

Renewable raw materials for the chemical industry

Key messages

- The transition to a [bioeconomy](#) is a key pillar for industrial net zero production, growth, and rural development. Products made from renewable raw materials (biomass) directly and indirectly reduce fossil carbon usage all over the world.
- We ensure responsible sourcing of **sustainably grown biomass for chemical use** by continuously developing and adapting our sourcing criteria.
- Priority should be assigned to **the use of renewable raw materials as raw material for industry sector instead of use as energy**. Energetic recovery should only take place if a product has reached its end of life and cannot be recycled.
- The **mass-balance-credit method** can speed up the transition to a low carbon, circular bioeconomy, by increasing the share of products that support the replacement of fossil resources with biogenic resources.
- The EU's **Product Environmental Footprint method** (PEF) and other accounting standards require adaptation to allow for capturing positive impacts generated by renewable raw materials by accounting for the uptake of carbon stored in the biomass and the mass balance method.

About the topic

The use of [sustainably sourced](#) renewable raw materials contributes to the EU Green Deal's sustainability objectives on circularity and climate action as well as to reducing the European Union's dependency on fossil resources. Thereby, the circular bioeconomy increases resilience, and competitiveness of European industry and fosters innovation. While the bioeconomy already generates a significant turnover in the EU today ([814 bn EUR in 2019](#)), further development of a supportive policy framework is needed to accelerate the transition of the chemical industry: by providing reliable investment conditions, supporting the use of sustainable renewable raw materials and allowing industrial customers as well as consumers to make informed purchasing decisions. Such information may include the distinction between bio-based products and feedstock attributed via mass balance for production, both contributing to a reduced usage of fossil raw materials.

What does BASF offer?

The use of renewable raw materials is part of BASF's strategy to diversify its basis of raw materials. The objective is to reduce the uptake of fossil resources and to thereby consequently mitigate the greenhouse gas (GHG) emissions caused by purchased feedstocks. In 2022, BASF purchased around 1.2 million metric tons of renewable raw materials based on vegetable oils, fats, grains, sugar, and wood. These renewable raw materials are used to produce ingredients for the detergents and cleaning industry, to source natural active ingredients for the [cosmetics](#) industry, for [pharmaceuticals](#) or to produce additives or plastics for [automotive](#) applications or [electric cables](#), for example. These solutions enable significant reductions of a product's carbon footprint. Furthermore, BASF offers certified compostable [bioplastics](#) used for e.g. [organic waste collection or agricultural applications](#).

We commit to sourcing biomass sustainably. For example, the [Palm Commitment](#) sets sustainability standards in the palm- and palm kernel oil sourcing industry. In line with the [Responsibly Active program](#) we ensure the protection of biodiversity and empowerment of people along our value chains. Furthermore, BASF was the first chemical company offering [Rainforest Alliance Certified](#) personal care ingredients based on [coconut oil](#) and engaging in sustainable [castor oil](#) production. We continuously develop and adapt our sourcing criteria further to ensure the purchase of sustainably grown biomass, which does not negatively impact local food systems and ecosystems.

At BASF, we focus on scaling low-emission production concepts coupled with a sustainability-driven approach to raw material sourcing and supply. Therefore, we establish best practices in assuring transparency by applying chain of custody approaches such as **the mass-balance-credit method**. The [biomass balance approach](#) allows us to substitute large

quantities of fossil raw materials by continuously increasing the shares of renewable raw materials, such as bio-naphtha and/or biomethane, derived from organic waste, crops or vegetable oils feedstock. Applying third party verification methods, these renewable content shares can be directly attributed to materials or products according to market demand. Developing solutions for a circular bioeconomy allows us to further increase resource efficiency and to shape new material cycles. The bio-derived solutions drive positive economic, social, and environmental impact for our customers, partners, employees, and communities.

Our position

- Climate neutrality of the chemical industry cannot be achieved without a circular material approach and the use of renewable raw materials. The use of renewable feedstock, alongside recycling, reuse, and renewable energy in the production processes, constitutes an important lever to globally **reduce fossil carbon usage directly and indirectly**.
- The implementation of the principles of “**cascading use**” of biomass, will significantly increase the availability of high-quality feedstocks at a competitive cost. The “cascading use” of biomass means that the biomass share, which is not needed for food and feed, is first used to produce chemicals and materials over using this feedstock as energy source such as fuel. Moreover, recycling and the circular use of raw materials thereby contributes to improving resource efficiency.
- Creating a supportive policy framework setting **positive incentives for the use of renewable raw materials** would allow the timely conversion of chemical production plants away from fossil raw materials. It would also enable long-term “net zero” production.
- As BASF we strive to improve social as much as environmental sustainability as a fundamental element of our production processes and of the value of our products.
- The future regulatory framework needs to **acknowledge the mass-balance-credit method** in regulations, directives, and incentive schemes, to drive the uptake of recycled plastic and biomass for material use. Bio-based plastics and polymers are circular by design. They are manufactured using sustainably sourced biomass, are reusable/durable and recyclable (mechanical, chemical, or organic recycling). Additionally, it is important to allow flexible rules within mass balance approaches in legislation to facilitate low-hurdle market entry for all players.
- The efficient use of renewable raw materials is part of the chemical industry’s transformation towards circular feedstocks. Organic waste that is improperly disposed of in landfills can create methane gas, a potent greenhouse gas contributing to climate change. Recycling of organic waste promotes sustainable waste management practices, reduces greenhouse gas emissions, and conserves resources. **Gasification technologies and anaerobic digestion accompanied by post-digestion composting** can be used to process organic waste to alter its physico-chemical properties allowing it to be used again. It is a powerful chemical tool to recycle organic carbon instead of incineration, thereby contributing to an additional material cycle. Furthermore, high quality compost can be used as a soil enhancer.
- BASF supports the further development of the **product environmental footprint (PEF)** scheme to **account for biogenic carbon uptake**. Enabling this added value to be accounted for as well as clear and transparent communication about the environmental benefits of products, achieved by using renewable raw materials and/or recycled feedstock, is a prerequisite for placing the products with reduced carbon footprint on the market. The use of **the mass balance method** should also be integrated to allow for harmonized allocation of sustainability benefits of renewable and circular feedstocks in highly efficient, integrated chemical production. **All forms of carbon removals** need to be considered in the EU’s carbon accounting framework. This need for methodological adaptation also applies to the ongoing **GHG protocol update**.