Scaling-up advanced biofuels - essential part of transport decarbonization pathways

GBEP AG8 webinar: Impact of COVID-19 on the advanced liquid biofuels sector

27 October 2020
Toshimasa Masuyama, Bioenergy Analyst
International Renewable Energy Agency (IRENA)
Transport sector: the lowest renewables uptake + growing emissions

Total Final Energy Consumption (EJ) in 2017

- Transport
- Building
- Industry

Non-renewable
Renewable

Annual CO2 emissions associated with end-use sectors

- Building
- Industry
- Transport

Source: JRC-EDGAR (2018)
Decarbonizing transport requires biofuels and RE-electrification playing complementary roles

Final energy consumption (EJ/yr)

- **RE-Electrification**: · Battery electric vehicles · Hydrogen in Fuel cells
- **Renewables (direct uses)**: · Biofuels for road, aviation and marine transport
- **Energy Efficiency**: · Improvements in fuel economy · Modal shift to mass transport · Enhanced mobility service

Transforming Energy Scenario

- Coal
- Gas
- Oil
- Non-RE electricity
- Other renewables
- Bioelectricity
- Biogas
- Liquid Biofuels
Deployment of biofuels should be significantly increased GLOBALLY.

- North America
- Latin America
- EU
- Rest of Europe
- MENA
- SS Africa
- Oceania
- Southeast Asia
- East Asia
- Rest of Asia
- Southeast Asia

2017: 3 EJ
2050 PES: 10 EJ
2050 TES: 17 EJ

PES: Planned Energy Scenario  TES: Transforming Energy Scenario
Scaling-up of biofuels requires advanced biofuels deployment

World biofuel production from traditional and advanced feedstocks

Source: OECD/FAO (2020): OECD-FAO Agricultural Outlook
Global biofuel investments need to be reinvigorated

To achieve the 5-fold increase goal, more than 100 refineries should be developed annually at an investment cost of USD 20+ billion.

Source: BNEF
What really matters for investing in advanced biofuels?

- **Stability of regulation** is clearly the most important barrier to investments followed by the cost and availability of financing and level of conversion efficiency & capex.

- The three issues of policy stability, mandates and subsidies (46%) are all dependent on regulation and thus subject to societal preferences and political control.

- The second largest “block” relates to cost competitiveness of advanced biofuels production, formed jointly by “conversion efficiency & CAPEX” and “feedstock price”.

Source: Advanced biofuels: what holds them back? (IRENA, 2019)