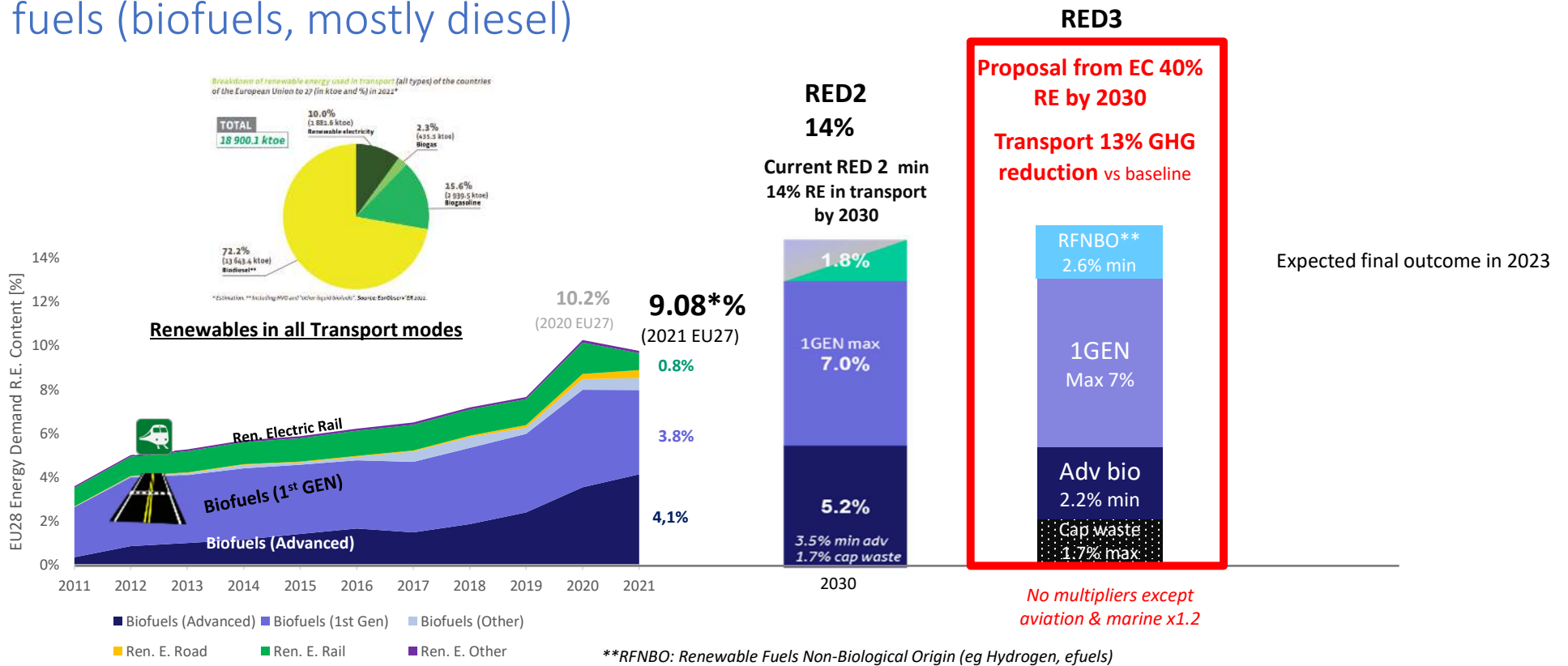
In 2020, reduction of GHG emissions by 9% vs 2019.

- In 2020, overall EU GHG emissions decreased by 9% vs 2019. -34% achieved vs 1990.
- GHG emissions from fuel combustion in transport increased during 1990-2020: +48 Mton (from 15% EU share in 1990 to 24% in 2020 <sup>①</sup>). However, transport GHG emissions decreased by -14% compared to 2019 (after 10 years of increase)
- By 2030, according to new announced targets, EU GHG emissions to reduce by 55% (ref. 1990) (<sup>②</sup>)



# Decarbonisation of energy in transport

In 2021, RE in transport reached 9%. Mostly in road transport through liquid fuels (biofuels, mostly diesel)



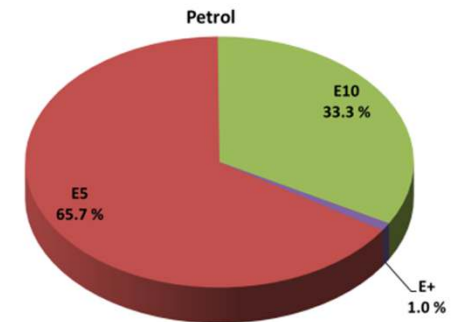
Source: SHARES EU27

\*\*RFNBO: Renewable Fuels Non-Biological Origin (eg Hydrogen, efuels)

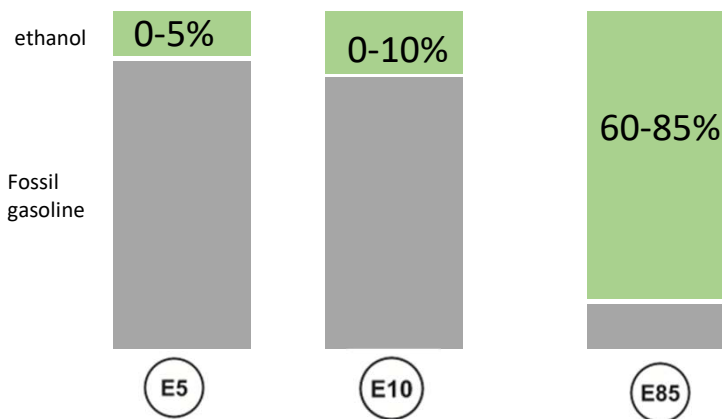
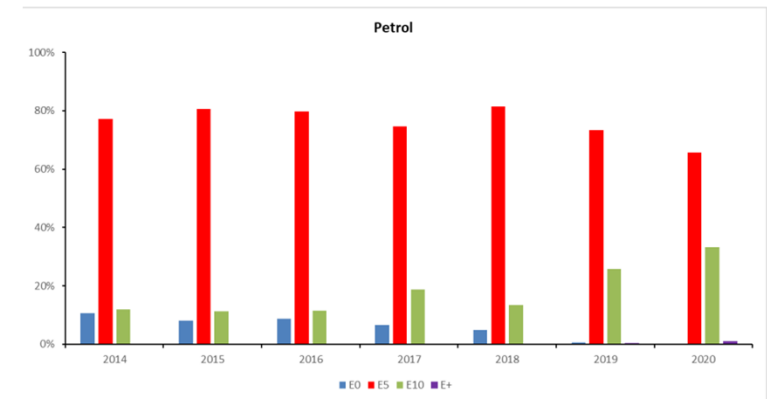
# Blending renewable in gasoline

- Legislative framework: Fuel Quality Directive (E(&E10), EN228 (E5 & E10), EN 15293:2018 (E85)
- According to fuel quality monitoring reporting, E10 grade accounts for 33% of all gasoline sales in EU27. E5 grade is still majority
- The customer can find at the pump 3 grades : E5, E10 & E85. E85 required dedicated powertrain (Flexi Fuel Vehicles) and E85 sold only in a few countries (France, Finland, Sweden)

Use of biocomponents in petrol and diesel fuels sold in the EU-27 in 2020 (% litres)



Biocomponents in petrol and diesel sold in the EU from 2014 to 2020 (% litres)



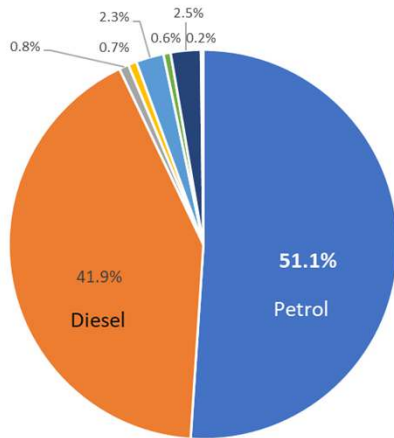
[https://www.eionet.europa.eu/etcs/etc-cm/products/etc-cme-report-11-2021-fuel-quality-monitoring-in-the-eu-in-2020/@@download/file/ETC\\_CME\\_Report\\_11-2021\\_final%20update%2020220323.pdf](https://www.eionet.europa.eu/etcs/etc-cm/products/etc-cme-report-11-2021-fuel-quality-monitoring-in-the-eu-in-2020/@@download/file/ETC_CME_Report_11-2021_final%20update%2020220323.pdf)

Almost 300 million vehicles in use in EU27

87% are Passenger Cars, 51% are gasoline fuelled

New PC sales only 4% of all PC on the road

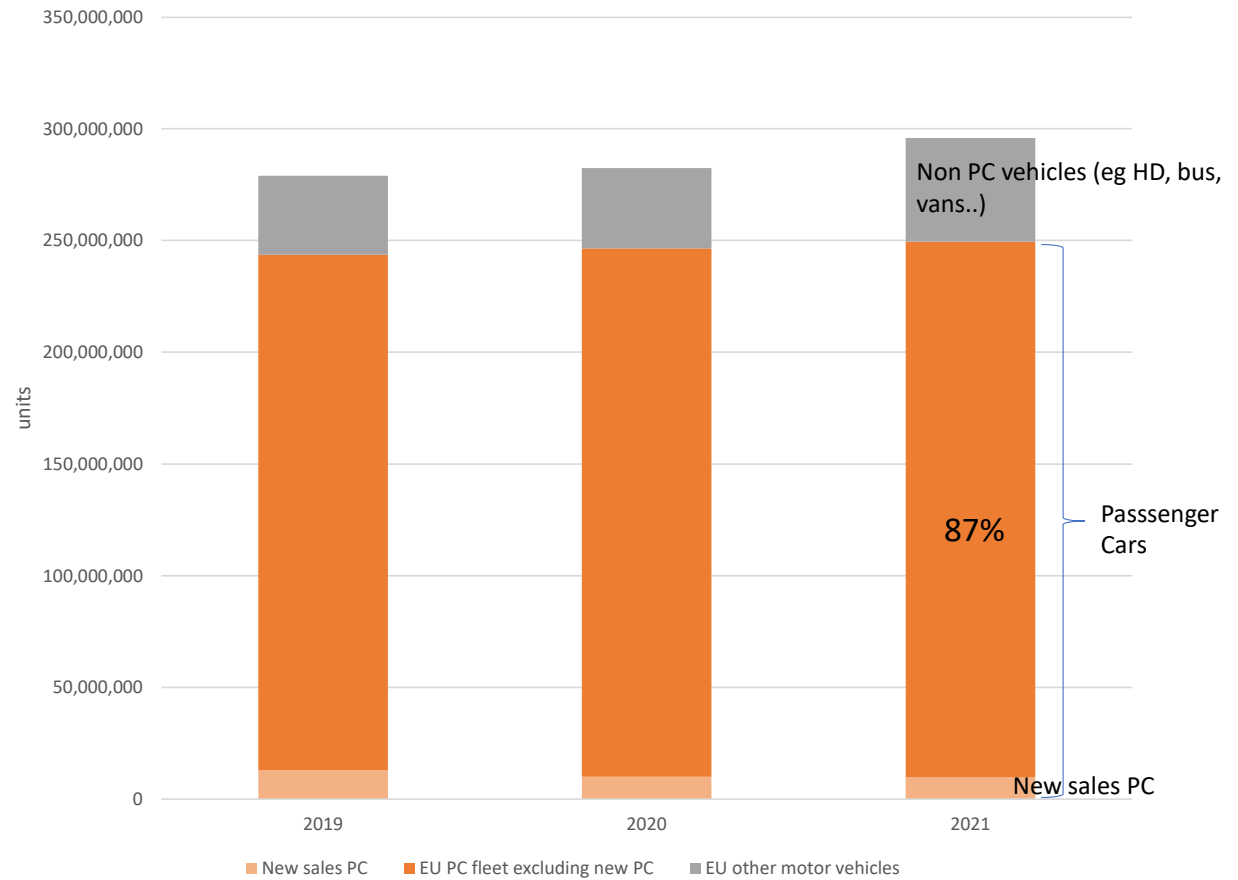
Break down EU PC fleet per fuel type (2021)



■ Petrol ■ Diesel ■ BEV ■ PHEV ■ HEV ■ NG ■ LPG ■ Other & unknown

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EU27 vehicle fleet (UIO)

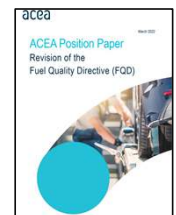


Source: ACEA 2022

# Options to increase renewable content in EU gasoline?



Options	Supporting / Benefits	Challenges	ACEA position
<b>Increase availability of E10 across EU member states</b>	Majority of EU cars compatible with E10 E10 sold now	Only 10% renewable content (Could be increased if blended w/ renewable hydrocarbons)	Supports (ACEA E10 compatibility list) <a href="https://www.acea.auto/files/E10_petrol_fuel_vehicle_compatibility_list-2021_update.pdf">https://www.acea.auto/files/E10_petrol_fuel_vehicle_compatibility_list-2021_update.pdf</a>
<b>Higher blends of ethanol (E85)</b>	Reduce carbon intensity fuel	Needs Flexi fuels vehicles (captive fleet) Needs dedicated infrastructure Limited EU MS offer E85 Retrofitting (France) – not supported by industry	E85 + FFV Against retrofitting (ACEA position paper) <a href="https://www.acea.auto/files/20170630_Position_Paper_on_E85_converters.pdf">20170630 Position Paper on E85 converters.pdf</a> (acea.auto)
<b>Increase renewable content in E10</b>			Supports ACEA RED & FQD position paper
Mid ethanol blends (E10+)	Reduce carbon intensity fuel	Must amend FQD CEN E10+TF for TS for E10+ (20% ethanol) Euro 7 challenge Compatibility of existing fleet (material & emissions compliance)?	<a href="https://www.acea.auto/files/ACEA_Position_Paper-Revision_of_Fuel_Quality_Directive.pdf">https://www.acea.auto/files/ACEA_Position_Paper-Revision_of_Fuel_Quality_Directive.pdf</a>  <a href="https://www.acea.auto/files/ACEA_Position_Paper-RED-FQD.pdf">https://www.acea.auto/files/ACEA_Position_Paper-RED-FQD.pdf</a>
Incorporate renewable hydrocarbons	Reduce carbon intensity fuel Compatibility with existing fleet & infrastructure	Availability Cost Impact on performance/emissions (new molecule)	





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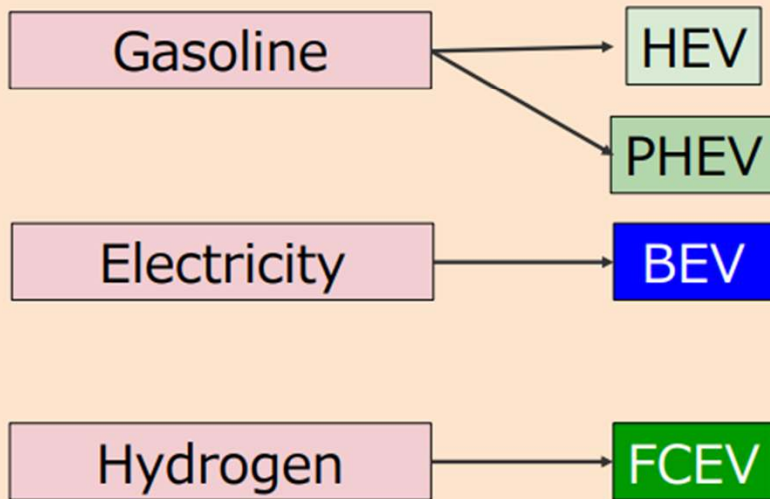
# Announcement of Toyota's BEV global strategy (Dec 14, 2021) **TOYOTA** <sup>L4</sup>

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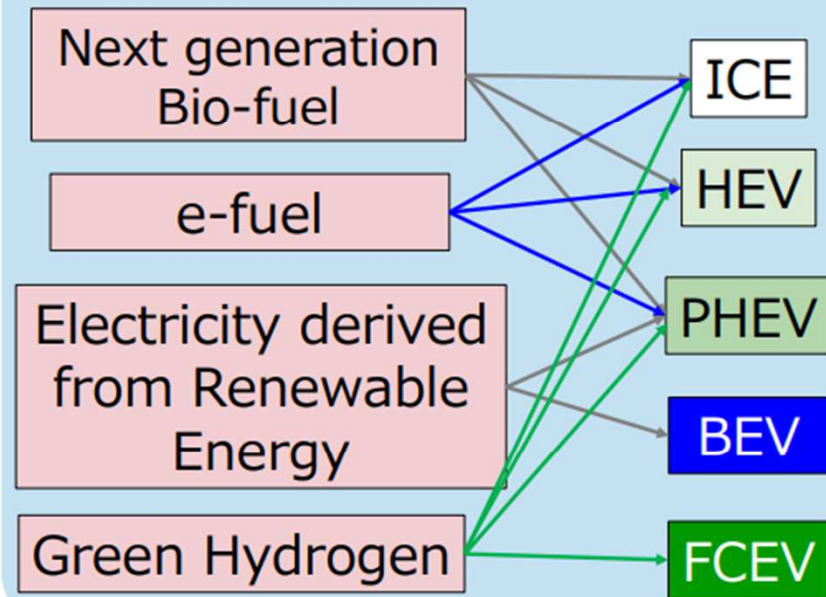


# Carbon-reducing/Carbon-Neutral Vehicles

## Carbon-Reducing Vehicles

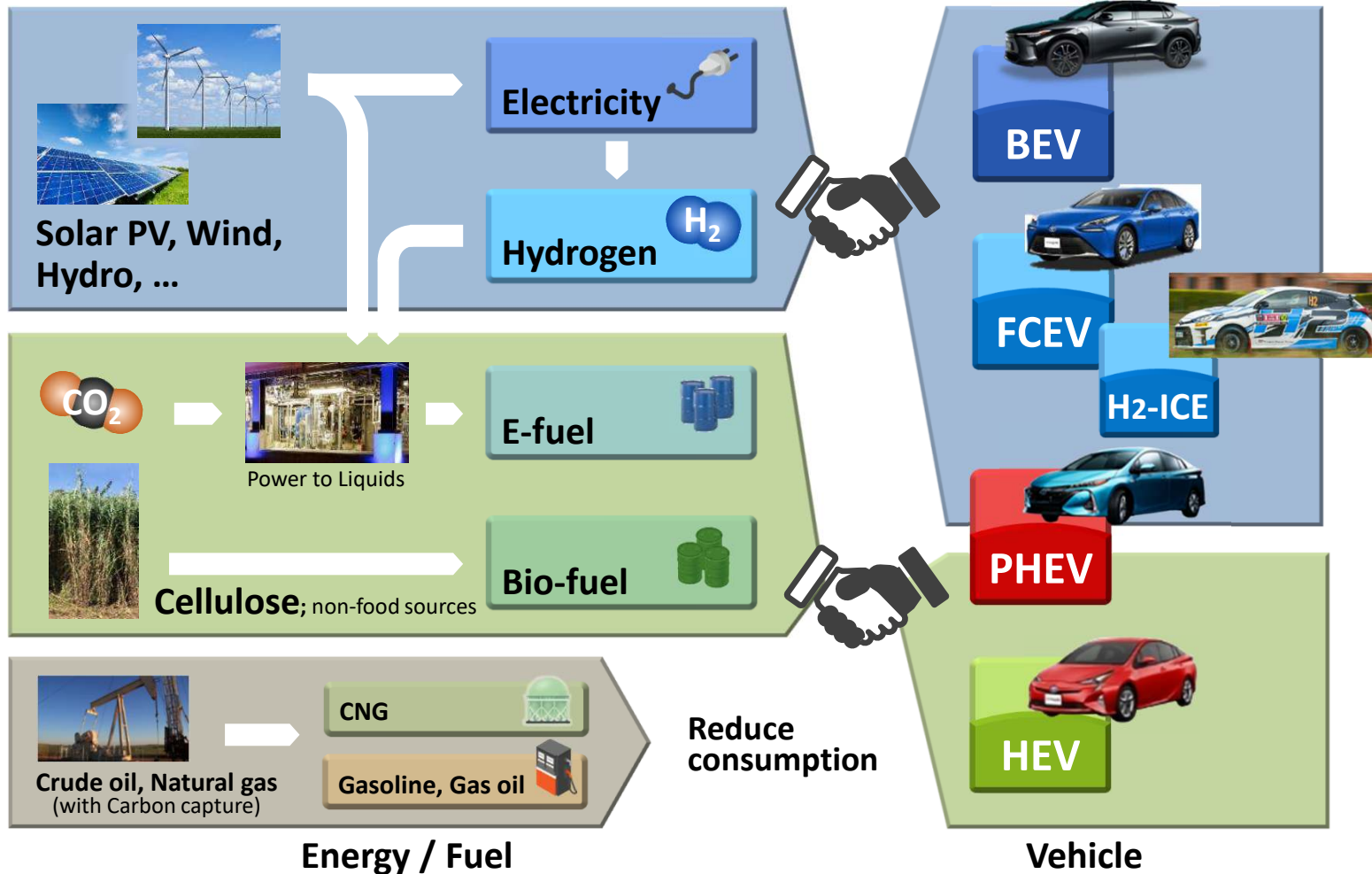


## Carbon-Neutral Vehicles



**Clean Energy is necessary for Carbon-neutral Vehicles**

# Sustainable Mobility



Both technologies go forward carbon neutrality together