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Bioenergy Retrofits for Europe's Industry

Retrofitting 1G biofuels – Status quo and BIOFIT activities

BIOFIT Final Policy Conference

Industry session: 1G biofuels

19.01.2022

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1G biofuels overview of the sector

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Main source for GHG mitigation in transport sector are 1G biofuels as blending components into diesel and gasoline

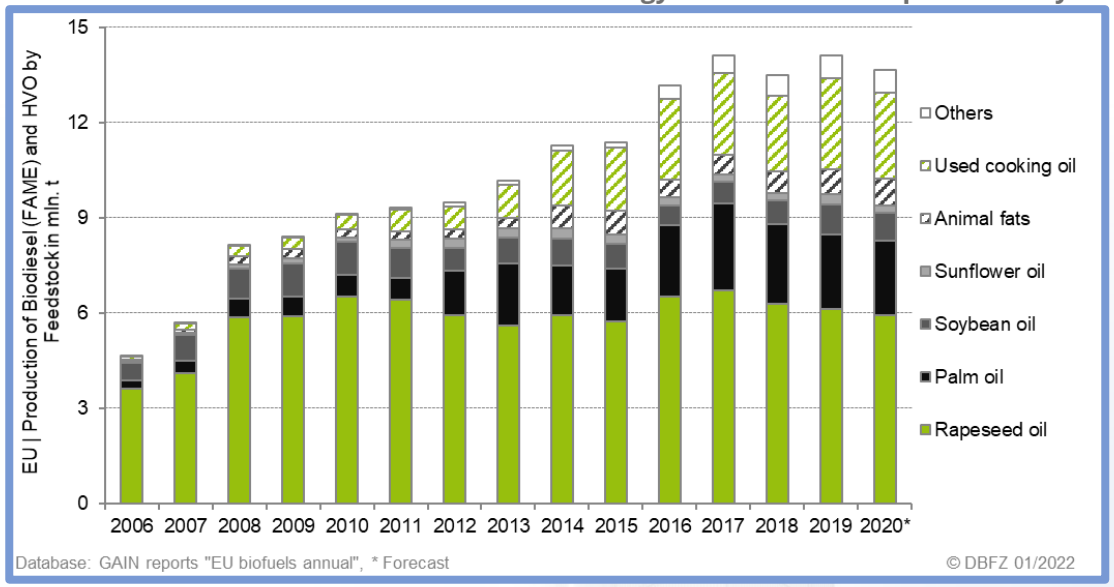
- Biodiesel (fatty acid methyl esters - FAME)
- Hydrogenated vegetable oil (HVO/HEFA)
- Bioethanol

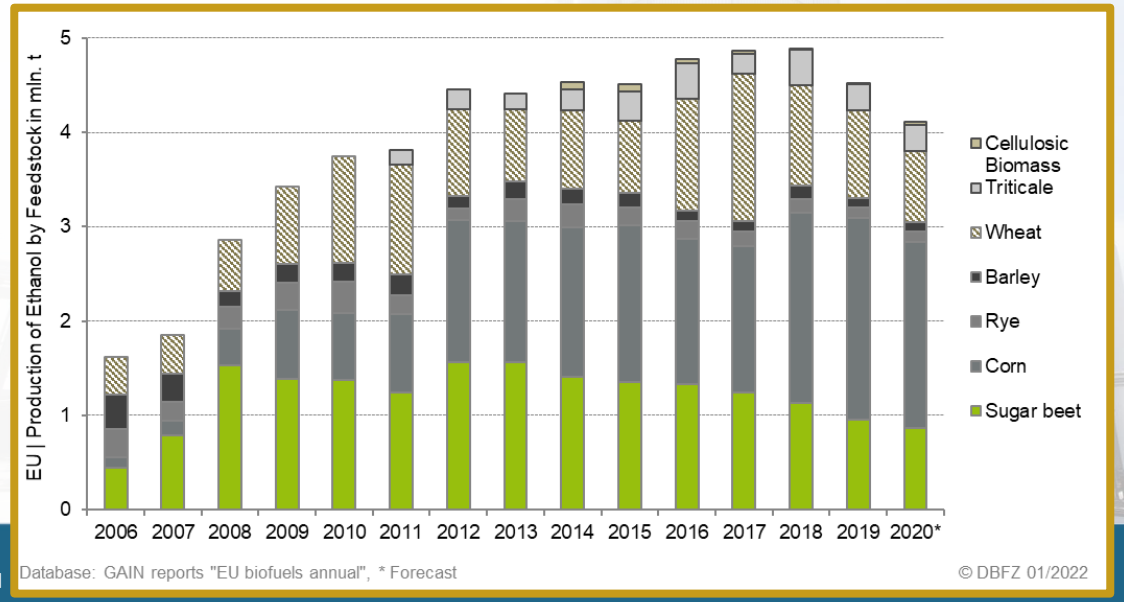
Stable production in the last years,

- Slight fluctuations
- Increase in production of FAME and HVO/HEFA from UCO

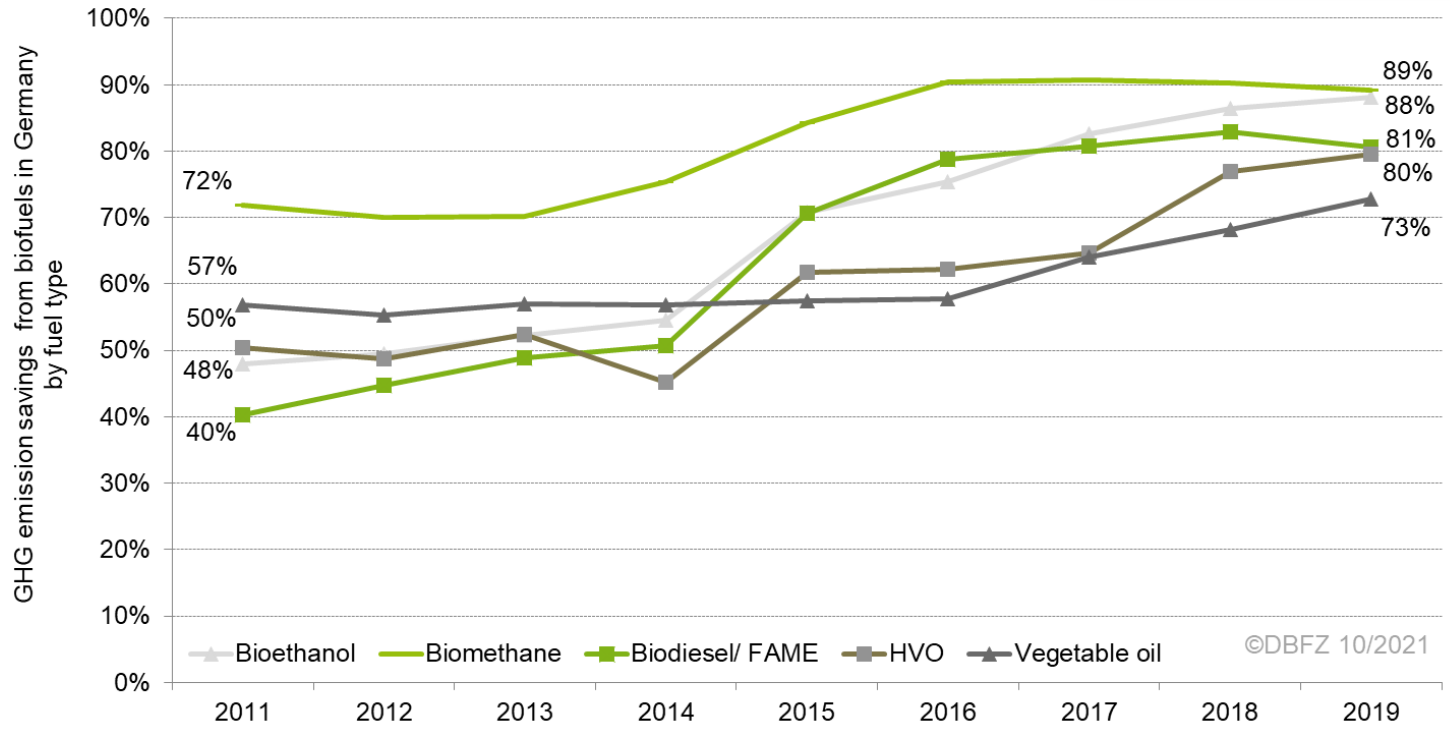
Main input: currently agricultural crops, with still rather small share of residues:

- UCO, animal fats for biodiesel and HVO
- Cellulosic biomass for bioethanol. Increase of production is ongoing e.g. by Clariant and AustroCell Hallein



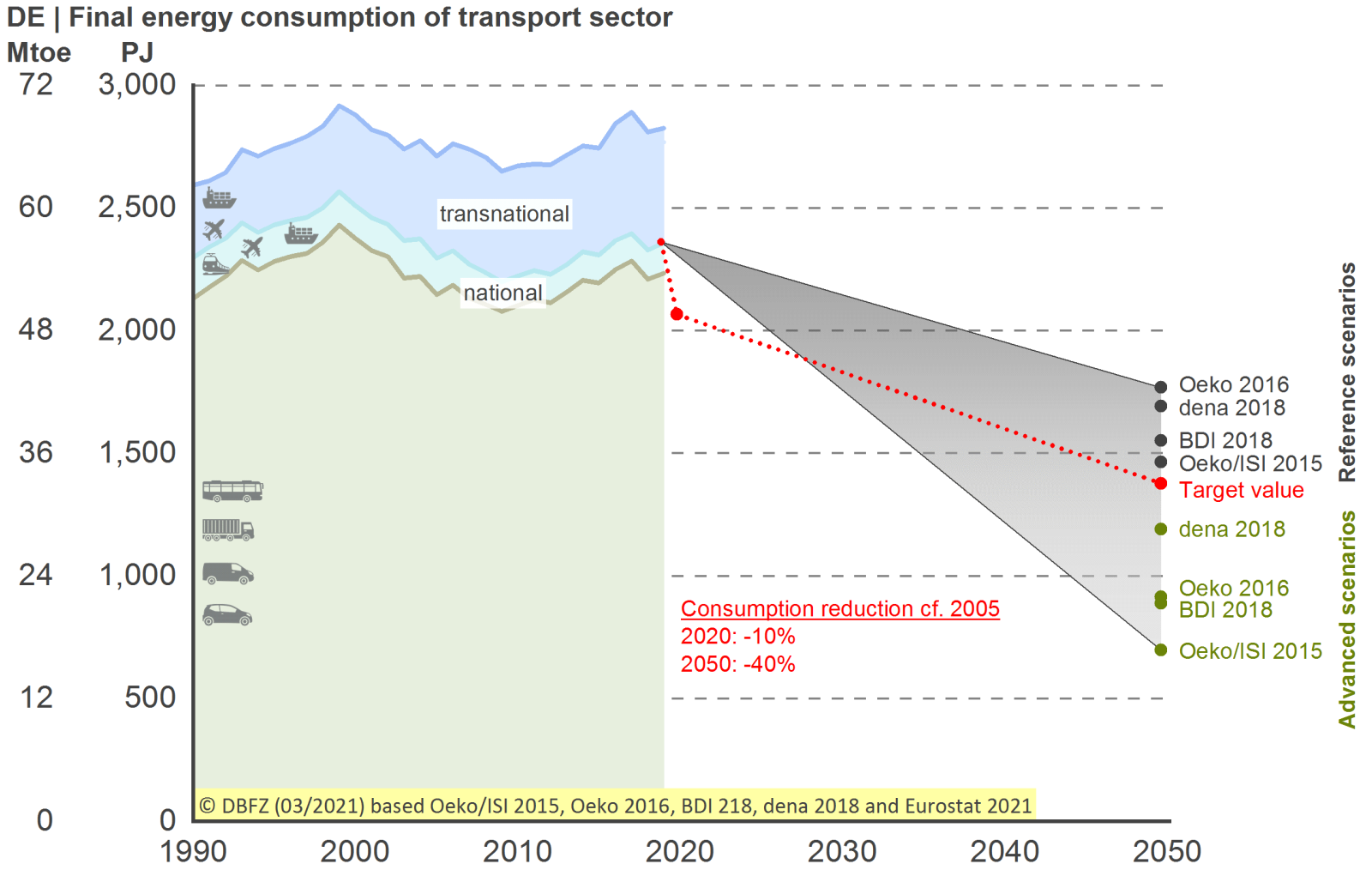


Improvement of GHG emission savings from 1G biofuels



Average value for GHG emission savings from biofuels utilized in Germany by fuel type between 2011 and 2019 (No specificity from feedstock utilized). ©DBFZ based on BLE (2014,2015, 2017, 2018 and 2020)

Gap between trends and targets



Gap between trends and targets

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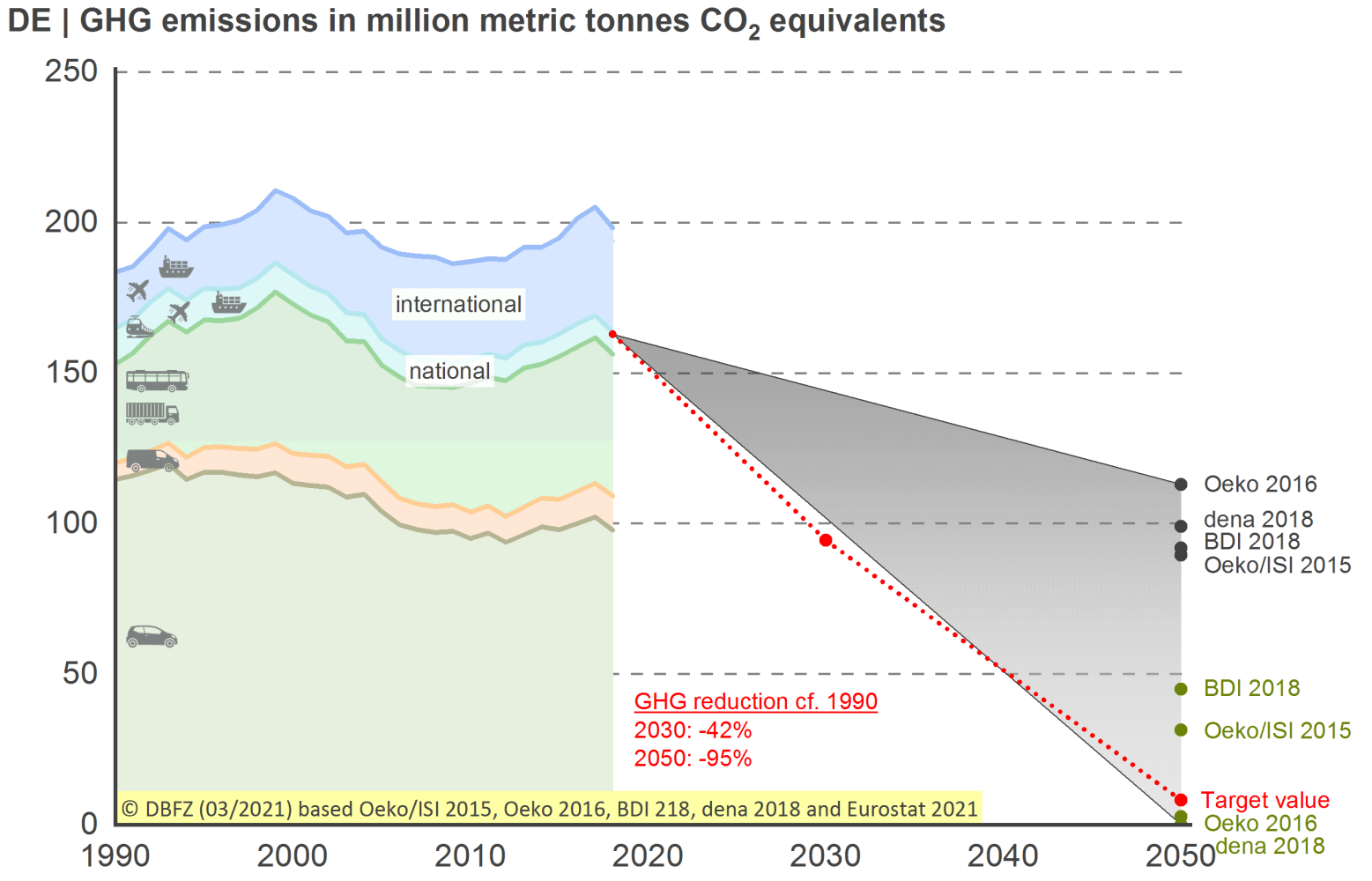
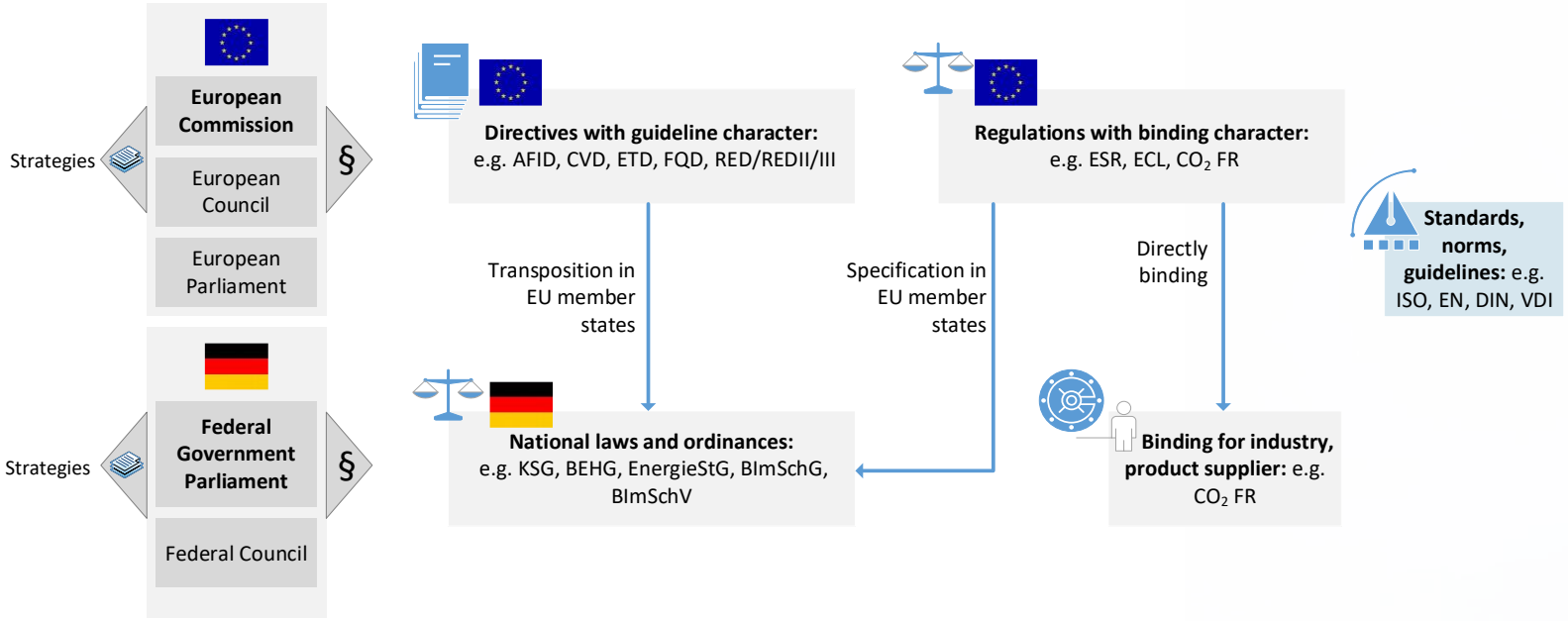


Highly regulated sector



Targets and quota e.g. for

- Advanced biofuels (0.2% in 2022, 1% in 2025, 3.5% in 2030, REDII)
- Aviation (ICAO target of 50% GHG emission reduction until 2050)

Caps for conventional biofuels

Sustainability criteria

Drivers for retrofitting for biofuels

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Drivers (in no specific order):

- Feedstock change to residues / 2G (REDII, Annex IX) (benefits on market: e.g. double counting)
- Lowering GHG emissions as a market benefit
- Production of biofuels for different applications, e.g. marine and aviation sector
- Upgrading of by-products for additional income
- Flexibilisation of feedstock
- Quality improvement of biofuels
- Exploring synergies with renewable electricity generation and CO2 utilization

Map, factsheets, handbook

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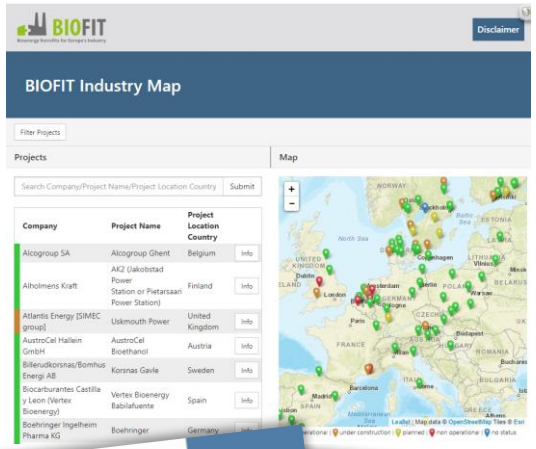

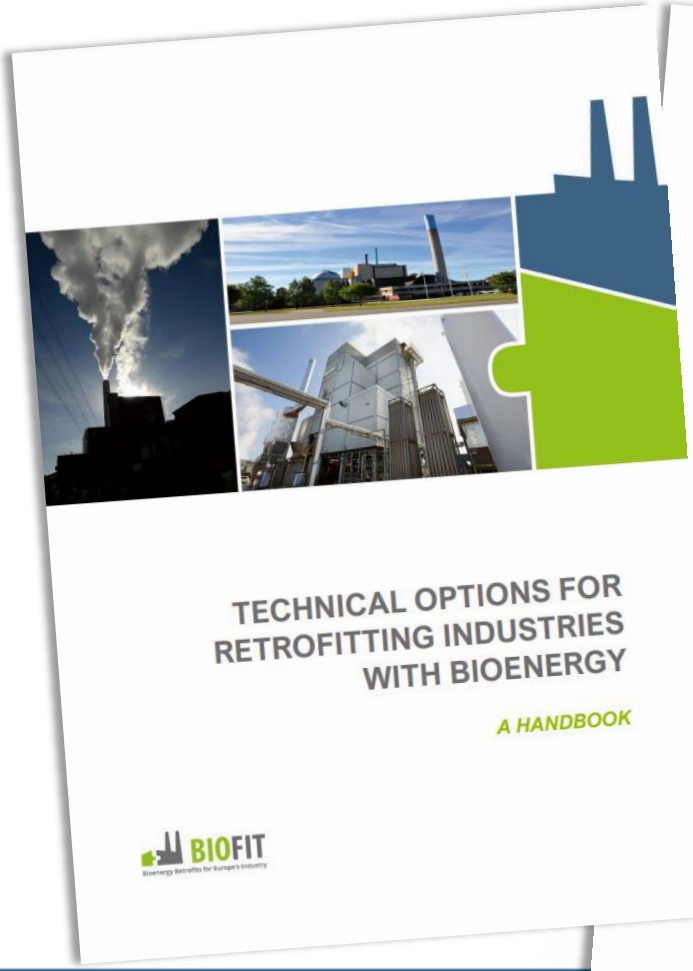

Industry fora and surveys

Retrofitting measures for biofuel plants with a special focus on biodiesel

Leipzig, DE

Madrid, ES

Retrofitting the first-generation biofuels

eEUBCE: BIOFIT side-event

online

September 19

March 20

September 20

online

Webinar Retrofitting cellulosic ethanol

March 21

September 21

- Surveys on drivers and barriers and public acceptance
- Policy recommendations → Results presented and discussed in Policy Breakfast tomorrow

Case studies

VERTEX BIOENERGY

Retrofit of the first-generation ethanol production facility of Biocarburantes de Castilla y Leon to produce advanced ethanol

Swedish BioFuels

Benefits, challenges and opportunities of integrating ATJ technology on to an existing 1G bioethanol plant

- Case study description
- Supply chain assessment
- Market assessment
- Techno-economic assessment
- Sustainability assessment
- Risks

Case study teams

btg biomass technology group

BEST Bioenergy and Sustainable Technologies

DBFZ

CERTH CENTRE FOR RESEARCH & TECHNOLOGY HELLAS

VTT

Ciemat

Agenda of the session

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11:15 - 12:30	Industry session: 1G Biofuels Retrofitting 1G Biofuels – *Status quo and BIOFIT activities* – *Arne Gröngröft (DBFZ)* 1G Bioethanol: Challenges and opportunities – *Antonio José Vallespir (CEO, VERTEX)* Retrofitting a bioethanol facility for the co-production of advanced fuels using industrial residues – *Ana Isabel Susmozas Torres (CIEMAT), Juan María (Vertex)* The Alcohol-To-Jet process: A Retrofit for 1G ethanol plants – *Andrew Hull (Swedish Biofuels)* Technical options and policy recommendations for retrofitting in the 1G biofuels sector – *Stephanie Hauschild (DBFZ)*
12:30 - 13:00	Discussion and Q&A: Biofuels – *Moderated by Raquel Iglesias Esteban (CIEMAT)*