

How to create value chains from different feedstocks

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Definition of value chain

- The **value chain** is defined as the full range of interlinked value-adding activities which are required to provide a product to end consumers. The specific activities include e.g. the supply of raw materials, pre-treatment, conversion or distribution and are mostly performed by several independent companies (in the BioEcon project).



Perspectives on bio-based value chains

- Consumers‘
 - Who look for renewable products
- Companies‘
 - Who are already into bioeconomy
 - Who consider product diversification
 - Who want to amend existing infrastructure to change from fossil to renewable products
 - Who seek utilization of available feedstock
- Policy Makers‘
 - Who are in charge for the framework conditions
- Researchers‘
 - Who want to answer all the arising questions for the actors above



Questions arising on

- Technology
- Sustainability
 - Economics: e.g. how will feedstock or product prices develop
 - Ecology: e.g. is the biomass required sustainably available
 - Social issues: e.g. acceptance of certain technologies





Feedstock



Forestry

- Wood
- Wood chips
- Forestry residues



Short rotation coppice (SRC)



Agriculture

- Oil
- Sugar
- Starch
- Ligno-cellulosic
- Agricultural residues

crops



Waste

- Municipal solid waste (MSW)
- Biogenic waste
- Waste/Tall oil
- Waste gases
- Sewage sludge
- Waste wood



Algae and aquatic biomass



Selected value chains

- Biofuels
- Green gas
 - Biomethane
 - Green hydrogen
 - Bio SNG



Austrian government agreement on...

- **...alternative fuels**

Promotion of advanced biofuels utilization and support of research and demo plants

- **...green gas**

Program for the expansion and support of „green gas“ aiming to feed in 5 TWh into the gas grid by 2030

The European Green Deal...

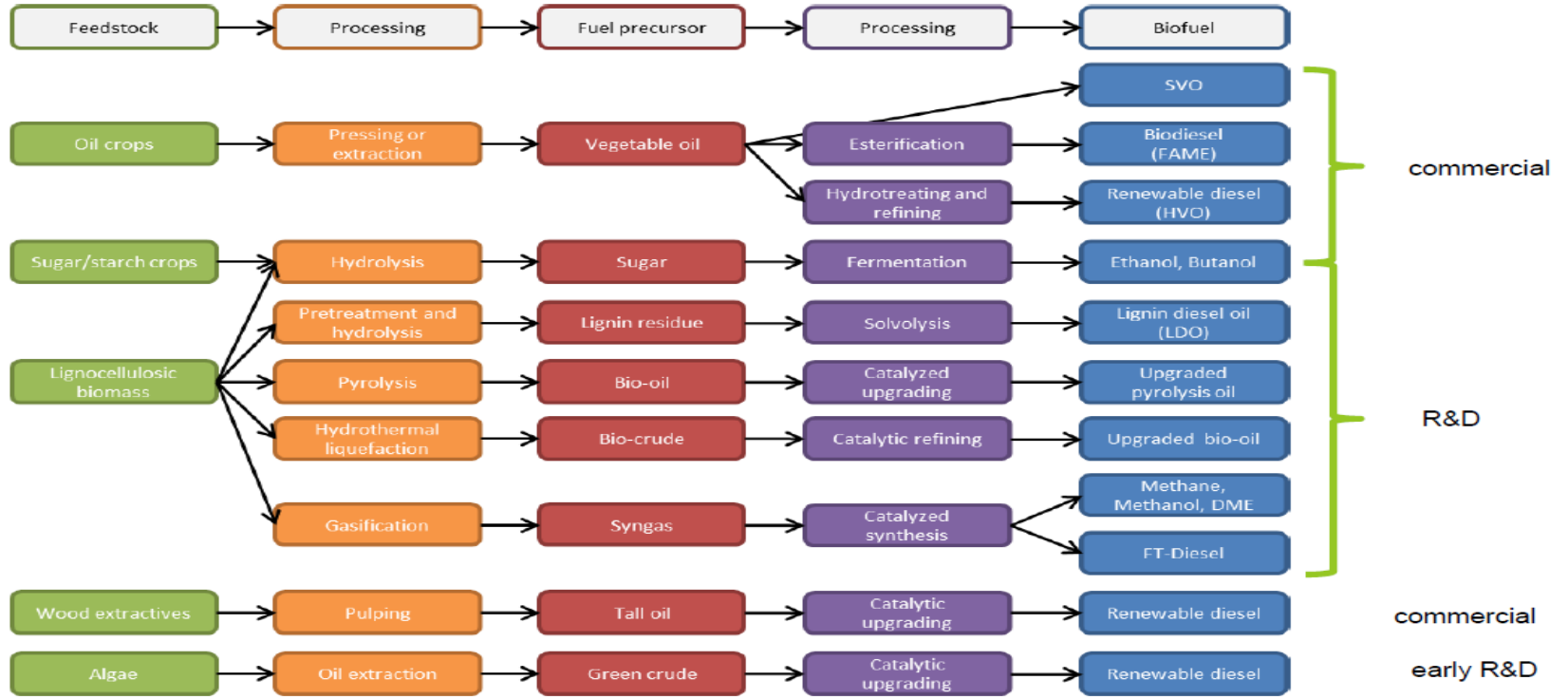


...on alternative fuels

The Commission will consider legislative options to boost the production and uptake of sustainable alternative fuels for the different transport modes.

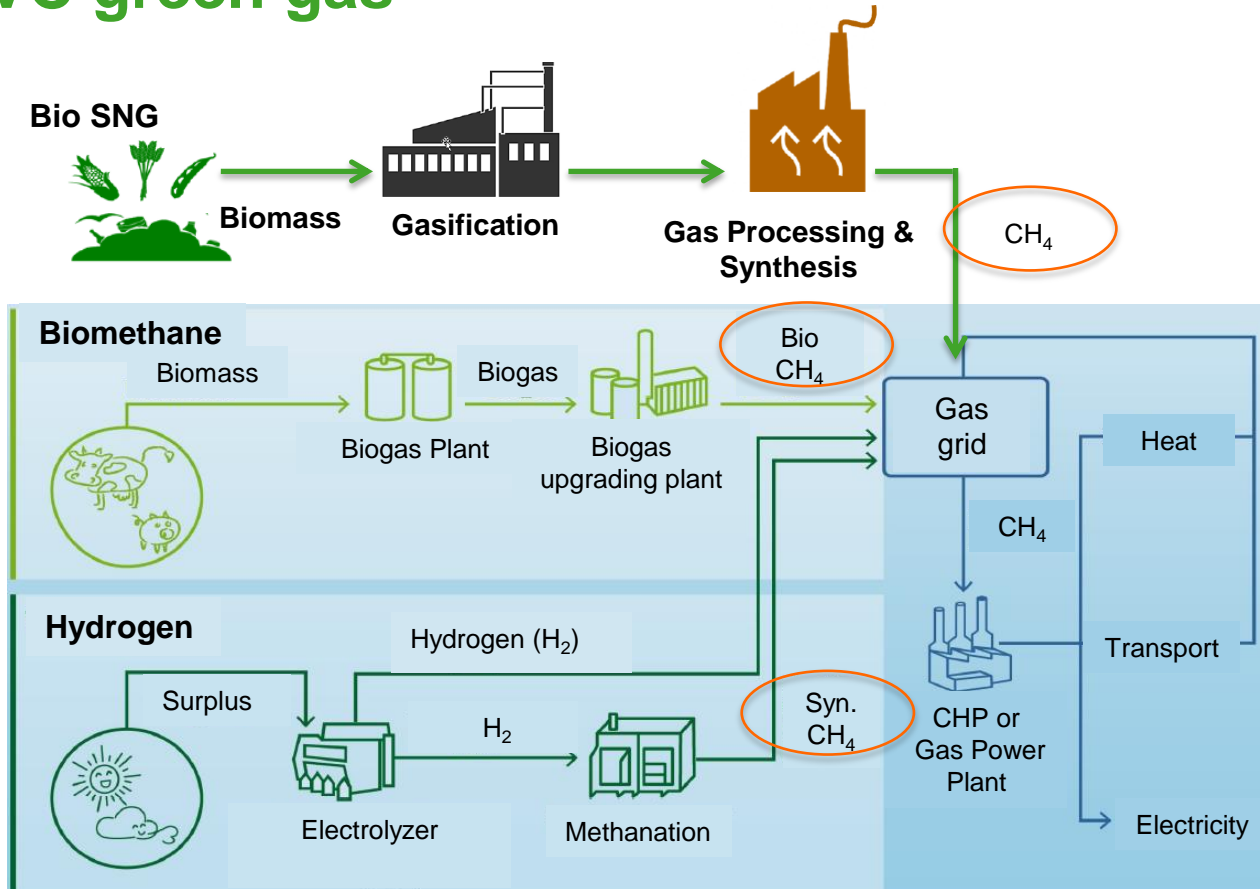


VC biofuels





VC green gas

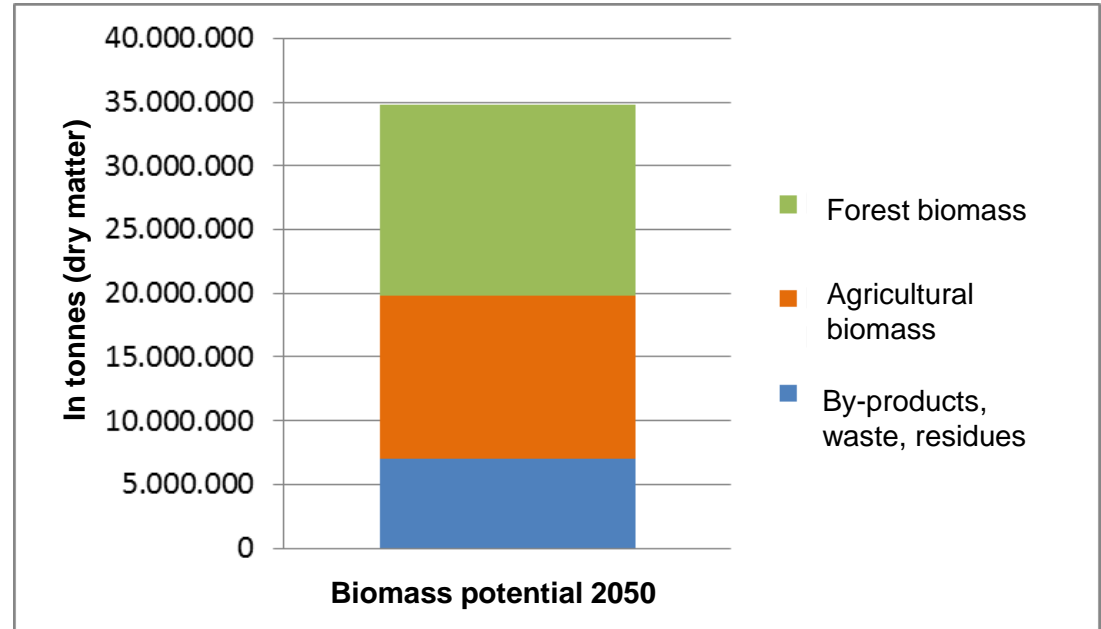




preBioEcon project

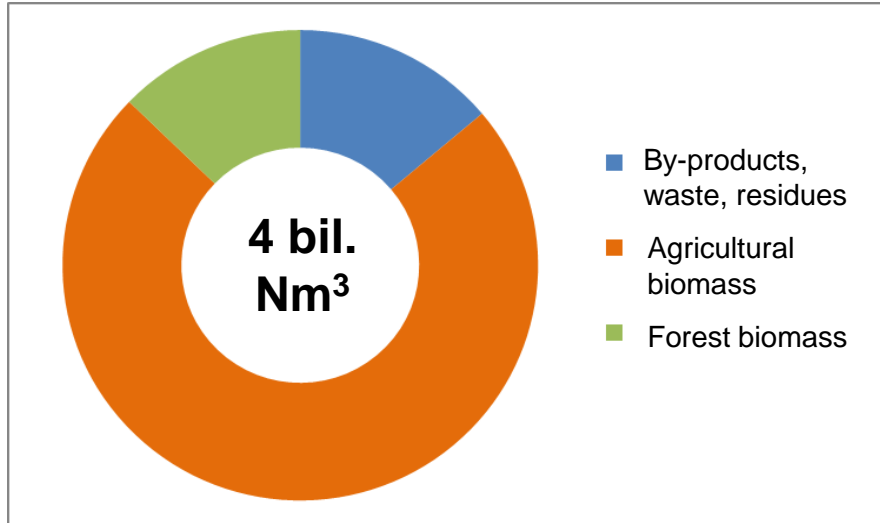
Austrian biomass potential 2050

- Current utilization included
- Biggest share: forest biomass with almost 15 Mio. t
- Including residues like straw and corncobs
- Excluding food and feed





preBioEcon project: Methane output



Methane potential 2050 based on the „realistic scenario“ is about **4 billion** standard cubic meters.

This is based on the assumption that **no food or feed** is utilized, that the **feedstock supply** for the Austrian **wood based industry** is **given** and that the existing **bioenergy utilization** will be **maintained**.



Conclusions from preBioEcon results

- 4 bil. m³ are **only possible if accompanied by a full range of measures**
 - cascading
 - various waste as feedstock
 - reduction of soil sealing
 - utilization of uncultivated areas
 - mobilization of forestry owners
 - etc.
- assuming that the calorific value of methane is ca. 10 kWh/m³ we could reach ca. 40 TWh by 2050.
- The 5 TWh aimed at by our new government in 2030 are ambitious and feasible if demoplants (Bio SNG, Hydrogen) are installed and above mentioned measures are taken as soon as possible.



Summary on bio-based value chains

- The numerous value chains get rather complex fast
- BEST has high expertise – especially on *bioenergy* value chains and a broad overview on most value chains
- Area 5.1 can consult technological expertise in-house on a short way from our areas 1, 2, 3 and our lab services
 - This allows us to identify costs, markets and technological requirements very efficiently in pre-feasibility studies
 - resulting in high quality assessments of the before raised questions



Selected Projects – MORE at THIS conference

Companies'

BioEcon Techno-economic modelling of bioeconomy value chains

- identification and evaluation of challenges for wood-based industries in a future bioeconomy
- investigation of different specific probably interlinked markets
- **Marilene Fuhrmann (BEST), Thursday 1:30, room 8**

Companies'

BioRed Bioreducer for steel industry

- application tailored biomass pre-treatment procedure via pyrolysis to produce a bioreducer
- from lab-scale to pilot
- **Norbert Kienzl (BEST), Friday 9:00, room 7**

Policy Makers'

BIOFEGG Biogas for future electric and gas grids

Consumers'

- Development of biogas cleaning solution
- Social acceptance; Compilation of policy framework related to the production, cleaning and upgrading of biogas
- **Antti Rimpilainen (KAMK), Friday 9:00, room 1**



Selected Projects

Companies'

BIOFIT Bioenergy Retrofits for Europe's Industry

- facilitate the introduction of bioenergy retrofits
- 5 industry sectors (CHP, pulp & paper, fossil refinery, fossil power plants, first gen. biofuels)
- Patrick Reumerman (BTG), Friday, 9:00, room 7

Policy Makers'

Transport Decarbonisation

- Show contribution of biofuels reducing GHG emissions in the transport sector
- Country assessments for FL, SE, GE, USA, BRA
- Doris Matschegg (BEST), Wednesday, 11:00, ☹ missed



THANK YOU FOR YOUR ATTENTION

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Sub-Area 5.1 Sustainable Supply and Value Chains