

## GreenFeed – Green Feedstock for a Sustainable Chemistry

Funded by the Federal Ministry of Economics and Climate Protection under the funding number 03EI5003B for the period 03/01/2022 - 02/28/2025.

### Partners:

- Wuppertal Institute for Climate, Environment, Energy (WI, joint project coordinator)
- Karlsruhe Institute of Technology (KIT)
- German Biomass Research Center (DBFZ).

While today the chemical industry in Germany is supplied with 90% fossil fuels (80% petroleum derivatives, 10% natural gas, 10% renewable raw materials), it must have a consistently sustainable raw material base in the future. The first scenarios of a climate-neutral, resource-saving industrial supply show the possible sources. A detailed assessment of the raw material supply based on technology potential and energy requirements is still pending. The recycling of plastics is particularly important here. This is the subject of the "GreenFeed" project.

Plastics are a central mass product of the chemical industry. They are not only found in packaging materials, but also, for example, in textiles, thermal insulation, pipes, floor coverings, paints and adhesives. The basic chemicals required for this are currently produced and processed on the basis of the petrol refinery in the petrochemical industry. In addition to the fossil raw material, the "feedstock", this process also requires a lot of energy. In Germany alone, 49 million tons of CO<sub>2</sub> emissions are generated every year along the entire value chain. However, since carbon is still required for plastics and other hydrocarbon compounds in a greenhouse gas-neutral world, closing the carbon cycle is of central importance in order to achieve climate targets and reduce dependence on fossil raw material imports.

How can a transformation of today's fossil-dominated industry towards a circular and climate-neutral system based on renewable raw materials - also known as "green feedstock" - succeed? For this purpose, scientists from the Wuppertal Institute, the German Biomass Research Center in Leipzig and the KIT first examine and evaluate the role of various technological components such as the use of bio-polymers and the chemical recycling of plastic waste. On this basis, they derive long-term scenarios for a climate-neutral plastics industry and concretise them into roadmaps together with stakeholders. In addition to topic-specific workshops, a smaller group of relevant practice partners from petrochemistry, waste management, bioeconomy and from regional networks of the chemical industry also accompanies the research project in the form of an industry advisory board. In this way, the researchers want to show how central value chains in the chemical industry can be designed to be greenhouse gas-neutral and how they can be secured in the long term in Germany and Europe.

Herein, the KIT Institute for Technical Chemistry (ITC) focuses on modeling the value chains of chemical recycling of mixed plastic waste in order to determine the potential of chemical recycling.

### Contact and information:

Karlsruhe Institute of Technology (KIT), Institute for Technical Chemistry (ITC)

Dieter Stapf (dieter.stapf@kit.edu, phone: 0721 608-29270)