

**To Sustainability and Beyond!
A Computer-Aided Story on a Circular Chemical Industry**

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Our current linear way of producing chemicals is unsustainable. The chemical industry needs to transform from its current fossil basis to renewable resources for its energy and raw materials. Since chemicals cannot be decarbonized in the literal sense, renewable carbon sources are needed to close the carbon cycle.

In this presentation, we will present recent methods in process design and life cycle assessment for developing a circular chemical industry based on biomass, CO₂, and waste recycling. The resulting toolbox allows us to identify promising pathways towards a circular chemical industry within the planetary boundaries.