September 22, 2022 – Task 64

Technology Collaboration Programme on
Advanced Motor Fuels

E-fuels - overview on current status and technology assessments

September 22, 2022 – Task 64

Technology Collaboration Programme on
Advanced Motor Fuels

Technical overview

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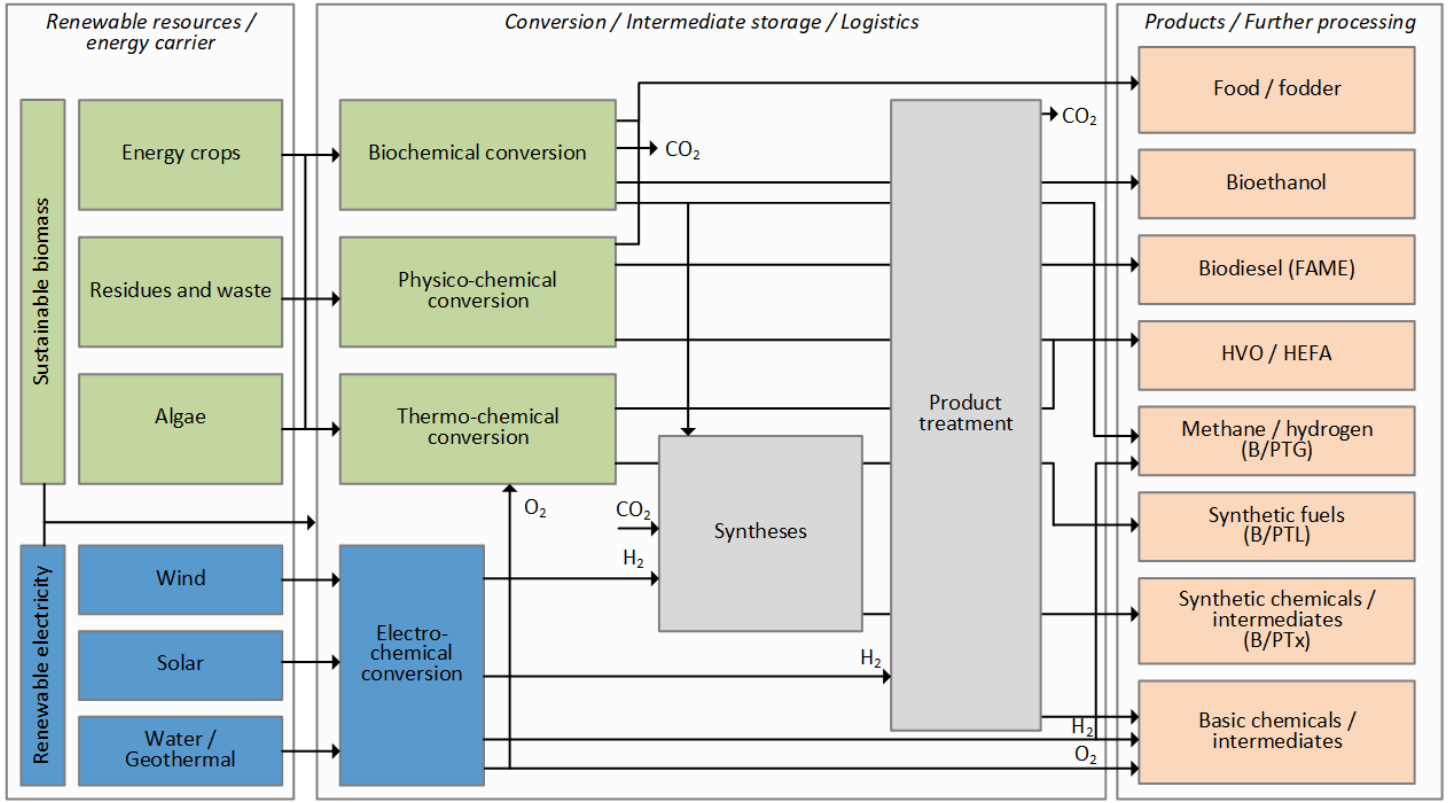
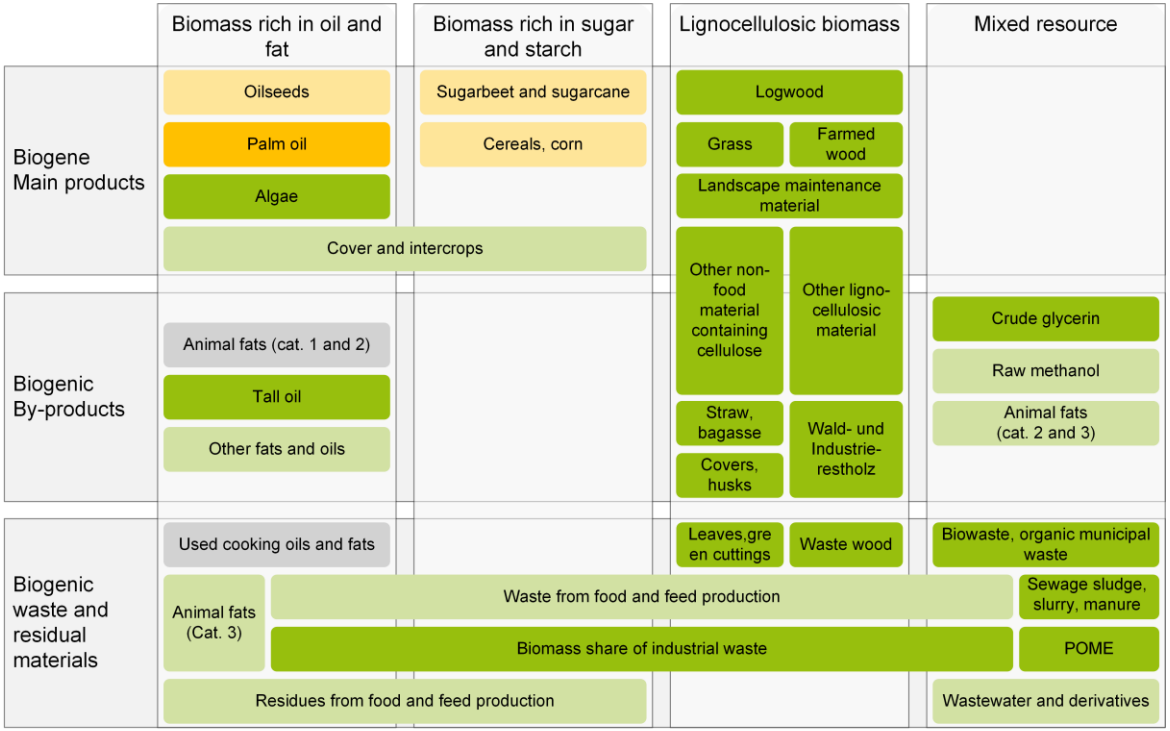
Different technology options and synergies

Technology Collaboration Programme on Advanced Motor Fuels



SynBioPTx © DBFZ 11/2021 (w/o entitlement of completeness)
B/PTG – Biomass-/Power-to-Gas, B/PTL – Biomass-/Power-to-Liquids, B/PTx – Biomass-/Power-to-products X; FAME – Fatty acid methyl ester

Further information

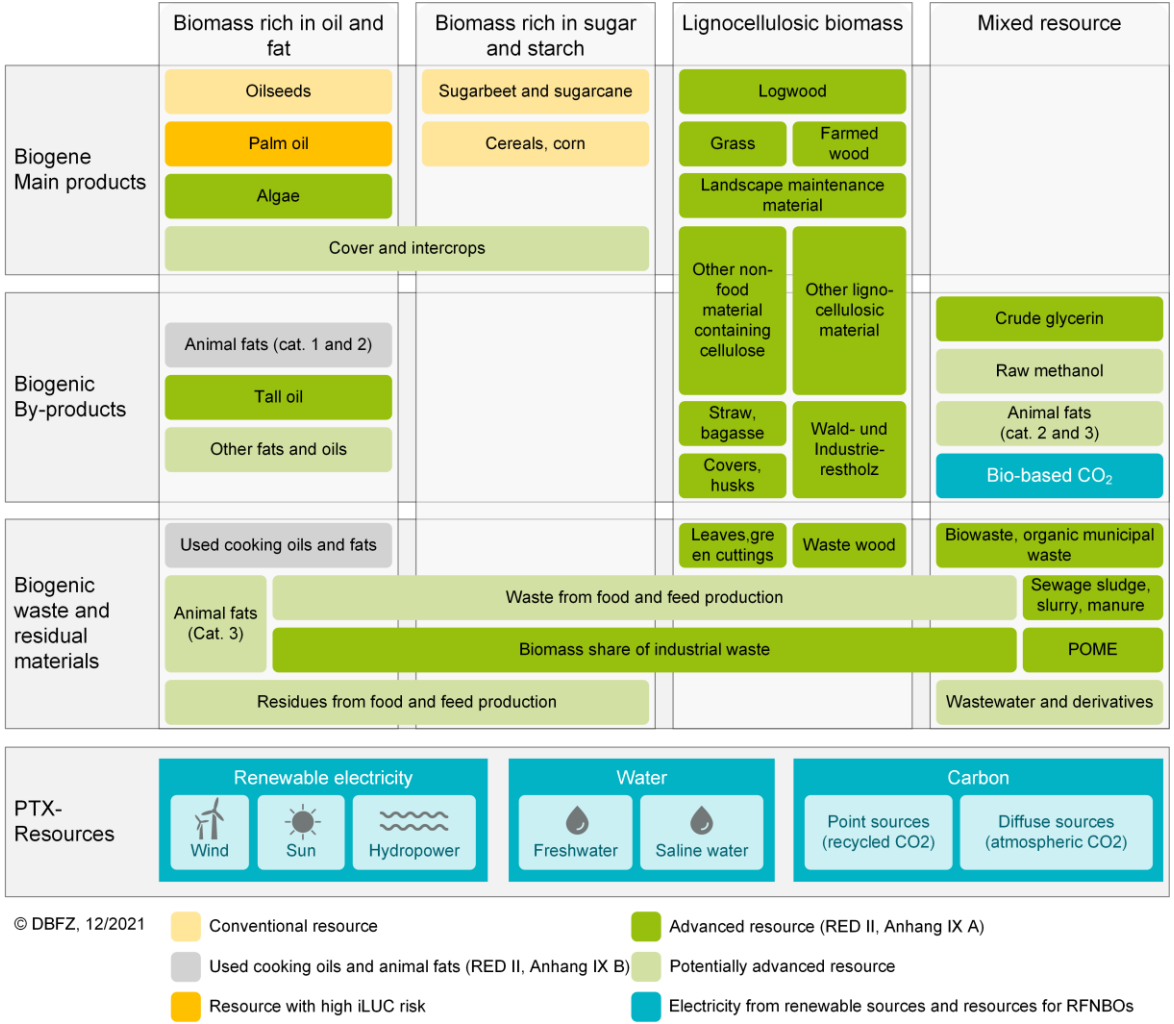


- Conventional resource
- Used cooking oils and animal fats (RED II, Anhang IX B)
- Resource with high iLUC risk
- Advanced resource (RED II, Anhang IX A)
- Potentially advanced resource

Resources for the production of renewable fuels

Note: without claim to completeness, Cat. corresponds to category, potentially advanced resources according to [E4tech (2020)]

References and further information in [Schröder 2022]



Resources for the production of renewable fuels

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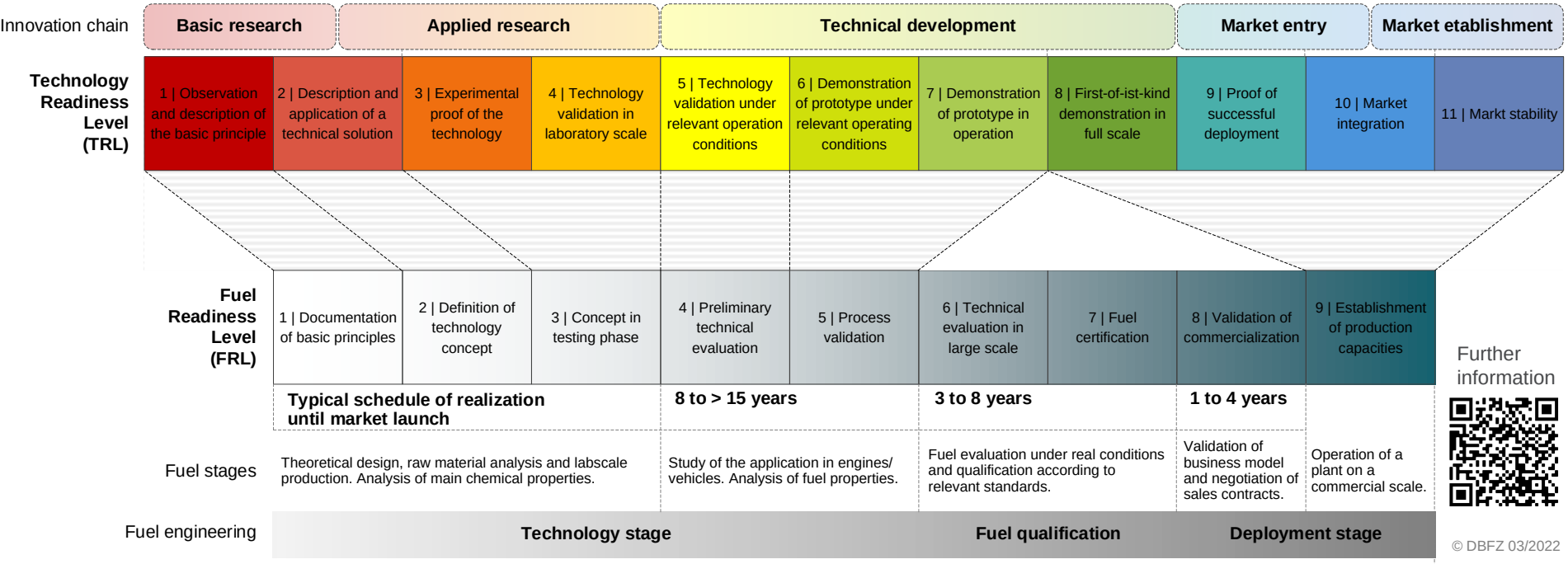
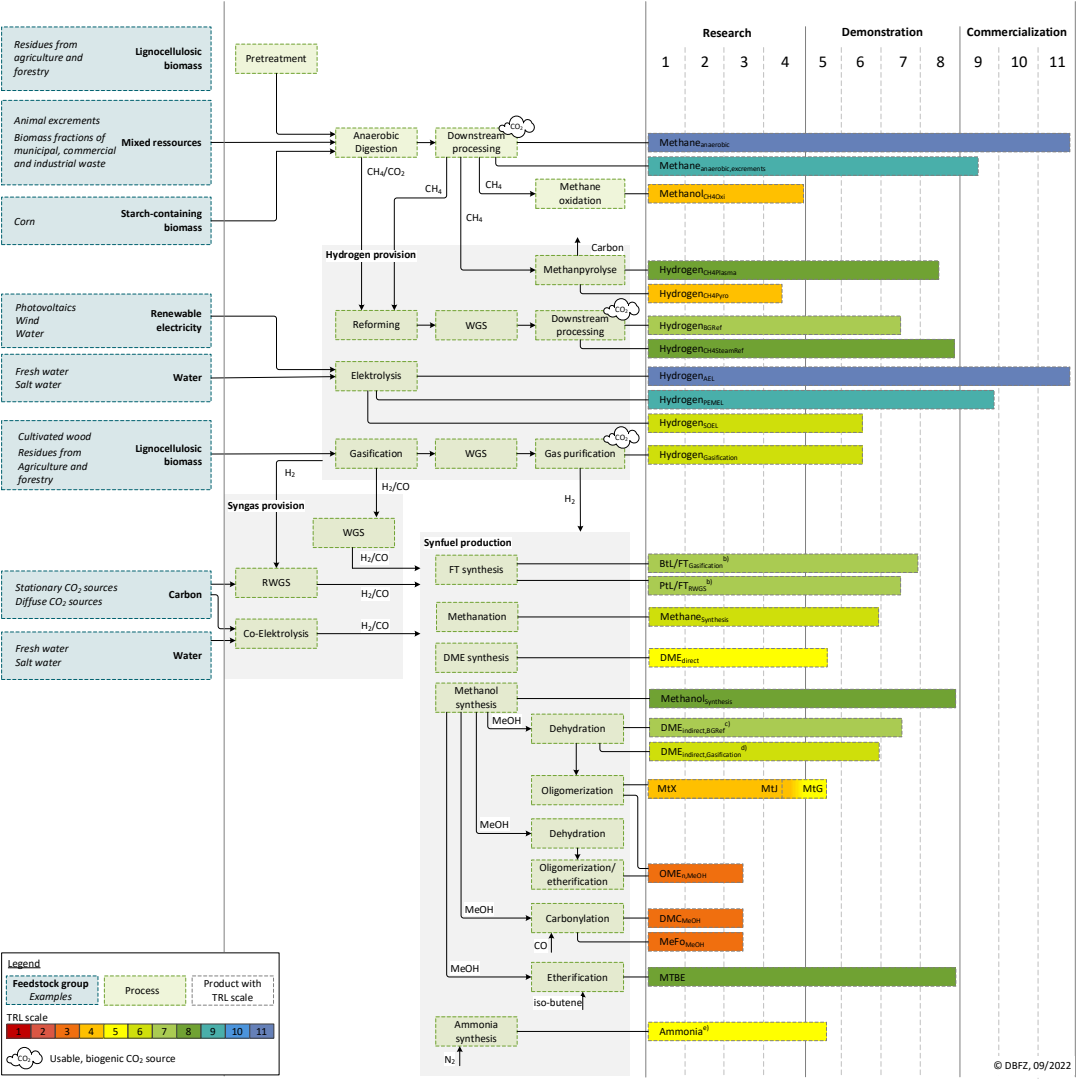
References and further information in [Schröder 2022]

State of development along the innovation chain



Further information



ADVANCED MOTOR FUELS
IEA-AMF
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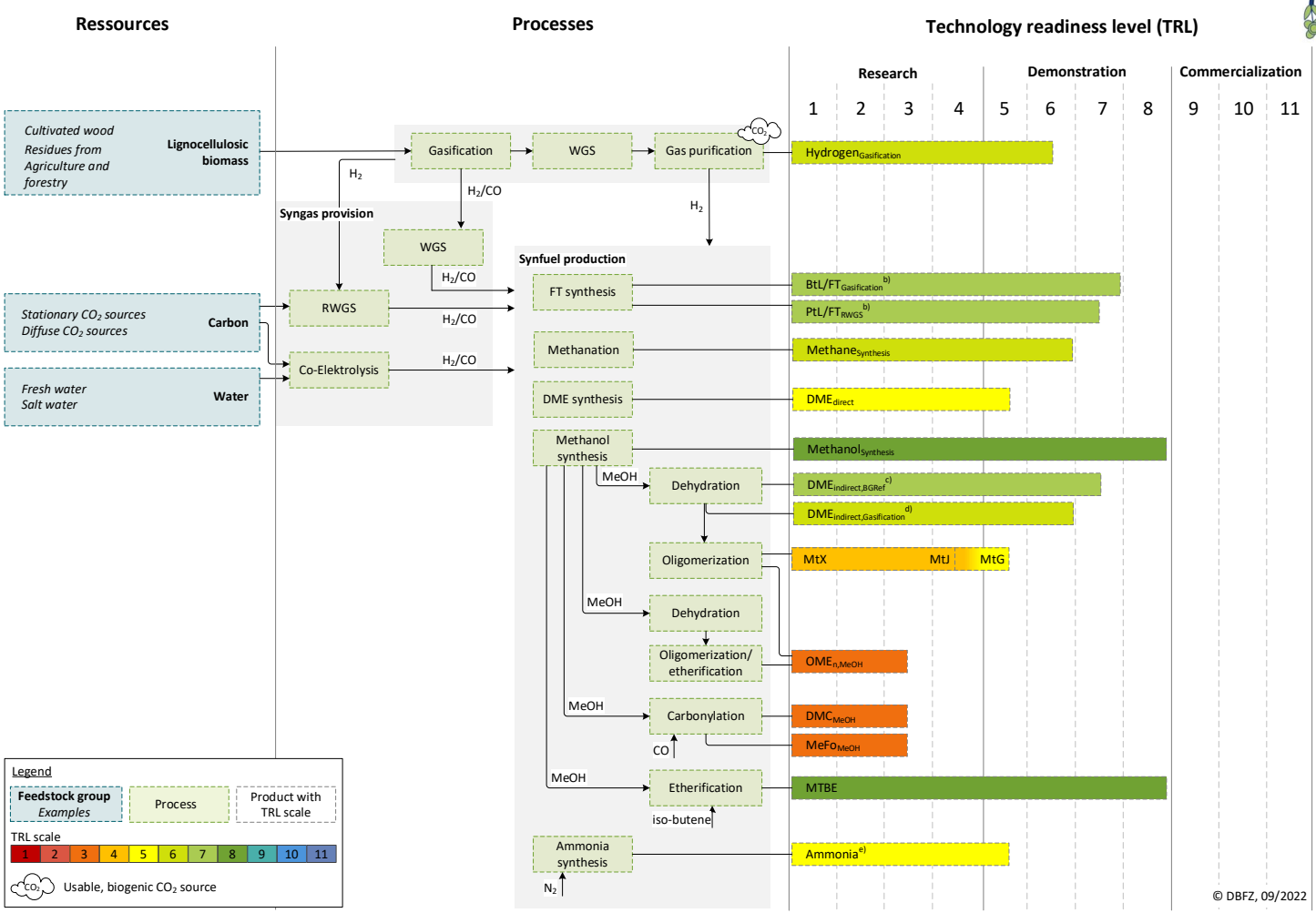
Many technical routes for synthetic / e-fuels

Further information



ADVANCED MOTOR FUELS
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Many technical routes for synthetic / e-fuels

Further information

State of development

Technology Collaboration Programme on Advanced Motor Fuels

Option	Technology Readiness (TRL)	Capacity	Research and development (examples)
Vegetable oil	11	DE: 168 PJ	Use as fuel in agriculture and forestry sector as well as for off-road applications
Biodiesel (FAME)	11	EU: 759 PJ	Diversifying of resources (used cooking oils and animal fats)
HVO/HEFA	11 8 (biocrudes)	EU: 289 PJ	Diversifying of resources (like FAME and additional biocrude like pyrolysis oil); Flexibilization of product portfolio (diesel, jet fuel, naphtha and gases); SynBioPTX: use of green hydrogen for hydrotreating
Ethanol	11 (sugar, starch) 8 (lignocellulosic, residues)	EU: 227 PJ EU: 27 PJ	Diversifying of resources (lignocelluloses, industrial residues) Downstream processing to synthetic aviation fuels; SynBioPTX: CO_2 recovery for syntheses with green hydrogen
Biomethane	11 (anaerobic)	EU: 68 PJ	Diversifying of resources (unused resources according RED II Annex IX A); Liquefication to renewable LNG; SynBioPTX: CO_2 recovery for syntheses with green hydrogen
Hydrogen	9 (electrolysis) 5 to 8 (others)	EU: < 1 PJ	BECCU/S: methane pyrolysis; Seawater treatment; Product synthesis of follow-up products
Synthetic fuels (BTX, PTX)	3 to 8	EU: 1 PJ	Fuel synthesis (e.g. methane, methanol, paraffinic fuels, oxygenates, alcohols-to-fuels); SynBioPTX: biomass as renewable carbon source