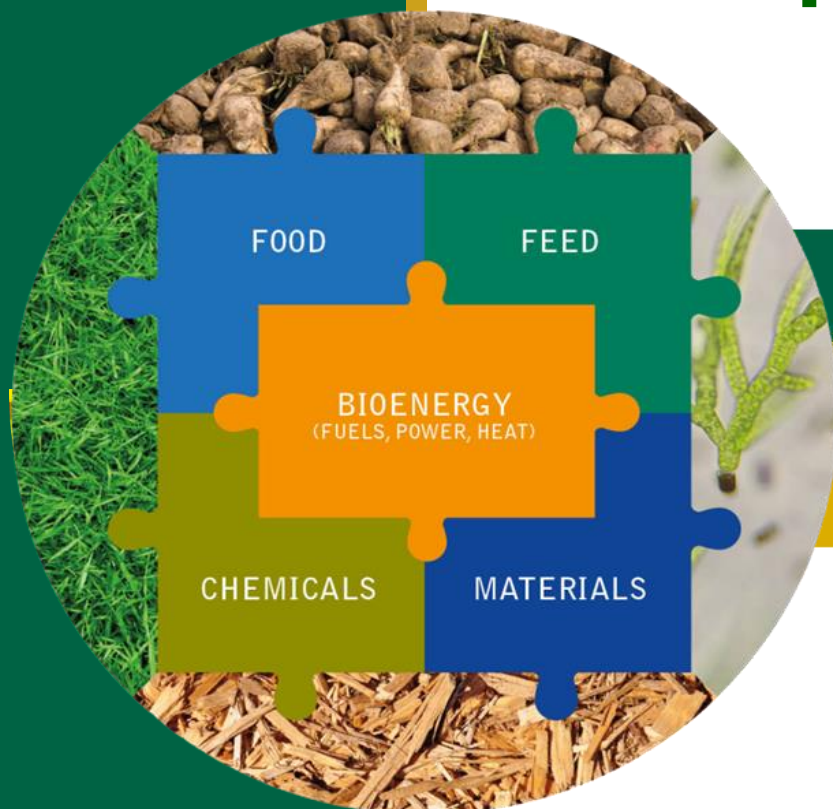


Round Table The Netherlands (NL)



Bert Annevelink & René van Ree
IEA Task42 meeting, Göteborg, 15 May 2017

Content

- Reference Plant Zambezi process
- Small scale biorefining report
- Biobased Delta
- Semi-industrial biorefinery
- CatchBio R&D programme finished

Reference plant Zambezi process

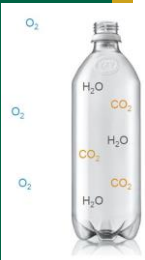
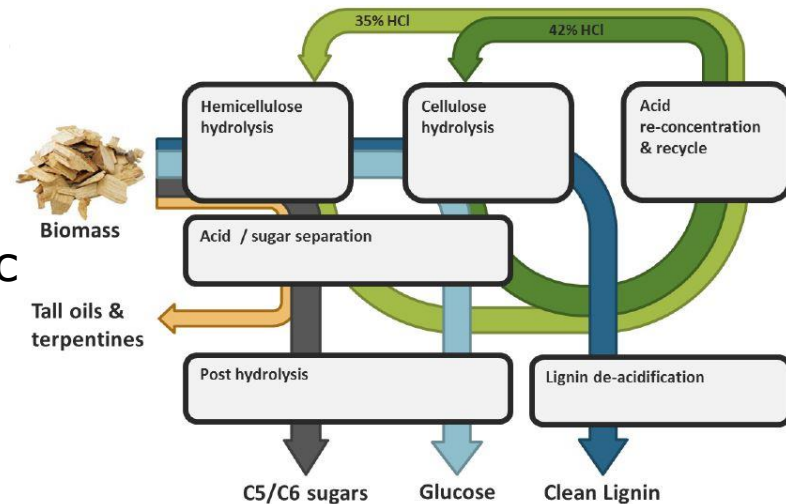
- partnership initiated for development of a wood to chemicals reference plant in Delfzijl



- Avantium, AkzoNobel, Chemport Europe, RWE and Staatsbosbeheer

- cost-effective process for the production of high-purity glucose from non-food biomass

- glucose is suitable for both catalytic and fermentation processes for the production of a new and growing generation of sustainable materials (such as PLA, PEF, PBAT, PHA)



Video: <https://www.avantium.com/renewable-chemistries/zambezi/>

Small scale biorefining report

- potential role of small-scale biorefineries to the Dutch circular bioeconomy
- success factors for small-scale biorefineries
- side-stream valorisation: materials screening, fractionation and products
- Examples:
 - valorising waste water and side streams with aquatic biomass
 - direct processing of sugar beet for the fermentative production of chemical building blocks
 - refinery of green leaves to produce protein products
 - acidified water extraction and purification of steviol glycosides from fresh Stevia
 - fatty acid and PHA production from residues

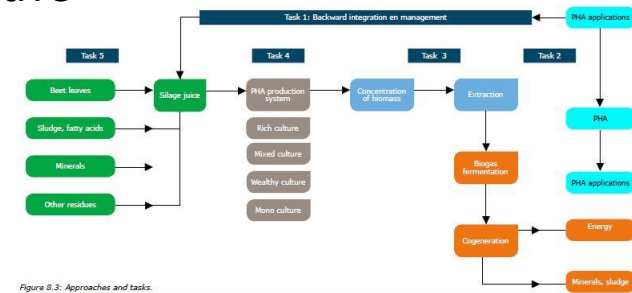


Figure 0.3: Approaches and tasks.

Reference: de Visser & van Ree (2017)

Biobased Delta



- Biobased Delta's longest-running programme is the development of functionalised bio-aromatics within the Biorizon consortium
- Sugar Delta is the second programme aimed at sugar chemistry
- the third programme 'Redefinery' (in its infancy) is intended to ultimately result in large-scale biorefinery on an industrial scale:
 - will be based on woody biomass that is converted into cellulose, C5 sugars and lignin
 - wood volumes 500,000 - 700,000 tonnes per year



Reference: <http://www.agro-chemistry.com/articles/biobased-delta-looks-ahead-ecosystem-growing/>

Semi-industrial biorefinery



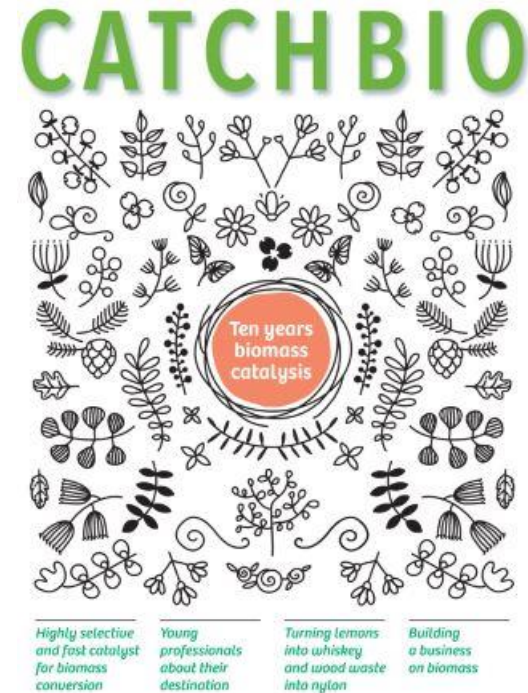
- laboratory facility of the semi-industrial biorefinery with supercritical CO₂ technology in the Zernike Advanced Processing facility of the Hanze University of Applied Sciences Groningentakes off
- preparatory treatment in the supercritical extruder, to first extract the fatty components from the biomass
- built in the first instance for the European Horizon 2020 project LIBBIO: based on the Andean Lupin plant, that contains high-quality proteins and high-grade oil



Reference: <http://www.agro-chemistry.com/articles/semi-industrial-biorefinery-takes-off/>
and <http://www.libbio.net/>

CatchBio R&D programme finished

- biomass catalysis was the central focus of the ten-year research programme CatchBio
- three domains: energy, bulk chemicals and fine chemicals/pharmaceuticals
- focus initially included biofuels; later stage attention shifted to bulk chemicals in particular
- heterogeneous character biomass provides the necessary challenges in the development of catalysts which can convert this variable input into the desired intermediary product



Reference: <http://www.agro-chemistry.com/articles/catalytic-conversion-biomass-catchbio-focus-chemistry/>
and <http://www.catchbio.com/>



Thank you

www.iea-bioenergy.task42-biorefineries.com

IEA Bioenergy



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Text

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