IEA Bioenergy

Task42 Biorefining in a Future BioEconomy

Country update Austria

May 2019

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tbw RESEARCH 1

ENERGIE INSTITUT an der Johannes Kepler Universität Linz 2

WOOD K PLUS 3

Bioenergy policies and status of implementation

- In 2018 four Austrian Federal Ministries presented a working document on the bioeconomy and the respective roles and fields of research[1]. The **"National Bioeconomy - RTD Strategy"** will underpin innovation and R&D to move towards circular economy and regional development.
- Research and innovation is seen as the basis for a structural change from fossil energy to sustainable economy.
- In May 2018 the **climate and energy strategy**[2] (Mission 2030) was decided by the Austrian Federal Government.
- Bioeconomy is a flagship project to boost growth for bio-based products, energy, processes and services.
- To emerge bioeconomy further stimulus is needed in bioenergy, efficiency measures, biorefining of materials from agriculture & forestry, moving toward circular economy
- In March 2019 the **National Bioeconomy Strategy**[3] Austria was decided by the Austrian cabinet

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1 https://nachhaltigwirtschaften.at/resources/nw_pdf/biooekonomie-fti-strategie-ag2-2018.pdf

2 https://mission2030.info/

3 https://www.bmvit.gv.at/innovation/publikationen/energieumwelttechnologie/biooekonomiestrategie.html

Projects – national

Acronym	Project name	Funding source	Duration	Weblink
BioREg	Etablierung einer dezentralen rohstoffflexiblen Reststoffbioraffinerie	FFG	2017-2020	https://www.wood-kplus.at/de/aktuelles/wood-k-plus-startet-neues-projekt-bioreg-_n52
PowderExteriorWood	Entwicklung eines Verfahrens zur witterungsbeständigen Beschichtung von Holz- und Holzfaserverbundwerkstoffen	FFG	2016-2019	https://projekte.ffg.at/projekt/1723551
3D-CFRP	Additive Manufacturing of Continuous Fibers Reinforced Polymer Materials for High Performance Structural Applications	FFG	2017-2020	https://projekte.ffg.at/projekt/1848274
BioForS	Bio-based form sheets for aircraft applications	FFG	2018-2020	https://projekte.ffg.at/projekt/2758311
Natural3D	Natural reinforcement for 3D printing from Nano to Continuous for bioinspired applications	FFG	2017-2020	https://projekte.ffg.at/projekt/2728576
RSBC	Reliable and Sustainable composite production for Biobased Components	FFG	2017-2020	https://nachhaltigwirtschaften.at/de/projekte/reliable-and-sustainable-composite-production-for-biobased-components.php
FLIPPR + FLIPPR²	Future Lignin and Pulp Processing Research	FFG	2017-2020	http://www.flippr.at/jart/prj3/flippr/main.jart
Wood C.A.R.	Computer Aided Research	FFG	2016-2019	http://www.woodcar.eu/
Bioraffinerie	Entwicklung mikrobiologischer Bioraffineriekonzepte	FFG	2016-2019	https://projekte.ffg.at/projekt/1415445

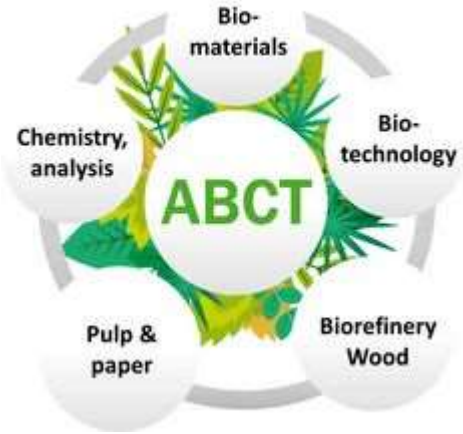
Projects – national

Acronym	Project name	Funding source	Duration	Weblink
Nutricoal	A biobased fertilizer with metered nutrient release	FFG	2018-2021	https://projekte.ffg.at/projekt/2920188
InduZymes	Enzymproduktion aus industriellen Reststoffen	FFG	2017-2020	https://projekte.ffg.at/projekt/1817334
CareForParis	Adaptation for carbon efficient forests and the entire wood value chain (including a policy decision support tool) - Evaluating pathways supporting the Paris Agreement	ACRP	2017-2019	http://eficeec.boku.ac.at/local/portal/projects/careforparis/index.html
ReNOx	Recovery of ammonium from liquid digestates for industrial NOx-removal	FFG	2015-2021	http://vtiu.unileoben.ac.at/media/2017_10_13_ReNOx_-_english.pdf
Bio-ABC	Development of a two-step biological CO_2-fixing process for the production of fuel chemicals	FFG	2017-2020	https://www.vt.tuwien.ac.at/biochemical_engineering/bioprocess_technology/projekte/aktuelle_projekte/bio_abc_development_of_a_two_step_biological_co2_fixing_process_for_the_production_of_fuel_chemicals/DE/
CAFB	Combined Agro-Forest Biorefinery	IWB2020	2015-2020	
Bio-Reduce	Kombinierte Produktion von Biomethan und Bio-Aromaten als Strategie zur CO2 Reduktion in den Bereichen Transport und chemische Industrie	IWB2020	2019-2020	

R&D initiative

There is a regional initiative with strong focus on biorefining activities:

- **Austrian Biorefinery Center - Tulln (ABCT)**
  - **University of Natural Resources and Life Sciences, Vienna**



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Webpage:
https://forschung.boku.ac.at/fis/suchen.projekt_uebersicht?sprache_in=de&menue_id_in=300&id_in=1872

Biorefinery Education

Biorefinery Engineering - factsheet

- English taught **master program** with an engineering focus at **TUGraz**
- **Credits:** 120 ECTS
- **Duration:** 4 semesters, full-time
- **Admission criteria:** an undergraduate degree in a subject relevant to biorefinery engineering (e.g. chemistry, environmental sciences)
- For more information see:

https://www.tugraz.at/en/studying-and-teaching/degree-and-certificate-programmes/masters-degree-programmes/biorefinery-engineering/

Biorefinery Education

BioEnergyTrain Student Camp on

"Biorefineries and Biobased Industrial Products"

at the Competence Center for Wood Composites and Wood Chemistry (Wood K Plus), in Linz Austria

25.-28. Feb 2019

Limited 35 participants

from 11 countries

(9 EU countries)

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www.task42.ieabioenergy.com

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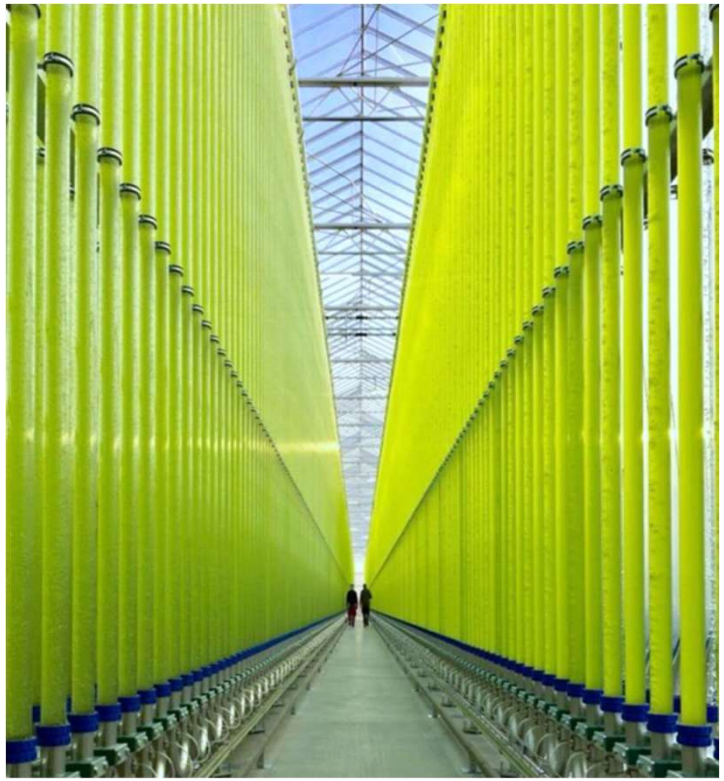
Demo plant

ecoduna AG – eparella GmbH

Location	Bruck/ Leitha, Lower Austria
Type/ Size	Demonstration Plant, Industrial Pilot since 2018 Goal: 100 t_{dm} algae/a
Processing & Products	• Production of microalgae from nutrients, $C0_2$ and sunlight. • Production of omega-3 fatty acids from algae for high value applications (food) • Valorisation of residues for other product applications • Integration with biogas optional
webpage	www.ecoduna.com



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Pilot plant

Lignozellulose-Biorefinery (LCF Biorefinery) @ ICEBE-TU-Wien

- LC-Feedstock (cereal residues, forest biomass and residues, paper, cellulosic, MSW)
- 10L Organosolv Extractor, 220°/30bar,
- Downstreaming: Thin film evaporator, membranes
- Products:

  Nanolignin

  Bioactives

  Organic acids

  Erythritol

  Fibres

Major innovation activities and EU projects with Austrian input

Acronym	Project name	Funding source	Duration	Weblink
ERIFORE	European Research Infrastructure for Circular Forest Bioeconomy	H2020	2016-2018	http://erifore.eu/
SmartLi	Smart Technologies for the Conversion of Industrial Lignins into Sustainable Materials	H2020	2015-2018	https://clicinnovation.fi/projects/smartli/
SUSBIND	Development and pilot production of SUStainable bio-BINDer systems for wood-based panels	H2020	2018-2022	https://susbind.eu/
D4EU	Dendromass4Europe	H2020	2017-2022	https://www.dendromass4europe.eu/
BioEnergyTrain	European cooperation for higher education	H2020	2015-2019	http://www.bioenergytrain.eu/
Percal	Chemical building blocks from versatile MSW biorefinery	H2020	2017-2020	http://www.percal-project.eu/index.php
Wast!UP	Value chains for disruptive transformation of urban biowaste into biobased products in the city context	H2020	2019-2022	
START CIRCLES	Supporting TrAnsition from lineaR To CIRCuLar valuE chainS	Interreg	2018-2021	http://www.si-at.eu/en2/
OPTISOCHEM	OPTimized conversion of residual wheat straw to bio-ISObutene for bio based CHEMicals	BBI-JU / H2020	2017-2021	http://optisochem.eu/
REWOFUEL	REsidual soft WOod conversion to high characteristics drop-in bioFUELs	H2020	2018-2021	http://www.rewofuel.eu/

Major innovation activities and EU projects with Austrian input

Acronym	Project name	Funding source	Duration	Weblink
TFP-HyMat	Technology and Research Platform – Hybrid Materials	Interreg	2016-2019	https://www.jku.at/en/institute-for-chemical-technology-of-organic-materials/research/polymer-characterization/tfp-hymat/
NO WASTE	Verbesserte Biodiversität für abfallfreie wirtschaftliche Verwertung traditioneller Kulturpflanzen	Interreg	2017-2019	https://www.wood-kplus.at/de/partner/fordergeber-und-foerderprojekte/no-waste
Alplinkbioeco	Linking BioBased Industry Value Chains Across the Alpine Region	Interreg	2018-2021	https://tinyurl.com/Alplinkbioeco
WASTE2FUELS	Biobutanol from food waste	H2020	2016-2018	www.waste2fuels.eu
TORERO	TORrefying wood with Ethanol as a Renewable Output: large-scale demonstration	H2020	2017-	www.torero.eu
DanuBioValnet®	Interreg project, which is cross-clustering partnership to boost eco-innovation by developing a joint bio-based value-added network for the Danube Region	Interreg	2017-2019	http://www.interreg-danube.eu/approved-projects/danubiovalnet
CHIC	Chicory as a multipurpose crop for dietary fibre and medicinal terpenes	H2020	2018-	http://chicproject.eu
ICAWER	Interregional Concept for Advanced Wastewater Energy Reclamation	Interreg	2014-2020	https://icawer.syneco-group.com
LIGNOFLAG	Commercial flagship plant for bio-ethanol production involving a bio-based value chain built on lignocellulosic feedstock	BBI-JU / H2020	2017-2022	https://www.lignoflag-project.eu/

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