Country report | Biofuels for transport in Germany





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Agenda

1. Background
2. Biofuels in Germany
3. Ongoing initiatives
4. R&D&D examples

Background

Transport sector in Germany

Situation today (compared to 2010)

Amount passenger	+12%
Amount LDV & HDV	+27%
Total mileage	+ 9%
CO_2-eq. emissions	+8%
(incl. 4% reduction from renewable fuels)	
Total energy demand	+ 5%
(of which 4% renewable fuels, 1.5% electricity)	

Binding targets

Growth of share on renewable energy
of 10% by 2020 (RED II 14% by 2030)

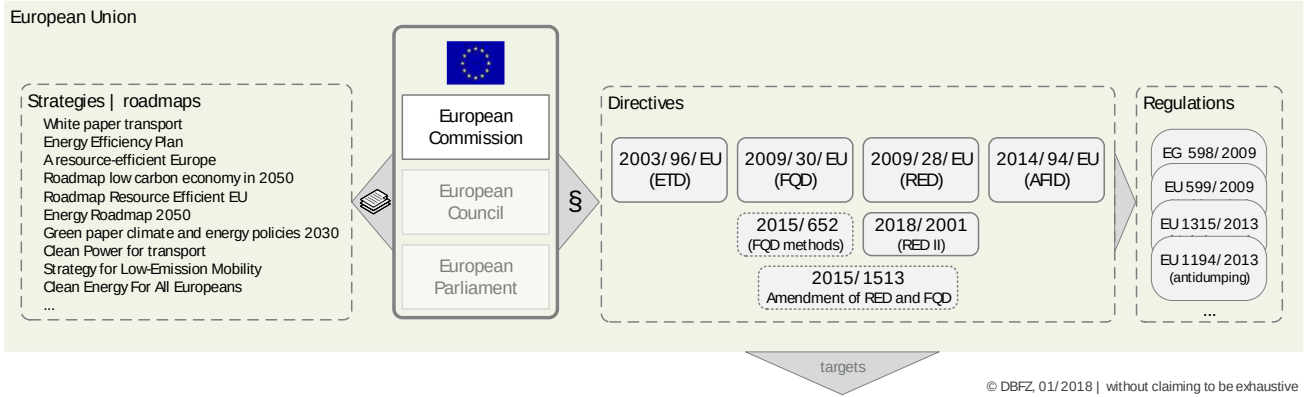
Reduction on energy demand
10% by 2020 and 40% by 2050 (ct 2005)

Reduction on CO_2 emissions
4% by 2017, 6% by 2020 related to energy demand
40-42% by 2030 (ct 1990)

Regulations for vehicles

Source: DBFZ Report 11, 2019; LDV – light duty vehicles, HDV – heavy duty vehicles

Background
Frame RED II



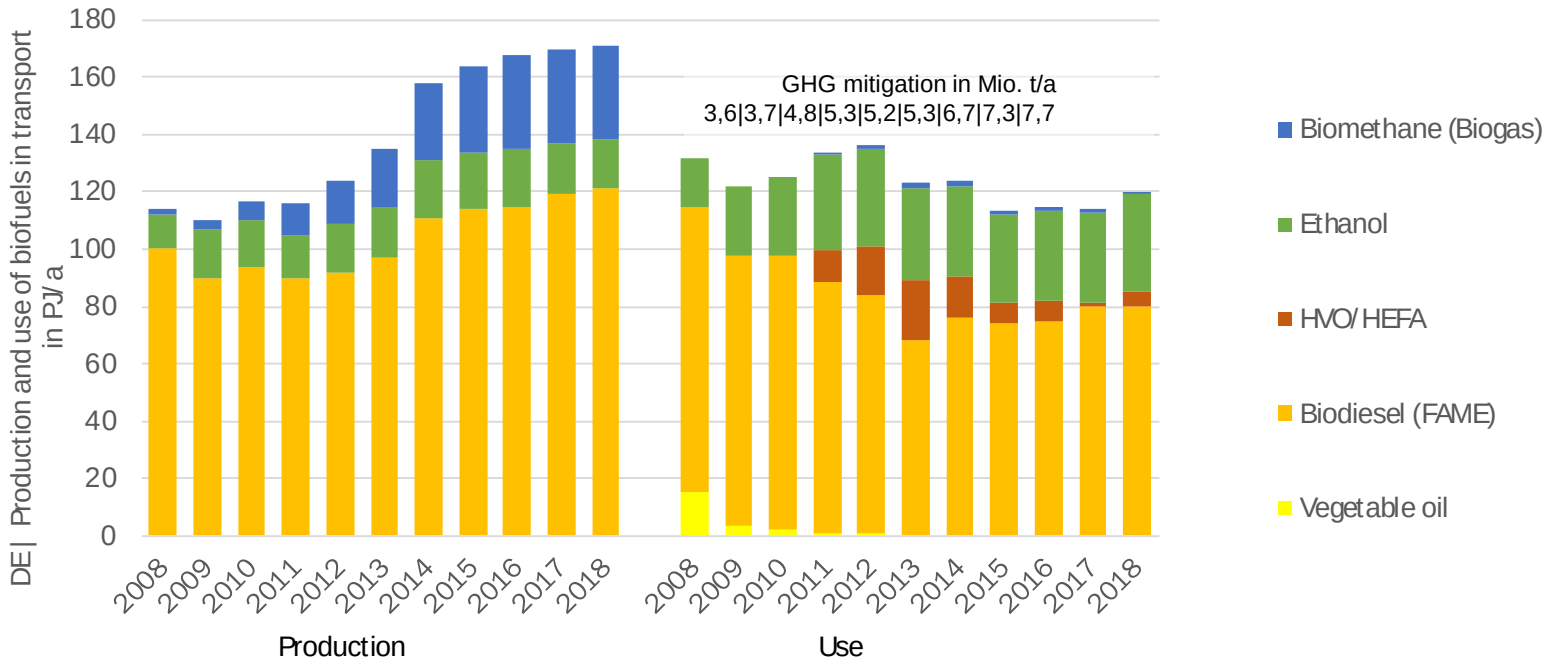
2009/30/EU (respectively 98/70/EU) – FQD Fuel Quality Directive (Kraftstoffqualitätsrichtlinie) | 2009/28/EU – RED Renewable Energy Directive (Erneuerbare-Energien-Richtlinie) | 2003/96/EGU – ETD Energy Tax Directive (Energiesteuerrichtlinie) | 2014/94/EU – AFID Directive on the deployment of alternative fuels infratsructure | BImSchG: Bundes-Immissionsschutzgesetz (§37 - Mindestanteil von Biokraftstoffen an der Gesamtmenge des in Verkehr gebrachten Kraftstoffs) | EnergieStG: Energiesteuergesetz | Biokraft-NachV - Biokraftstoffnachhaltigkeitsverordnung | 36. BImSchV - Verordnung zur Durchführung der Regelungen der Biokraftstoffquote | 37. BImSchV - Verordnung zur Anrechnung von strombasierten Kraftstoffen und mitverarbeiteten biogenen Ölen auf die Treibhausgasquote | 38. BImSchV - Verordnung zur Festlegung weiterer Bestimmungen zur Treibhausgasminderung bei Kraftstoffen

RED II by 2030

- 14% RE in transport
- 7% (DE 6.5%) limit for conventional biofuels
- min. 3.5% advanced biofuels + double counting
- 1.7% limit and double counting for UCO fuels
- RE electricity: 1.5-counting for rail, 4-counting for road
- 1.2-counting for aviation and shipping
- 65% GHG mitigation potential for new plants by 2021
- fossil reference 94.1 g CO_2-eq/MJ

Biofuels in Germany

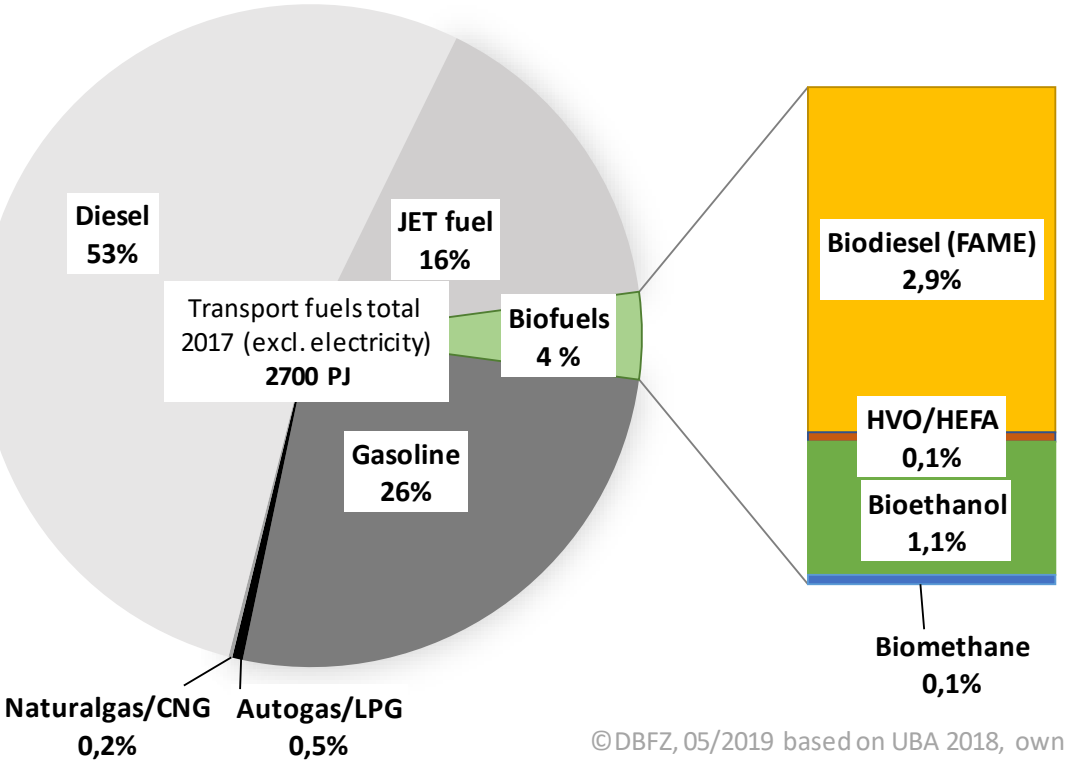
Production and use in transport



Data base: BDBe 2016, 2019; BLE 2015a, 2018; BNetzA und BKartA 2018; Destatis 2018; OVID 2019a, 2019b; VDB 2015; 2018 estimation

HVO / HEFA: no production in DE.; Biomethane: production also for electricity and heat sector, [c]GHG mitigation: 2009 + 2010: 35% based on RED, 2011-2017: based on BLE data

Biofuels in Germany
Role in transport in 2017



Average GHG mitigation potential of biofuels within GHG quota

- Biodiesel/FAME 81%
- HVO/HEFA 65%
- Bioethanol 83%
- Biomethane 91%

Average price for fuels

- Biodiesel/FAME ca. 35 - 40 EUR/GJ
- Bioethanol ca. 22 - 30 EUR/GJ
- Biomethane ca. 5 - 20 EUR/GJ

More information on market development in DBFZ report 11 https://www.dbfz.de/fileadmin/user_upload/Referenzen/DBFZ_Reports/DBFZ_Report_11_4.pdf

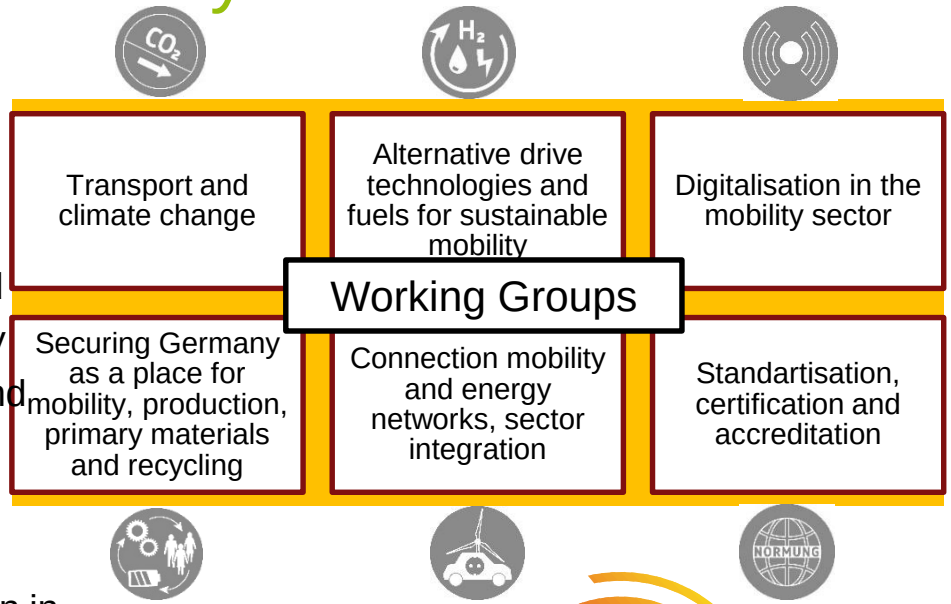
Ongoing initiatives

National platform future of mobility

Targets:

- Development of intermodal and interconnected solutions for a largely greenhouse gas-neutral and environmentally friendly transport system
- Ensuring a competitive automotive industry and promoting the employment location of Germany
- Enable efficient, high quality, flexible, secure and affordable mobility
- Clarification of facts on complex topics with relevant stakeholders

>> based on the results recommendations for action in politics, business and society



Further information:
https://www.plattform-zukunft-mobilitaet.de/

ProcessNet working group and position paper

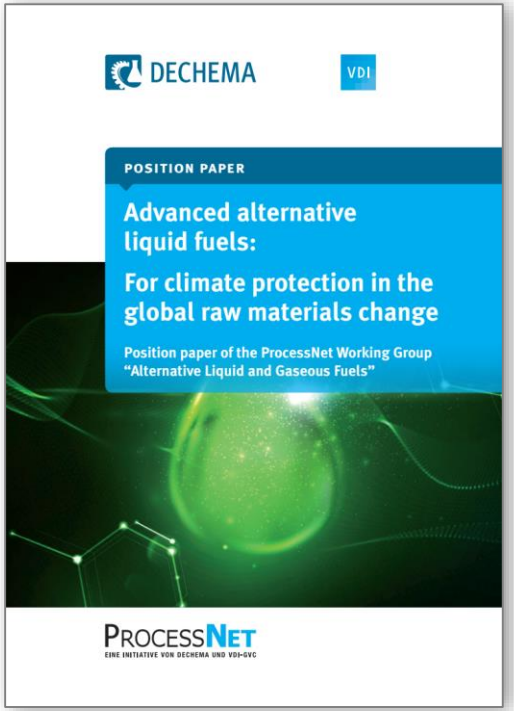
Advanced alternative liquid fuels

Spokesmen

- Prof. Dr.-Ing. Thomas Willner, HAW Hamburg
- Dr.-Ing. Klaus Lucka, Tec4Fuels
- Dr. Armin Günther, Air Liquide

Targets

- Extended resource basis: biomass, organic residues and waste, carbon dioxide
- Co-processing
- Synergies (e.g. renewable hydrogen supply)
- Integration into biorefineries
- Enhance technological development



https://processnet.org/en/Publications/Topics+of+Strategic+Relevance/_/PP_Alt.Brennstoffe%202018_engl_ezl.pdf

R&D&D examples

Energy transition in the transport sector

- More than 15 projects within this funding initiative
- All focus on alternative fuels regarding „power-to-fuel“
- These include, among others, methanol, ethanol, kerosene, synthetically produced natural gas and biogas with hydrogen fractions.

Examples:

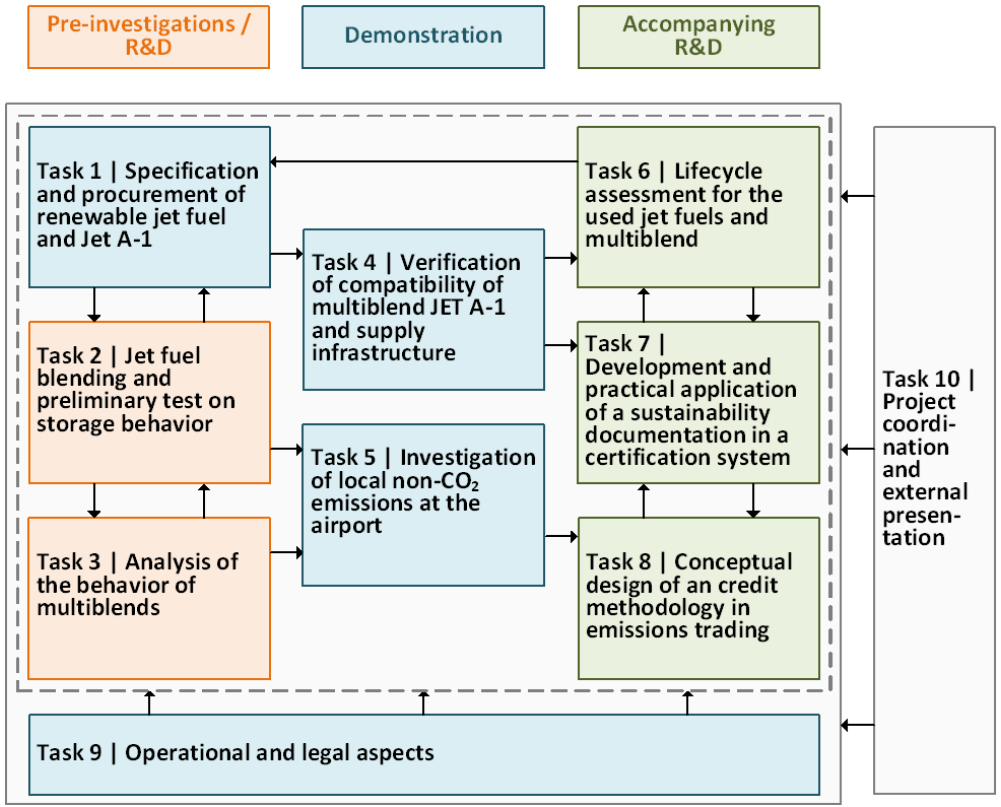
- C³-Mobility: and cars — Based on regenerative produced methanol, synthetic fuels for passenger and light to heavy commercial vehicles is produced.
- E2Fuels: and — The study will focus on the production of hydrogen, natural gas, methanol Polyoxymethylene dimethyl ethers (PODE) for energy use.
- MethFuel: and — The researchers are developing process engineering concepts for hydrogen CO_2 supply and for catalytic methanation

https://www.energieforschung.de/forschung-und-innovation/energiewende-im-verkehr/prc

Federal Ministry for Economic Affairs and Energy

R&D&D examples

DEMO-SPK | Multiblend JET A-1 for aviation



Federal Ministry of Transport and Digital Infrastructure

http://www.bmvi.de/SharedDocs/DE/Artikel/G/MKS/demo-spk.html?nn=214182

R&D&D examples
reFuels

An initiative of Baden-Württemberg Ministry of Traffic within the Strategic Dialog of Automotive Industries

- Synthetic fuels application project with partners from automotive industry, automotive supply industry, and mineral oil industry
- Gasoline and diesel fuels based on Methanol-to-gasoline (bioliq, biomass based) and Fischer-Tropsch (CO_2-based, EnergyLab2.0, INERATEC)
- Launched in January 2019, 20 Mio. EUR project cost, 24 months

Audi, BOSCH, EnBW, BorgWarner, DAIMLER, PORSCHE, Eberspächer, INERATEC, Freudenberg Sealing Technologies, L'orange, MAHLE, MWV Mineralöl Wirtschafts Verband e.V., Energy Power Systems CAT, MANN+HUMMEL, KOLBENSCHMIDT, MiRO, KIT Karlsruher Institut für Technologie coordination, Baden-Württemberg Ministerium für Verkehr

National representatives

Please do not hesitate to contact us

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