



# *Perspectives of low ILUC risk biofuel production systems in Europe*

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**A. Salimbeni**



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# **BIKE Project**

**Biofuels production at low - ILUC risk for European sustainable bioeconomy**

- ❖ to facilitate the market uptake of EU low ILUC risk biofuels
- ❖ to inform primarily the bioenergy and biofuels stakeholders
- ❖ to provide policy and market stakeholders with new knowledge
- ❖ to remove the most prominent barriers against the market uptake of low ILUC risk biofuels
- ❖ to support the sustainable conversion of the biochemical and biofuels industry

# Bike value chains: case studies



**CS1: Castor oil for HVO** in three sites (unused, abandoned or severely degraded lands) located in **Italy, Kenya and Greece**



**CS2: Perennial lignocellulosic crops** for advanced biofuels in three sites (unused, abandoned or severely degraded lands) located in **Italy, Greece and UK**



**CS3: Brassica carinata** for HVO in three sites (as **cover crop**, in rotation systems with conventional crops) located in **Italy, Greece and Uruguay**



**CS4: BRD model** for liquid biofuels for **road, aviation and maritime** from decentralised and distributed biomethane production through centralised FT or synthesis in three sites (in rotation systems with conventional crops) located in **Italy, Greece and UK**

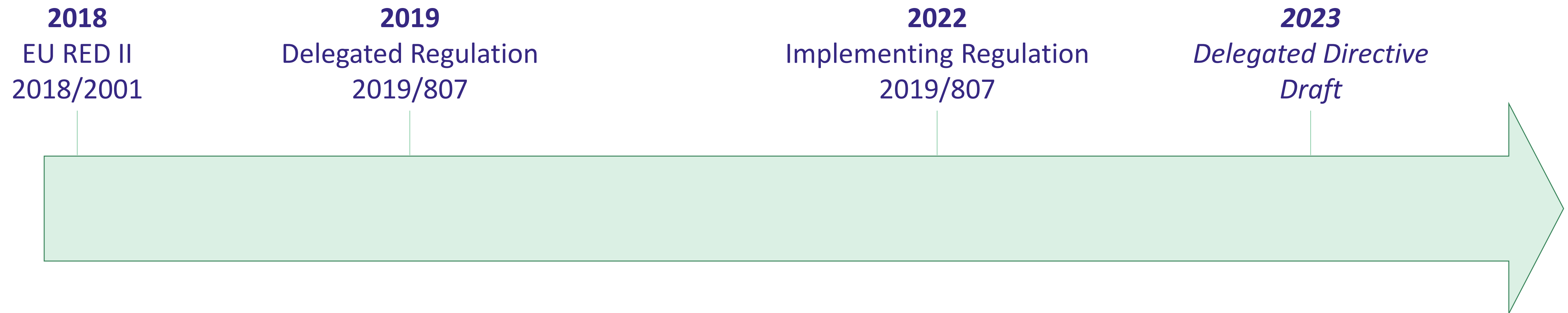
# Main actions



- ❖ WP1 - Creating a **ISCC system certification module** for certifying the low ILUC-risk status of biofuels production sites
- ❖ WP2 - Mapping the European potential production and assess economics of **Low ILUC risk feedstocks and crops**
- ❖ WP3 - Assess the replication potential of Low ILUC risk biofuels value chains identified **by selected case studies**
- ❖ WP 4 - Perform a Full Sustainability Assessment of low- ILUC advanced biofuels production routes
- ❖ WP 5 - Analyse and contribute to policy framework and design a **decision support for decision makers**
- ❖ WP 6 - Analyse and showcase the good practices of real, operational **selected case studies**
- ❖ WP 7 - Connecting data and experiences with **policy, industry, consumers and platforms**



# Update on EU biofuels policy framework



# Renewable Energy Directive (EU) 2018/2001



- New **40% overall RES 2030 target**;
- **Double-counting removal** for Adv. Biofuels
- **Increased subtarget**: from at least 0.2 % in 2022 to 0.5% in 2025 and 2.2 % in 2030;
- Introduced a 2.6% **sub-target for RFNBOs** in 2030;
- Further rules set on the sourcing of bioenergy, including to **“minimise”** the use of **“quality roundwood”** for energy production (D.A exp.).



Part A			
<ul style="list-style-type: none"> <li>• Algae if cultivated on land in ponds or photobioreactors</li> <li>• Biomass fraction of mixed municipal waste</li> <li>• Biowaste from private households subject to separate collection</li> <li>• Biomass fraction of industrial waste not fit for use in the food or feed chain</li> <li>• Straw</li> <li>• Animal manure and sewage sludge</li> <li>• Palm oil mill effluent and empty palm fruit bunches</li> <li>• Crude glycerin</li> <li>• Bagasse</li> <li>• Grape marcs and wine lees</li> <li>• Nut shells</li> <li>• Husks</li> <li>• Cobs cleaned of kernels of corn</li> <li>• Biomass fraction of wastes and residues from forestry and forest-based industries</li> <li>• Other non-food cellulosic material</li> <li>• Other ligno-cellulosic material except saw logs and veneer logs</li> </ul>	<table border="1"> <thead> <tr> <th>Part B</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> <li>• Used cooking oil</li> <li>• Some categories of animal fats</li> </ul> </td> </tr> </tbody> </table>	Part B	<ul style="list-style-type: none"> <li>• Used cooking oil</li> <li>• Some categories of animal fats</li> </ul>
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# COMMISSION DELEGATED REGULATION (EU) 2019/807



*supplementing Directive (EU) 2018/2001 of the European Parliament and of the Council as regards the determination of high indirect land-use change-risk feedstock*

## General criteria for

- ✓ **certification of low indirect land-use change-risk biofuels, bioliquids and biomass fuels**
- ✓ **determining the high indirect land-use change-risk feedstock for which a significant expansion of the production area into land with high carbon stock is observed**
- ✓ **Additionality measures**

II

(Non-legislative acts)

## REGULATIONS

COMMISSION DELEGATED REGULATION (EU) 2019/807

of 13 March 2019

**supplementing Directive (EU) 2018/2001 of the European Parliament and of the Council as regards the determination of high indirect land-use change-risk feedstock for which a significant expansion of the production area into land with high carbon stock is observed and the certification of low indirect land-use change-risk biofuels, bioliquids and biomass fuels**

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources <sup>(1)</sup>, and in particular the fourth subparagraph of Article 26(2) thereof,

Whereas:

- (1) In order to address the issue of indirect land use change ('ILUC'), Directive (EU) 2018/2001 requires the Commission to adopt a delegated act to lay down provisions setting out the criteria for determining the high ILUC-risk feedstock for which a significant expansion of the production area into land with high carbon stock is observed, and for certifying low ILUC-risk biofuels, bioliquids and biomass fuels. Such provisions should accompany the report on the status of worldwide production expansion of the relevant feedstock ('report on feedstock expansion'), submitted to the European Parliament and to the Council on this date.



# COMMISSION IMPLEMENTING REGULATION (EU) 2022/996



*rules to verify sustainability and greenhouse gas emissions saving criteria and low indirect land-use change-risk criteria*

- **General rules on governance**, internal monitoring, complaints procedures and transparency of voluntary schemes
- **Audit process, audit scope**, qualifications of auditors and audit supervision
- **Specific rules on the implementation of the mass balance system**, the Union database and the establishment of GHG emissions and biological fraction of fuels
- **Specific rules on compliance with the requirements on low ILUC-risk certification**

27.6.2022

EN

Official Journal of the European Union

L 168/1

II

(Non-legislative acts)

## REGULATIONS

COMMISSION IMPLEMENTING REGULATION (EU) 2022/996

of 14 June 2022

on rules to verify sustainability and greenhouse gas emissions saving criteria and low indirect land-use change-risk criteria

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources <sup>(1)</sup>, and in particular Article 30(8) thereof,

Whereas:

- (1) Directive (EU) 2018/2001 expands the role of voluntary schemes to include the certification of the compliance of biomass fuels with sustainability and greenhouse gas (GHG) emissions saving criteria and the compliance of renewable liquid and gaseous transport fuels of non-biological origin and recycled carbon fuels with the respective GHG emissions saving criteria. Furthermore, the voluntary schemes can be used to certify biofuels, bioliquids and biomass fuels with low indirect land-use change-risk.

# Consultation for COMMISSION DELEGATED DIRECTIVE (EU) amending Annex IX to Directive (EU) 2018/2001



*as regards adding feedstocks for the production of biofuels and biogas*

Ref. Ares(2022)8413323 - 05/12/2022

Part A, the following feedstocks are added: “

- Alcoholic distillery residues and wastes (fusel oils) not fit for use in the food or feed chain;
- Raw methanol from kraft pulping stemming from the production of wood pulp;
- **Non-food crops grown on severely degraded land, not suitable for food and feed crops.”**



Brussels, XXX  
[...] (2022) XXX draft

ANNEX

ANNEX

to the

COMMISSION DELEGATED DIRECTIVE (EU)

amending Annex IX to Directive (EU) 2018/2001 of the European Parliament and of the Council, as regards adding feedstocks for the production of biofuels and biogas

# New feedstock in Part B



- Bakery and confectionary residues and waste not fit for use in the food and feed chain;
- Drink production residues and waste not fit for use in the food and feed chain;
- Fruit and vegetable residues and waste not fit for use in the food and feed chain, excluding tails, leaves, stalks and husks;
- Starchy effluents with less than 20% starch content not fit for use in the food and feed chain;
- Brewers' Spent Grain not fit for use in the food and feed chain; (h) Liquid whey permeate;
- .....
- Intermediate crops, such as **catch crops and cover crops that are grown in areas where, due to a short vegetation period, the production of food and feed crops is limited to one harvest and provided their use does not trigger demand for additional land and provided the soil organic matter content is maintained.**"



# **Figures about biofuels in Europe**

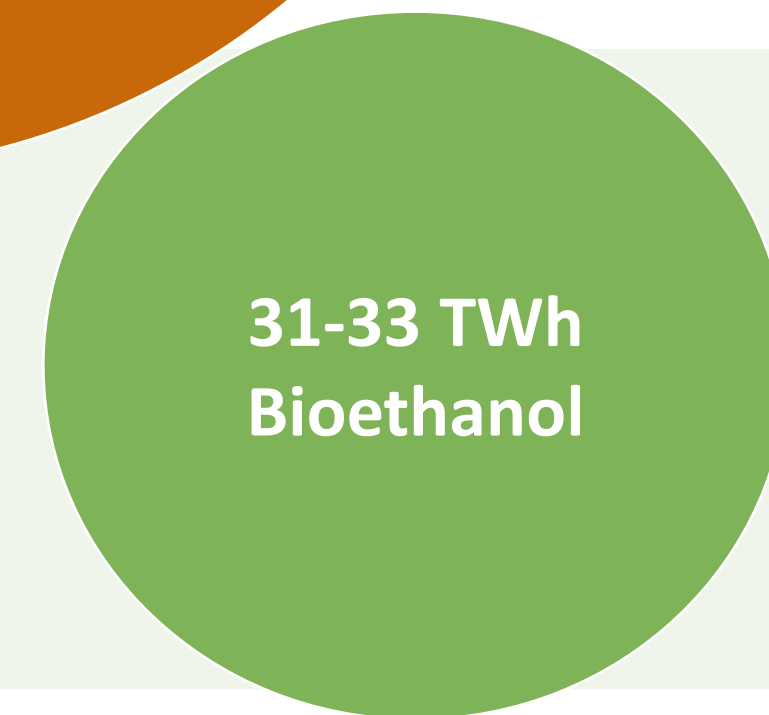
# Where we stand



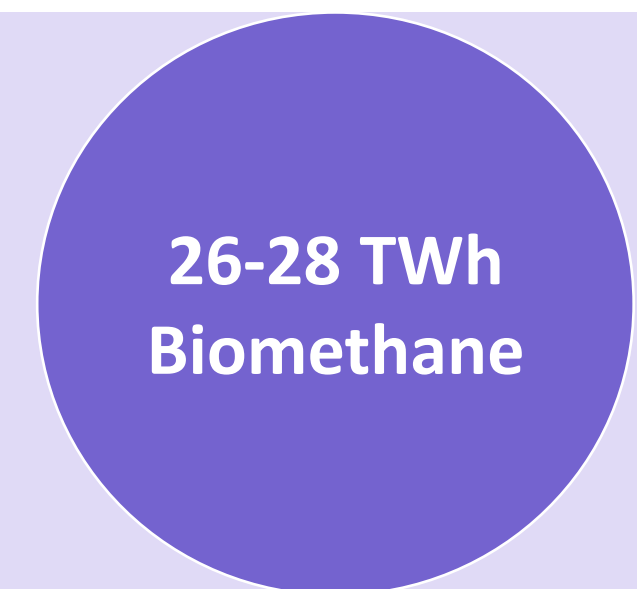
- **Biodiesel:** 12 billion liters
- **HVO:** 3.5 billion liters
- **Non advanced:** 65% (rapeseed, palm, soybean, sunflower)
- **Advanced (part A)** 4% (tall oil, pine oil)
- **Advanced (part B):** 30% (UCO, animal fats)
- **Biodiesel plants in 2022:** 170 (19.3 billion liters capacity)
- **HVO plants in 2022:** 16 (5.5 billion liters capacity)



- **1G Bioethanol:** 5.3 billion liters
- **2G bioethanol:** 50 million liters
- **Non advanced:** 99 % (wheat, corn, barley, rye)
- **Advanced (part A):** 1 % (woody biomass)
- **1G bioethanol plants in 2022:** 55 (6.4 billion liters capacity)
- **2G bioethanol plants in 2022:** 4 (0.12 billion liters capacity)

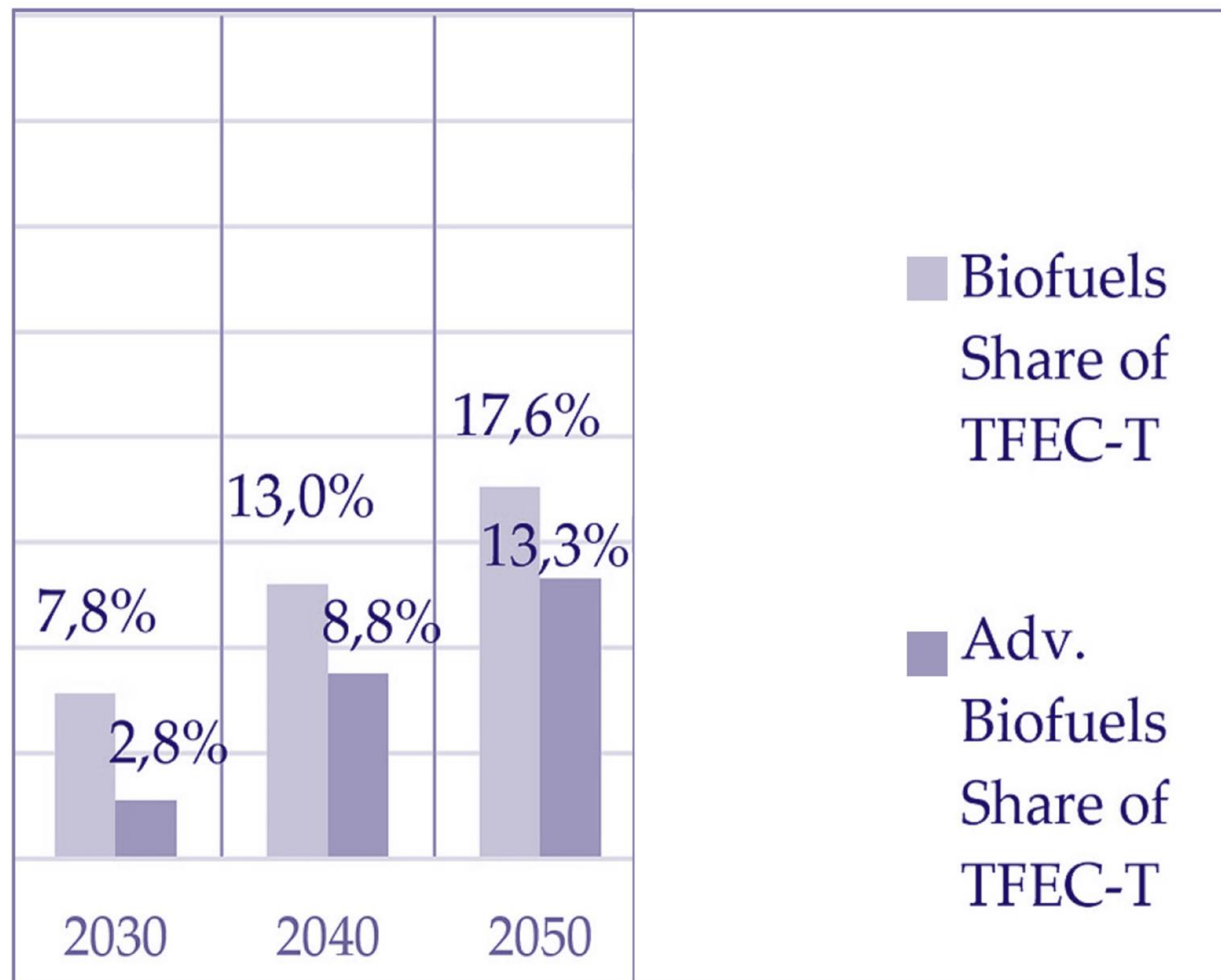


- **Biogas:** 15.8 billion cubic meters
- **Biomethane:** 2.4 billion cubic meters
- **Not for transport:** 85%
- **For transport:** 15%
- **Biogas plants in 2020:** 18 900 (for electricity)
- **Biomethane plants in 2020:** 725 (gas injection)



# Where we must go

## Perspectives to 2030



Both electricity and power-to-x fuels play a key role in decarbonizing the road transport sector, reaching **37% and 27%** of total fuel consumption in 2050, respectively.



Biofuels and advanced biofuels together are expected to contribute to more than 17% by 2050, with advanced biofuel expected to prevail already by 2040.



# Thank you!

@BIKEPROJECT

Bike-biofuels.eu

info@bike-biofuels.eu



(Coordinator)



etaflorence  
renewable  
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exergia  
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