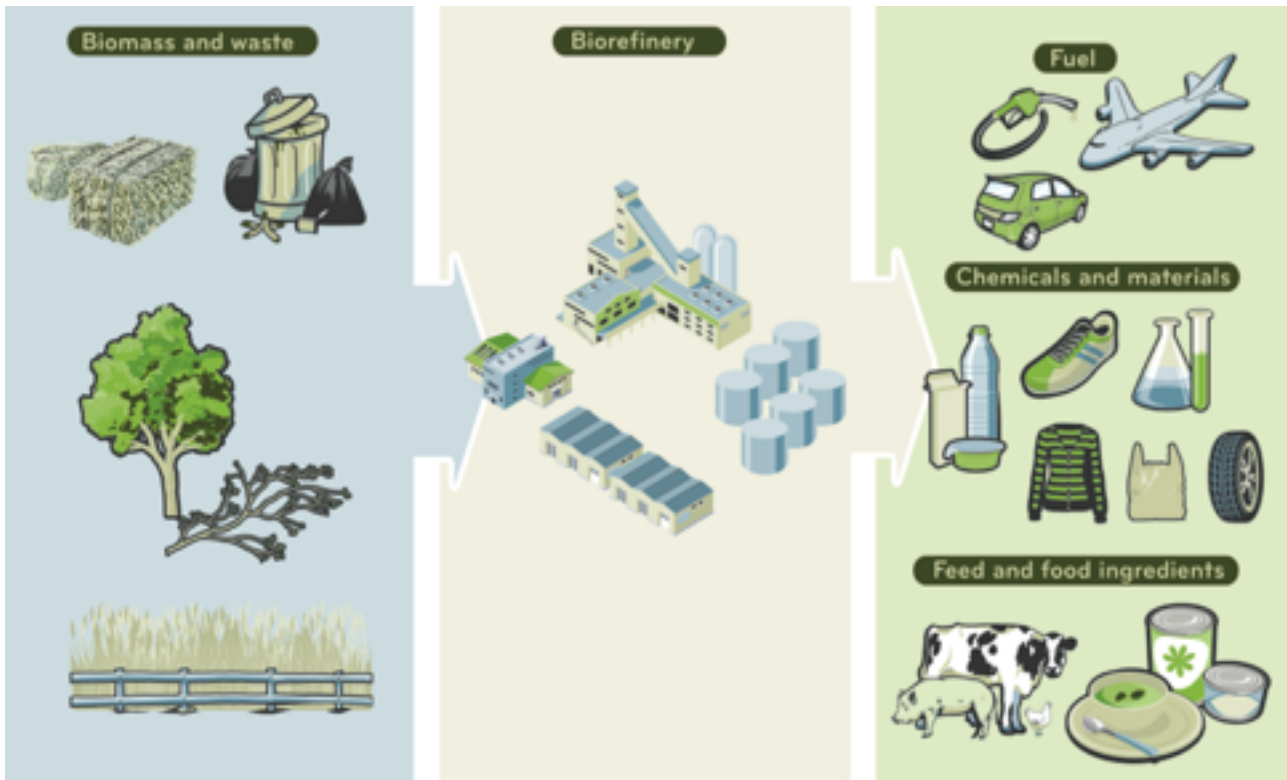


## Biorefineries

Biorefineries are processing facilities that convert biomass into food, food ingredients, feed, chemicals, materials, fuels and energy using a wide variety of conversion technologies in an integrated manner. A common goal for biorefineries is to use all parts of the biomass raw material as efficiently as possible, i.e. maximising the economic added value, while minimising the environmental footprint.



In other words, a biorefinery aims to exploit all parts of the biomass by producing several products (typically a main product and several co-products), by cooperating actively with other companies to convert 'one's waste to another's raw material', and even by generating the energy, which powers the biorefinery itself<sup>1</sup>. To date, many "types" of biorefineries have been developed. They rely on different technologies, but they all differ from (fossil) refineries in that biorefineries use renewable raw materials instead of fossil raw materials. The raw materials currently used in biorefineries show a great variety, as is illustrated in the diagram below.

Current biorefinery development set-ups follow two paths:

- improvement and expansion of a conventional biomass processing facility;
- implementation of a new processing concept converting biomass into value-added products.

Since biorefineries maximise the use and value of all components of the biomass, hence having positive effects on both economics and environment, they play an important role in the development of local (rural) growth. Integration of biorefineries with the local agronomic or forestry

<sup>1</sup> In this respect, the concept is analogous to a petroleum refinery, where oil is refined into many marketable products, including chemicals, energy and fuels.

value chains boosts cooperation, especially in R&D projects, and has a positive impact on the local - both high-tech and agronomical/forestry - job markets. These elements reflect the essence of the evolving new bioeconomy and the complexity of its value chains.



The bioeconomy that essentially spurs from the activities of biorefineries, is, hence, able to revitalise regional economies. The future of the bioeconomy relies on the necessary links between companies and territories, research, industry, production and energy, agriculture and consumption. These interactions help create sustainable regions and, more important, new sustainable economic models, capable of solving common environmental problems (hydrogeological instability, polluted areas, abandoned lands, air pollution, lawlessness in the food and innovation sectors) by revitalising the economy of dismissed industrial areas, encouraging regional economic development, and creating new job opportunities.

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### About the Bio-based Industries Consortium

The Bio-based Industries Consortium (BIC) is the private partner in the Bio-based Industries Joint Undertaking (BBI JU), a Public-Private Partnership with the European Commission. BIC represents a unique mix of sectors, including agriculture/aquaculture, agri-food, biotechnology/technology providers, forestry/pulp and paper, chemicals, energy and end-users. Established in 2012, to date, BIC has close to 80 full industrial members (large, SMEs, SME clusters) and about 150 associate members (RTOs, universities, associations, technology platforms).

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