Prospects of low-carbon fuels in the transport sector

IEA Bioenergy conference

3 December 2021

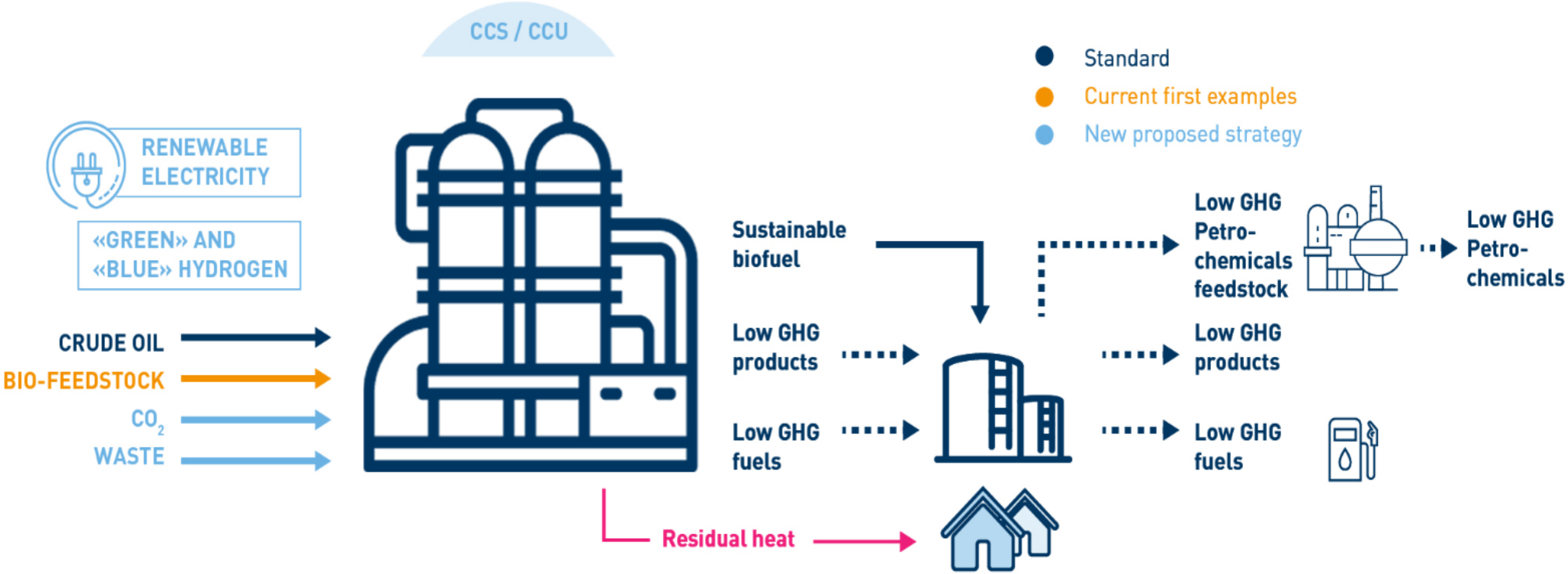
Alessandro Bartelloni – FuelsEurope Director

FuelsEurope

FuelsEurope represents 41 Member Companies ≈ 100% of EU Refining

The future refinery: an ENERGY HUB…

… within an INDUSTRIAL CLUSTER



What is *Clean Fuels for All* about?

- 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.

www.cleanfuelsforall.eu

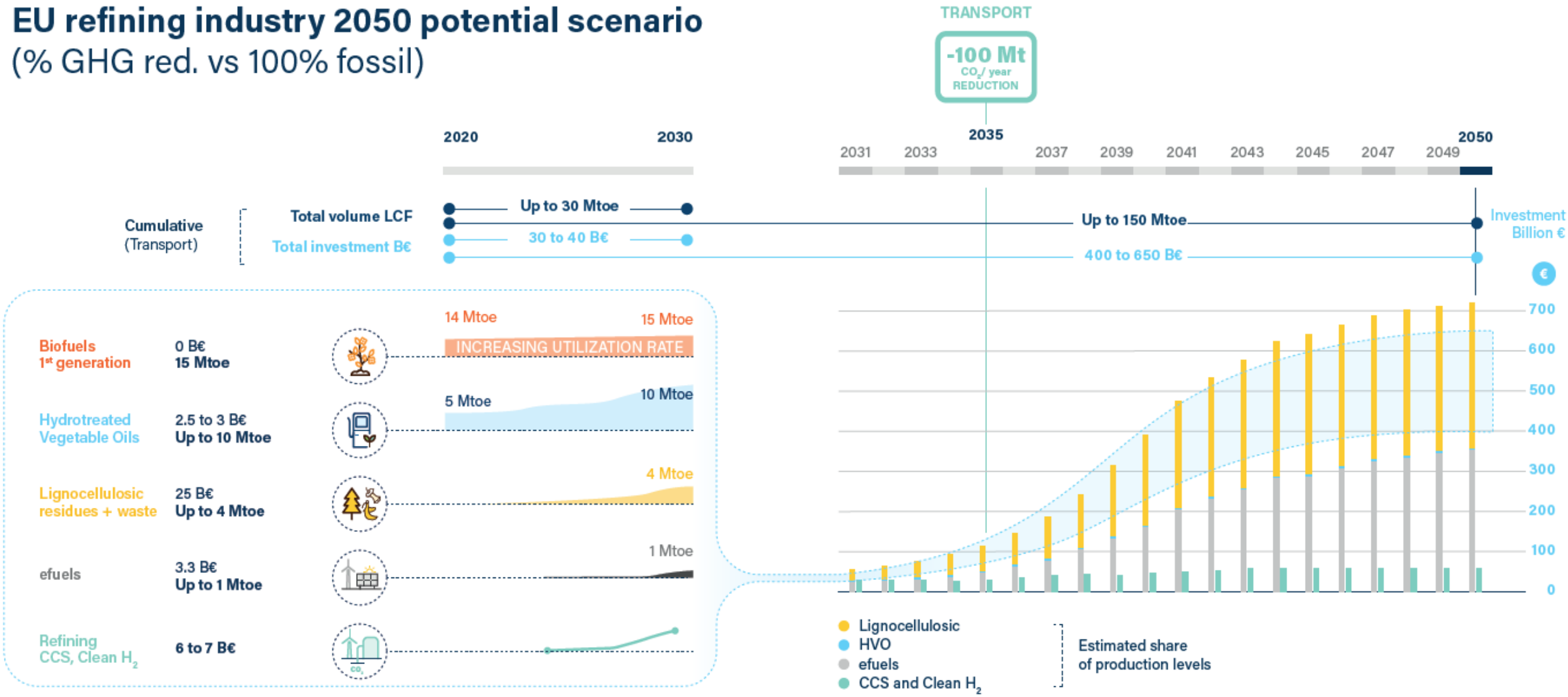
What are "Low-Carbon Liquid Fuels" ?

Renewable and sustainable liquid fuels from non-petroleum origin.

Produced from new feedstock such as biomass, renewable energy, waste and recycled CO_2.

Clean Fuels for All in numbers

EU refining industry 2050 potential scenario
(% GHG red. vs 100% fossil)



FuelsEurope
REFINING PRODUCTS FOR OUR EVERYDAY LIFE

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*:

- 9 Advanced biofuel projects, with capacities between 100.000 and 750.000 tonnes of output.
- 7 CCUS projects, up to 6 mt. of capacity for CO2 sequestration.
- 12 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).

9.9 MT

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

31

New 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.

Recommendations on the “Fit for 55” – focus on transport

Net Climate Neutrality 2050

Renewable and Low-Carbon liquid fuels

Value for transport ecosystem & affordable mobility

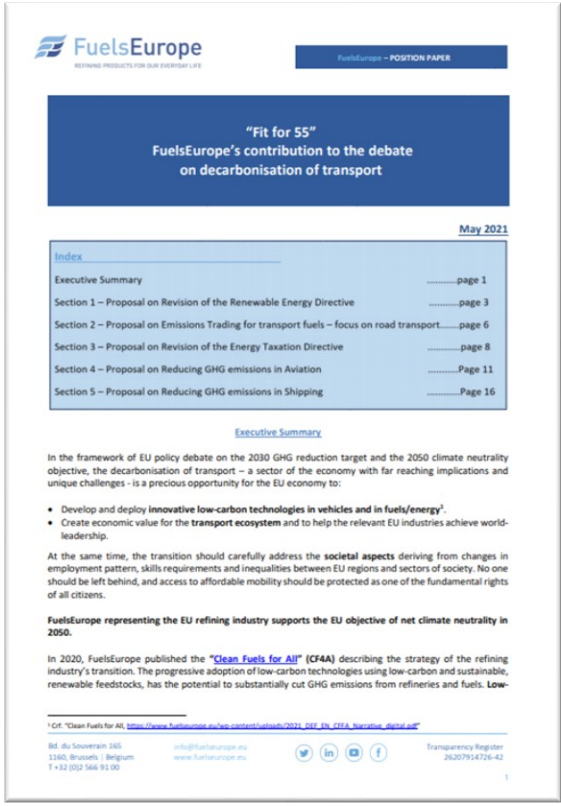
Before aviation and shipping, liquid fuels for road: a no-regret option

Create the conditions for deployment at scale of Renewable and Low-Carbon Fuels

“Fit for 55”

FuelsEurope’s contribution to the debate

on decarbonisation of transport



FuelsEurope

FuelsEurope – POSITION PAPER

“Fit for 55”
FuelsEurope’s contribution to the debate on decarbonisation of transport

May 2021

Index

Executive Summary

In the framework of EU policy debate on the 2030 GHG reduction target and the 2050 climate neutrality objective, the decarbonisation of transport – a sector of the economy with far reaching implications and unique challenges - is a precious opportunity for the EU economy to:

- Develop and deploy **innovative low-carbon technologies in vehicles and in fuels/energy**[1].
- Create economic value for the **transport ecosystem** and to help the relevant EU industries achieve world-leadership.

At the same time, the transition should carefully address the **societal aspects** deriving from changes in employment pattern, skills requirements and inequalities between EU regions and sectors of society. No one should be left behind, and access to affordable mobility should be protected as one of the fundamental rights of all citizens.

FuelsEurope representing the EU refining industry supports the EU objective of net climate neutrality in 2050.

In 2020, FuelsEurope published the **“Clean Fuels for All” (CF4A)** describing the strategy of the refining industry’s transition. The progressive adoption of low-carbon technologies using low-carbon and sustainable, renewable feedstocks, has the potential to substantially cut GHG emissions from refineries and fuels. **Low-**

[1] Cf. “Clean Fuels for All, https://www.fuelseurope.eu/wp-content/uploads/2021_DEF_EN_CFFA_Narrative_digital.pdf”

Bd. du Souverain 165
1160, Brussels | Belgium
T +32 (0)2 566 91 00

info@fuelseurope.eu
www.fuelseurope.eu

Transparency Register
26207914726-42

https://www.fuelseurope.eu/wp-content/uploads/FuelsEurope-contribution-to-decarbonisation-of-transport-May-2021.pdf

Renewable Energy Directive

- ✓ In general, the RED revision provides the opportunity to step up the contribution of sustainable and renewable liquid fuels in transport and the building sector.
- ✓ Technology neutral approach for a wide pool of feedstocks with proven GHG & sustainability credentials:
  - *Biofuels from crop, which meet stringent sustainability criteria.*
  - *Certified biofuels from sustainable agricultural biomass, waste and residues.*
  - *Renewable fuels of non-biological origin including H2 and H2-derived synthetic fuels (e-fuels).*
  - *Recycled carbon fuels.*
- ✓ Cap on the use of Annex IX, part B feedstocks should be removed. “Mature technologies” is wrong criteria.
- ✓ Remove to proposed modification to Annex V, part C, point 18 (indirect GHG burden). Fuels from residues not listed under Annex IX of the RED II are an important part of sustainable biofuels produced.
- ✓ Trading compliance at Member State level is welcome, but for better efficiency it should be extended at EU level.
- ✓ Allow recycled carbon fuels to comply at the Union level, rather than leaving at Member States’ discretion.
- ✓ Building sector: banning technologies, like fuel boilers is not appropriate. Alternative fuels can be used in the place of fossil to reduce the greenhouse emissions of heating significantly.

F.A.Q. On advanced biofuels and sustainable feedstocks

Is the production of advanced biofuels in line with the current RED sust. criteria?

Can the EU rely on the sustainable biomass for transport purposes?

Would that be in competition with electricity production and bioproducts?

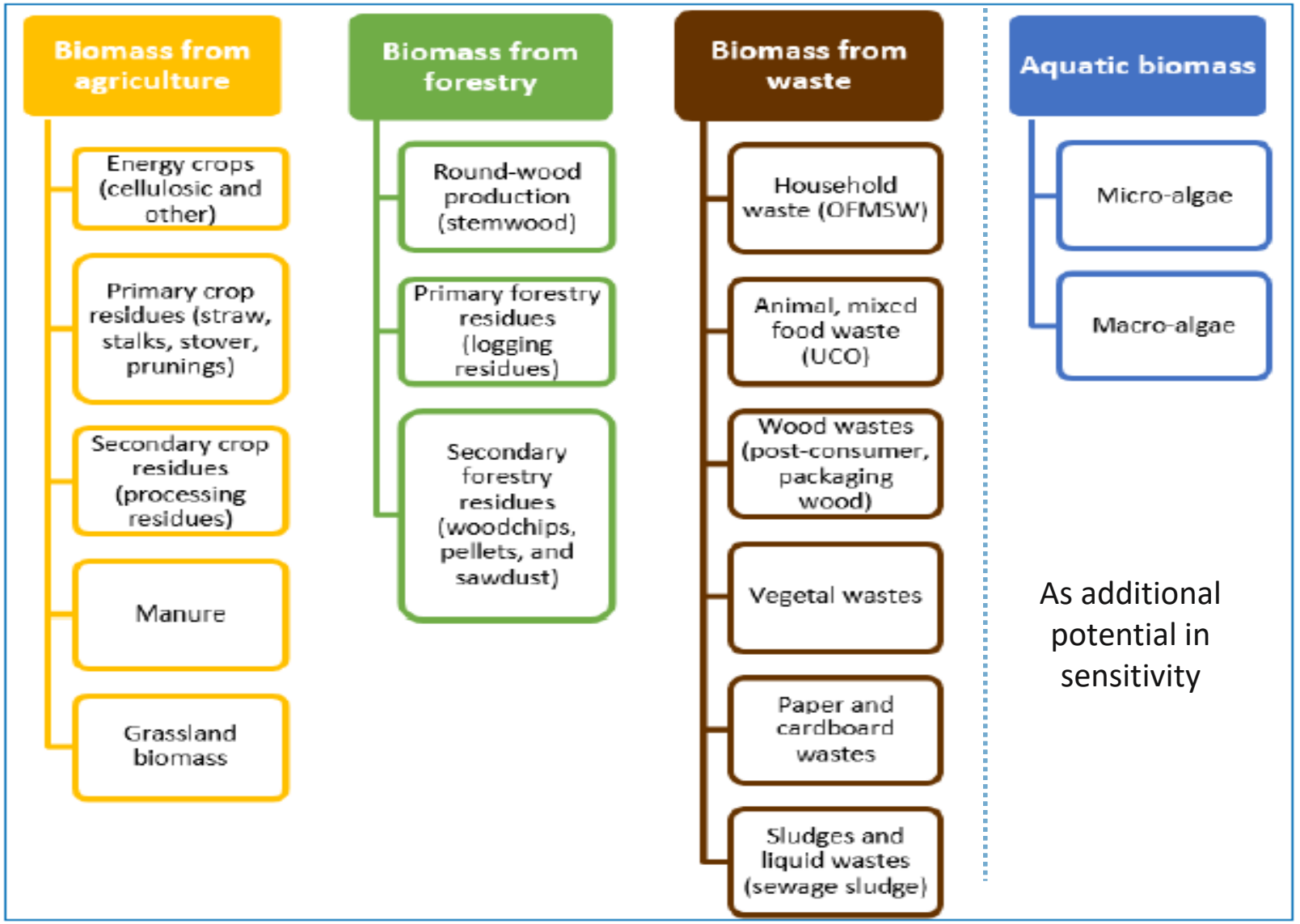
Would the sustainable biomass be available in 2030 and 2050?

Published on 24/8/2021

Advanced and waste-based biofuels are dismissed by some for an alleged scarcity of sustainable biomass feedstock of agricultural, forest and waste origin, or a possible harm to biodiversity.

https://www.concawe.eu/publication/sustainable-biomass-availability-in-the-eu-to-2050/

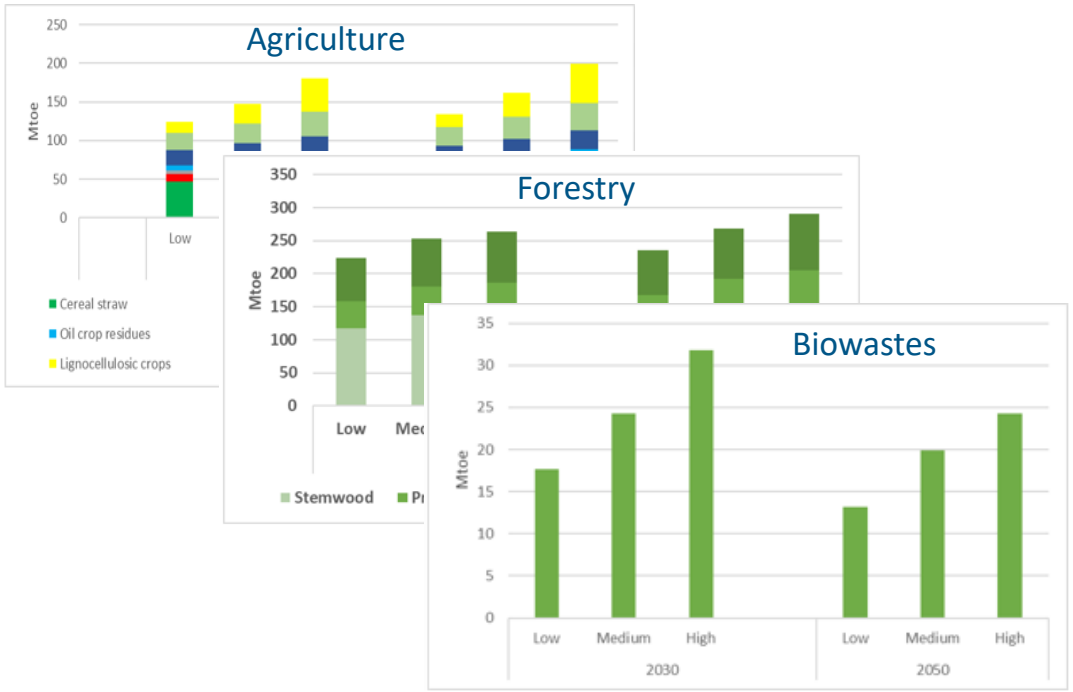
Types of biofeedstocks included in the study



A detailed look into agriculture, forestry, biowaste

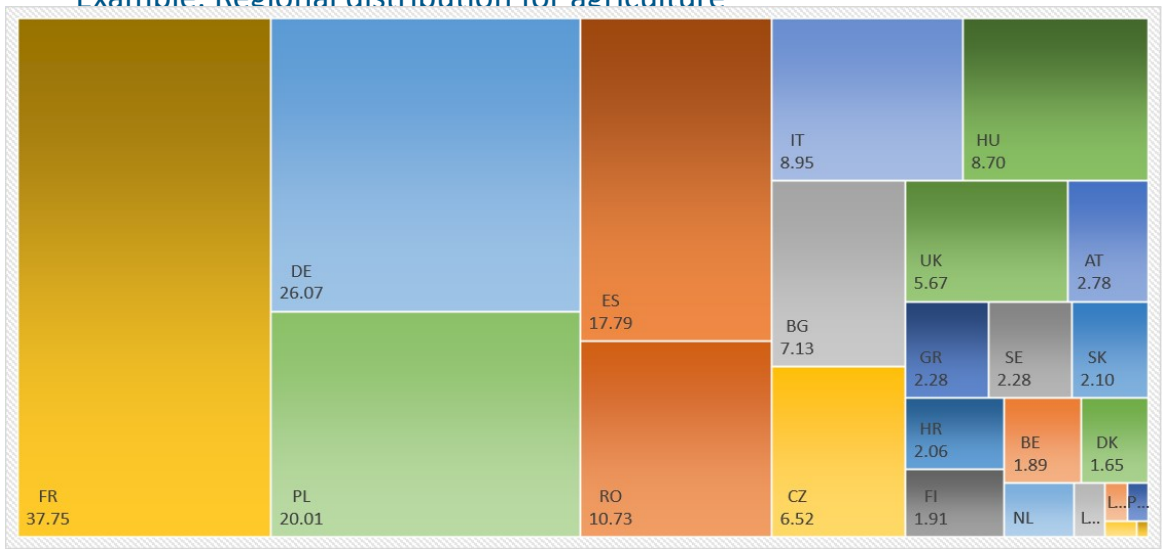
Estimated sustainable biomass potential for all biosectors

Estimated biomass potential across EU Economy



Regional distribution per category

Example. Regional distribution for agriculture



Note: Regional distribution for Scenario 1 (million dry tons).
Similar for Scenario 2 and 3

All biosectors

Bioenergy
Biobased products

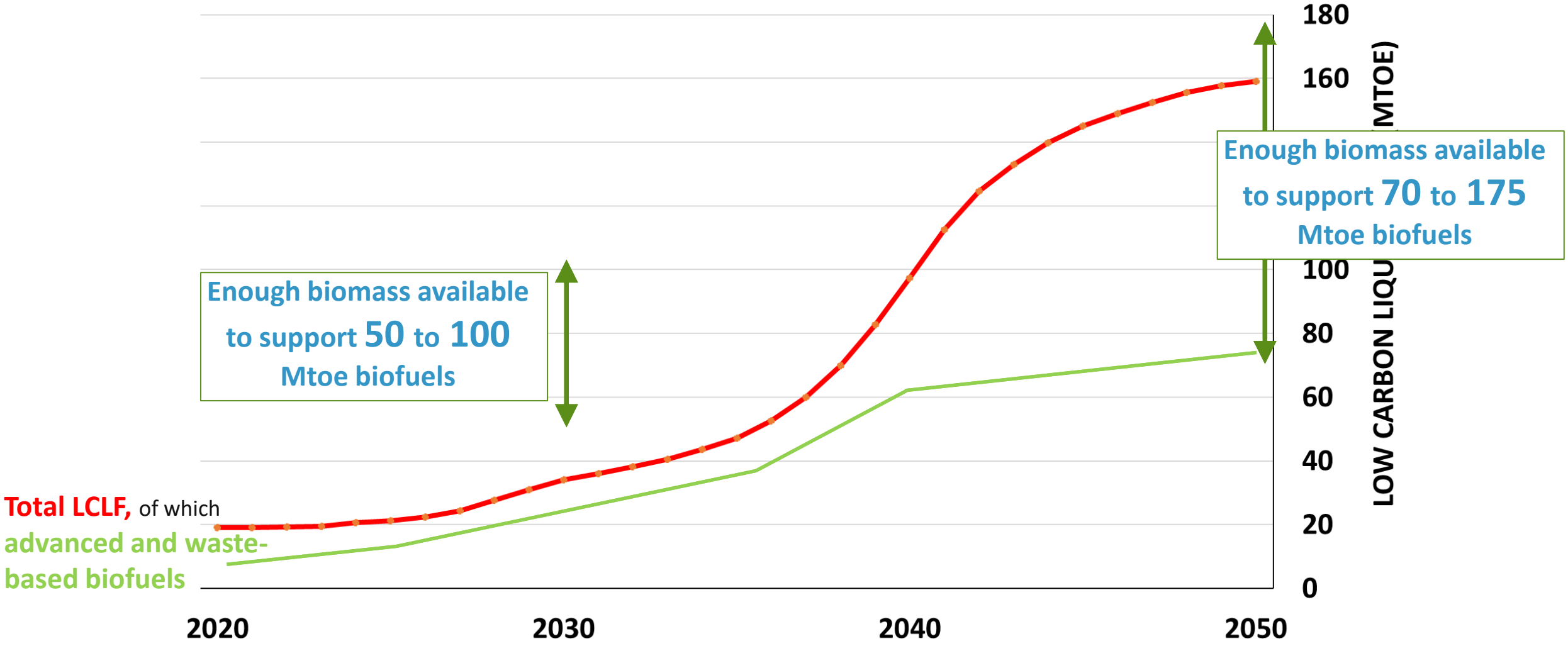
ALLOCATION

Subtracting allocation to biobased products

Bioenergy

Power
Industry
Building
Service & Agriculture
Transport sectors

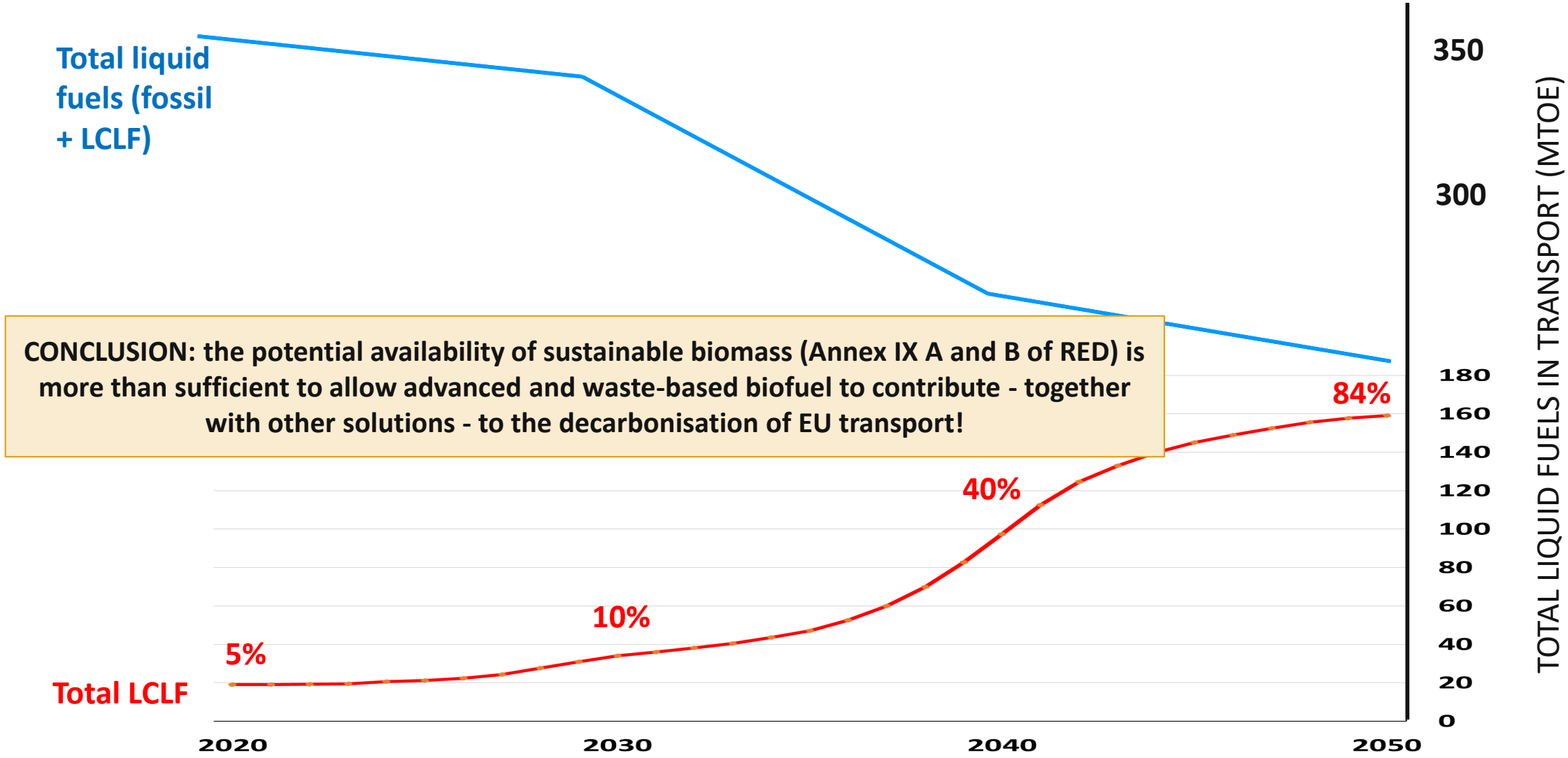
Enough sustainable biomass available for road, aviation and marine fuels biofuels



FuelsEurope's elaboration, based on the Imperial College London Cons. study and Concawe's scenario assuming LCLF in all transport modes
https://www.concawe.eu/publication/sustainable-biomass-availability-in-the-eu-to-2050/

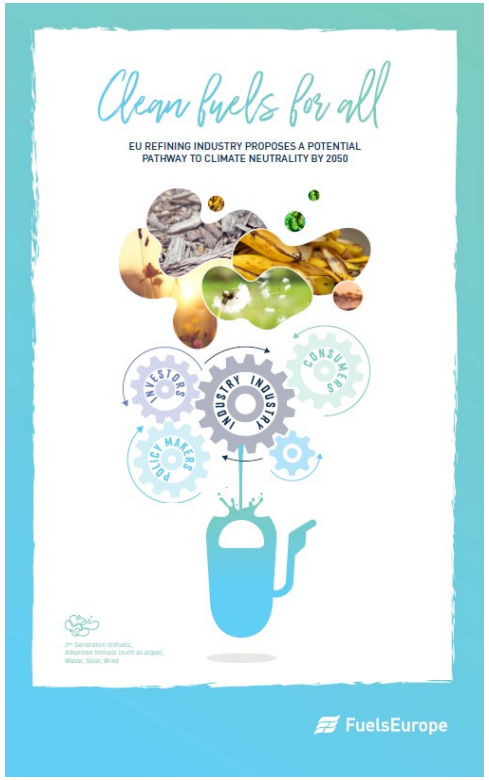
FuelsEurope
REFINING PRODUCTS FOR OUR EVERYDAY LIFE

Low-Carbon Liquid Fuels progressively replacing fossil fuels in transport



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

FuelsEurope
REFINING PRODUCTS FOR OUR EVERYDAY LIFE



www.cleanfuelsforall.eu

Thank you

FuelsEurope