MOre Transport from Organic Residues

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Circulair Congres - 8 mei 2019

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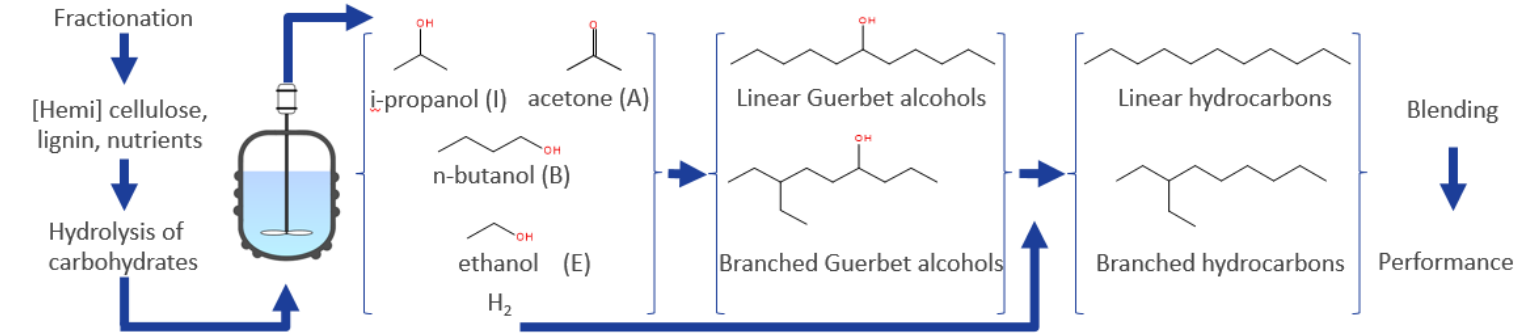
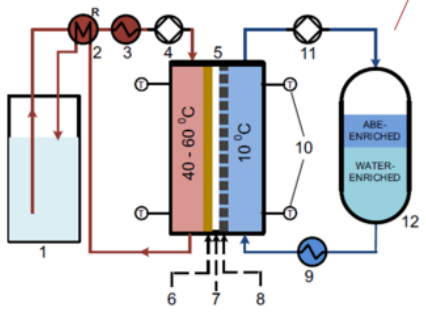
Advanced biofuels by means of industrial fermentation pathway

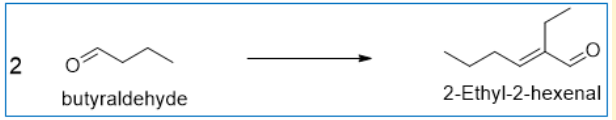
Biomass treatment	A(I)BE Fermentation with consolidated bioprocessing and thermopervaporation	Chemo-enzymatic condensation for chain elongation followed by hydrotreatment	Biofuel design

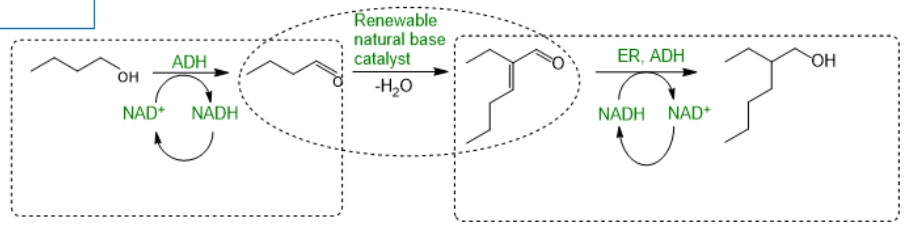


Improvement of productivity, yield, fine tuning of product ratio → Optimization of conversion efficiency (> 80%) → Cold filter plugging point, flash point, oxidation stability



Design for H_2 recovery and capture





HIGHLIGHTS

- Paper-sludge as 2G feedstock
- Cellulose degrading bacteria
- Process simplification in one pot with in situ recovery paraffins
- Linear and branched
- Enzymatic conversion for lo w energy demand

Blendstock for diesel or jetfuel

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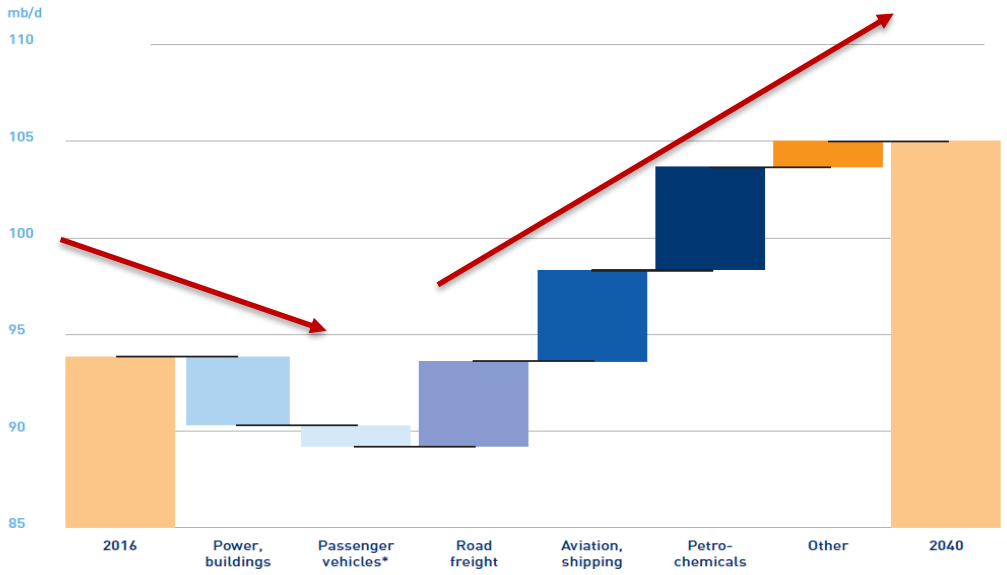
Importance of advanced biofuels

Growing demand for liquid fuels for long haul transportation

FIGURE 2: CHANGES IN WORLD OIL DEMAND BY SECTOR IN THE NEW POLICIES SCENARIO



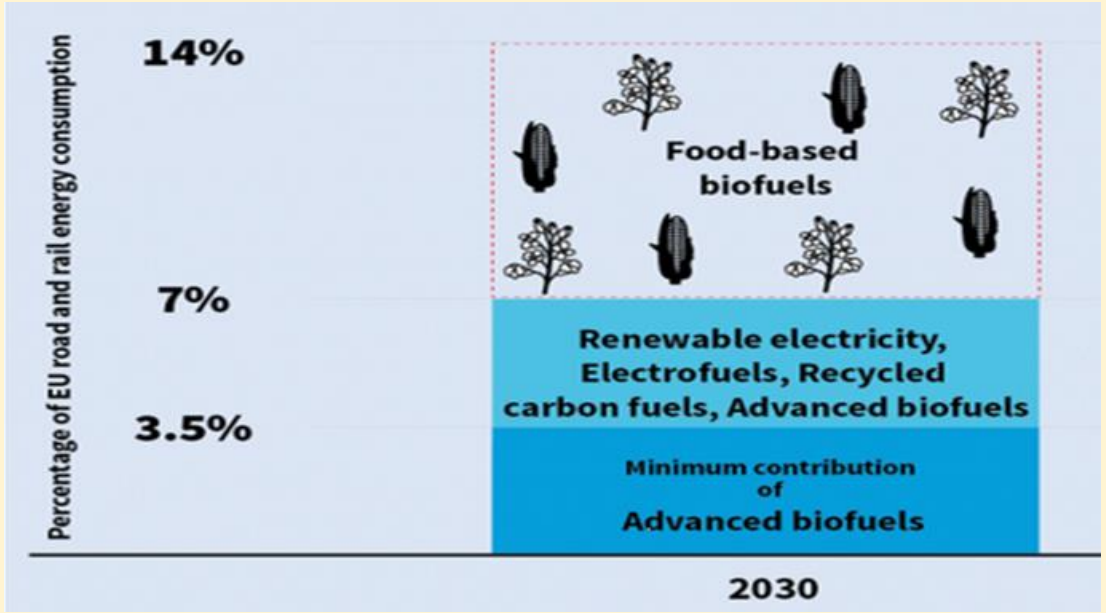
While the outlook for oil in power generation, buildings and passenger vehicles hints at a peak in oil demand, this is more than offset by rising demand in other sectors.

* Includes passengers cars, two/three wheels and buses.

Source: IEA, WEO 2017.

Source: Fuels Europe vision 2050

3,5% minimum contribution of advanced biofuels



Increasing demand for advanced biofuels

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CO2-reduction potential

REDII calculation methodology (Annex V; §C)

greenhouse gas emissions from the production and use of biofuels shall be calculated as:

$E = e_{ec} + e_l + e_p + e_{td} + e_u - e_{sca} - e_{ccs} - e_{ccr}$,

where

E	=	total emissions from the use of the fuel;
e_{ec}	=	emissions from the extraction or cultivation of raw materials;
e_l	=	annualised emissions from carbon stock changes caused by land-use change;
e_p	=	emissions from processing;
e_{td}	=	emissions from transport and distribution;
e_u	=	emissions from the fuel in use;
e_{sca}	=	emission savings from soil carbon accumulation via improved agricultural management;
e_{ccs}	=	emission savings from CO_2 capture and geological storage; and
e_{ccr}	=	emission savings from CO_2 capture and replacement.

High level greenhouse reduction values (60% -85%), comparable to RED II Typical values (Annex V; §A) are likely to be reached

Waste/residue → no emission from harvesting and indirect land use

Enzymatic conversion at ambient temperature → energy reduction

H2 partly recovered from batch fermentation → energy mgt.

To be calculated a part of the project

Thank you for your attention.

Q8 Research