



Climate Resistant Bioeconomy

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Industrial Scale plants:

- Biogas plant
 - Throughput: 65,000 Tons/year
- Process water treatment plant
- Microalgae Cultivation
 - ammonia load up-to 1000 mg l⁻¹ and COD up-to 2000 mg l⁻¹



Microalgal purification of high N load process waters

Transformation of nitrogen compounds and CO₂

- Alternative, resource-efficient process water treatment method
- Production of biomass as a resource, i.e. energy production

Cultivation of micro-algae

- in undiluted process waters, i.e. landfill leachate
- in biofilms to improve the light yield, nutrient assimilation and biomass harvest

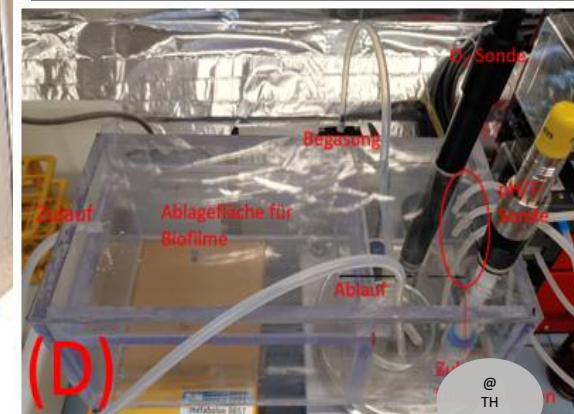
Research on the nutrient and climate dependant metabolism activity

- Photo-respirometer and
- Photo bioreactor

Photo-bioreactor



Photo-respirometer



➤ **Our Current Projects:**

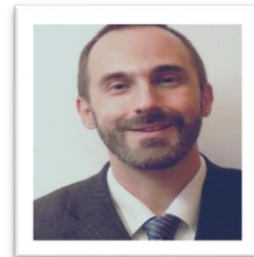
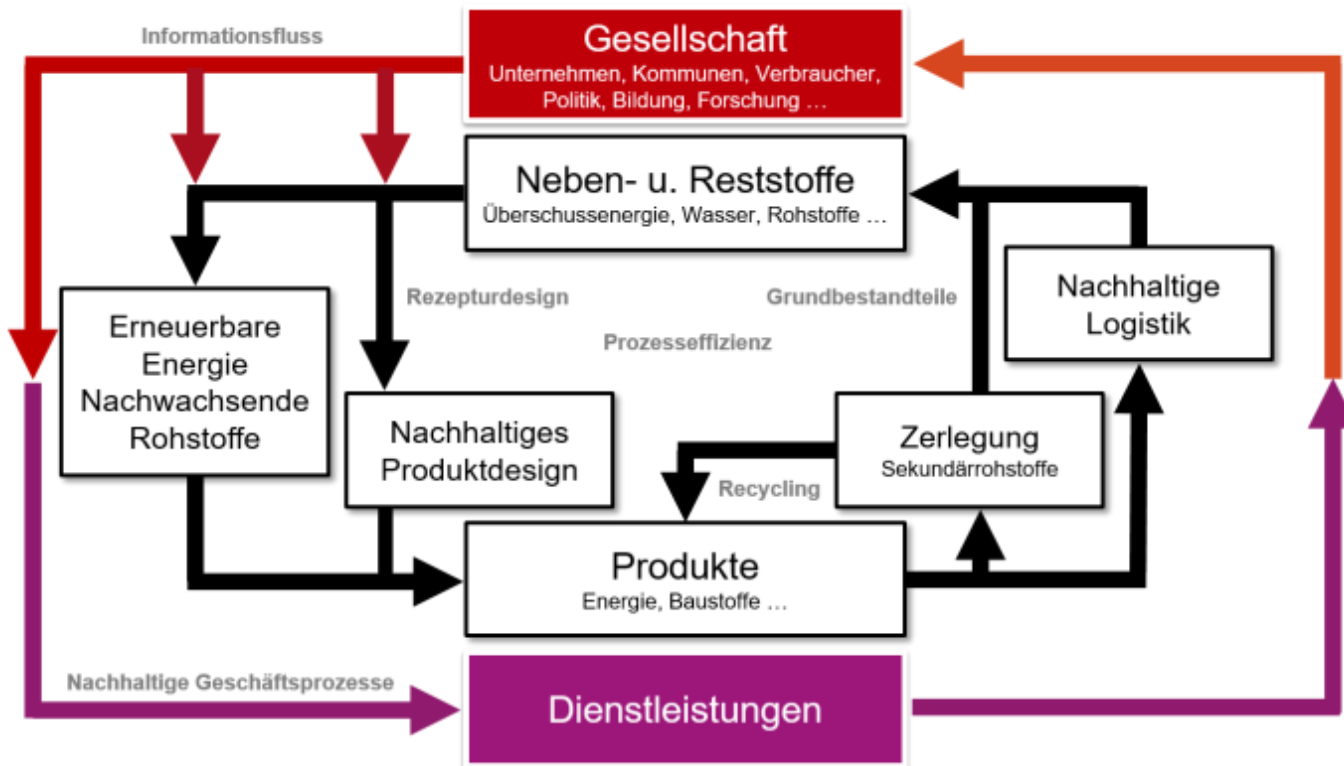
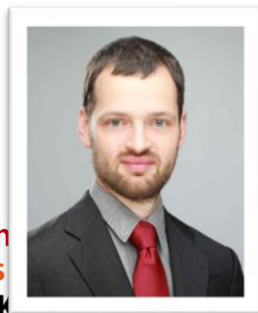
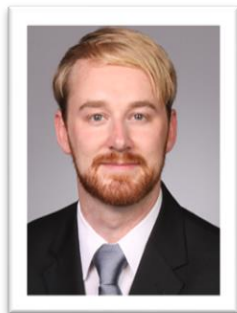
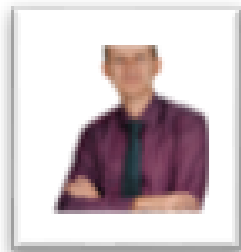
- Green Hydrogen from Organic Waste and Slurry with Dark Fermentation and Microbial Electrolysis
- Bioremediation of Plastic Waste
- Biomethanation of Landfill Gas
- Treatment of Landfill Leachate producing Biomass as microalgae



➤ **Our experience:**

- Consortium leader for multiple EU Projects
 - EIC Pathfinder Open
 - Horizon Europe
 - EFRE
 - Horizon 2020
- Past project
 - 2021-2022 Pilot of the Bergische Forge of Resources (EFRE.NRW), Budget: 3,960,000 €
 - 2019-2023 INTERREG NWE: REGENERATIS - REGENERATION of Past Metallurgical Sites and Deposits through innovative circularity for raw materials
 - 2017-2020 :metabolon IIb - Innovative Processes for a Circular Economy (EFRE.NRW), Budget: 3,640,000 €
 - 2013-2018 ENERWATER Standard method and online tool for assessing and improving the energy efficiency of waste water treatment plants, Budget: 1,700,000 €
 - 2013-2017 ATBEST Advanced Technologies for Biogas Efficiency Sustainability and Transport (Marie Curie People ITN), Budget: 3,800,000€
 - 2009-2015 :metabolon I und IIa - From Waste to Resource (EFRE) Budget: 25,000,000€
 - 2011-2015 RENEW REsource Innovation Network for European Waste (Interreg IVb) Budget: 4,859,329€
 - 2009-2011 SILCO - Innovative electrodes to control trace metal ionization used to treat Legionella and other pathogens in water distribution systems(FP7 - Research for the benefit of SME) Budget: 1,400,000€

The Team: Circular Transformation Lab



Technologie Ökologie Ökonomie Soziologie Recht

