

# Global development of the liquid biofuels sector and its role in a clean energy transition

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# World Bioenergy Association

- Global industry association based in Stockholm
- Established in 2008
- **Mission**: Promoting the sustainable development of bioenergy
  - International advocacy
  - Platform for engagement
- Members Pellet producers, utilities, research institutions, boilers/gasifier manufacturers, pellet mills, briquette manufacturers, heating companies etc.
- Coverage: Solid, liquid and gaseous fuels











GLOBAL BIOENERGY STATISTICS 202 World Bioenergy Associatio

WBA - Global voic





#### Renewable energy in sectors

- Penetration of RE varies among end use sectors
- Heating, cooling and transport suffer from lack of **policy** focus in the past
- Electrification of transport sector is only one part of the solution
- Bioenergy has major impact and potential in all end use sectors – with heating and transport more prominent
- We need all sustainable solutions to decarbonize transport sector



Note: Data should not be compared with previous years because of revisions due to improved or adjusted methodology. Source: Based on IEA data.

REN21 RENEWABLES 2021 GLOBAL STATUS REPORT

Figure: Renewable energy in TFEC (Source: REN21)



Renewable Energy in Total Final Energy Consumption by Final Energy Use, 2018

#### Global production of liquid biofuels

- Current production of liquid biofuels is estimated to have increased to 171 billion litres in 2022 (3 million barrels per day)
- Production increased by 6% post COVID
- Both bioethanol and FAME Biodiesel had a modest growth of 4% while Renewable diesel (or HVO) increased production by 30%
- Bioethanol (mainly sugarcane, corn in Brazil and corn in USA) accounted for 65% of the production, while biodiesel (Rapeseed in EU and Palm in SE Asia) accounted for 28%



Figure: Biofuel production globally (Source: IEA Statistics)

2023-10-13

#### Bioethanol – fuels and regions

- USA and Brazil account for **80%** of the global production of bioethanol
- India is a major emerging market
- Crop based biofuels are the dominant renewable resource in EU transport (54%)
  - But recent legislations hinder progress e.g., cap on the qualification of crop biofuels towards RED 2, phasing out ICE and lowering gasoline demand
- Major growth in Americas (USA 10%, Brazil -27%) and Asia (India – E10 to E20)



#### Biodiesel – fuels and regions

- More distributed among all continents (Asia 37% and Europe 31%)
- In 2022, biodiesel production is back at pre pandemic levels with global production at 47 billion litres
- Europe is the leader in biodiesel production, but growth has stagnated over the past few years
- Asia is experiencing exponential growth mainly mandate driven in Malaysia (B20), Thailand (B10 – 7/5) Indonesia (B35) etc.





# Biofuels policy development in EU

- Revised RED II set a framework for renewable use in EU
- Overall binding target of 32% by 2030 and specific renewable energy in transport share of14% (upgrade from 10% in 2020)
- Minimum shares for advanced biofuels (Annex IX Part A): 0.2% 2022, 1% 2025, 3.5% 2030 – all double counted
- Cap on crop-based biofuels (capping at 2020 levels and 7% target)
- Reinforced sustainability criteria and phase out of high ILUC risk biofuels by 2030







## **Bioethanol production in EU: 2022**

- In 2022, 6.2 billion litres of total bioethanol was produced in 58 refineries
- Imports reached an all-time high of 1.3 billion litres
- Critical component of bioethanol production are DDGS and corn oil while opportunities for CO2 capture and use are of significant interest
- Prominent feedstock are corn kernels (37%), sugar beets (35%) and wheat kernels (19%)
- Anticipated minor increase of 2% in demand, but production to fall





# **Biodiesel production in EU 2022**

- EU is world's largest biodiesel producer
- In 2022, 16 billion litres was produced in 2022
  - Imports at 3.2 billion litres
- Total of 190 biodiesel facilities with a combined capacity of 26 bl
- 15 million tonnes of feedstock was used in the EU:
  - Rapeseed 40%
  - UCO 25%
  - Animal Fats 10%
  - Palm Oil 10%
- France, Germany and Sweden account for 50% of the EU consumption



#### IEA NZE Pathway

- Sustainable bioenergy delivers emissions reductions across a wide range of area:
  - Low emission fuels for aviation, shipping and other forms of transport
  - Replacing natural gas with biomethane and other fuels
  - Replacing coal with solid biomass fuels in large CHP facilities
  - Clean cooking solutions
- In NZE scenario, bioenergy will be the 2<sup>nd</sup> largest fuel in 2050!!



Figure: IEA Net Zero Emissions scenario (IEA NZE report)

# Strengthening feedstock supplies

- Get more out of less yields, supply chains and residue collection
- 2. Increase crop production using marginal or degraded lands
- 3. Improvement of technologies for accessing and processing novel feedstock
- 4. Lowering LCA emissions by reducing fossil fuel use in transport, fertilizer etc.
- 5. Invest in communication efforts to dispel myths (e.g. food vs. fuel)



IRVING, Texas – ExxonMobil has signed an agreement with Global Clean Energy Holdings to purchase 2.5 million barrels of renewable diesel per year for five years from a converted California refinery starting in 2022.

> Bunge and CoverCress Inc. Announce Commercial Partnership to Meet Growing Demand for Renewable Fuel Feedstocks

> > Bunge, Chevron Make New Investments in CoverCress Inc.

Race for new feedstock – Eni, ExxonMobil, Chevron, BP etc.

## Thank you!

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TECHNOLOGIES FOR EFFICIENT CONVERSION OF BIOMASS TO HEAT AND POWER 22 Jun, 2023 1:00 AM CET, WEBINAR



23/05: Biomass pellets and briquettes (CPM, Kahl, Andritz, C F Nielsen..)

22/06: Conversion technologies (Polytechnik, Justsen, ..)



19/10 – ...: WBA General Assembly (Beijing, China + Bangkok, Thailand)