



WHAT IS THE BIOECONOMY?



The bioeconomy has become very popular in the last few years. But what is it all about? Here is a first definition:

“The bioeconomy covers all sectors and systems that rely on biological resources (animals, plants, micro-organisms and derived biomass, including organic waste), their functions and principles. It includes and interlinks: land and marine ecosystems and the services they provide; all primary production sectors that use and produce biological resources (agriculture, forestry, fisheries and aquaculture); and all economic and industrial sectors that use biological resources and processes to produce food, feed, bio-based products, energy and services.” (Bioeconomy Strategy of the European Commission¹)

...or to summarize, the term bioeconomy describes everything that we produce with renewable biomass.

¹ [A sustainable bioeconomy for Europe: strengthening the connection between economy, society and the environment](#), European Commission, 2018

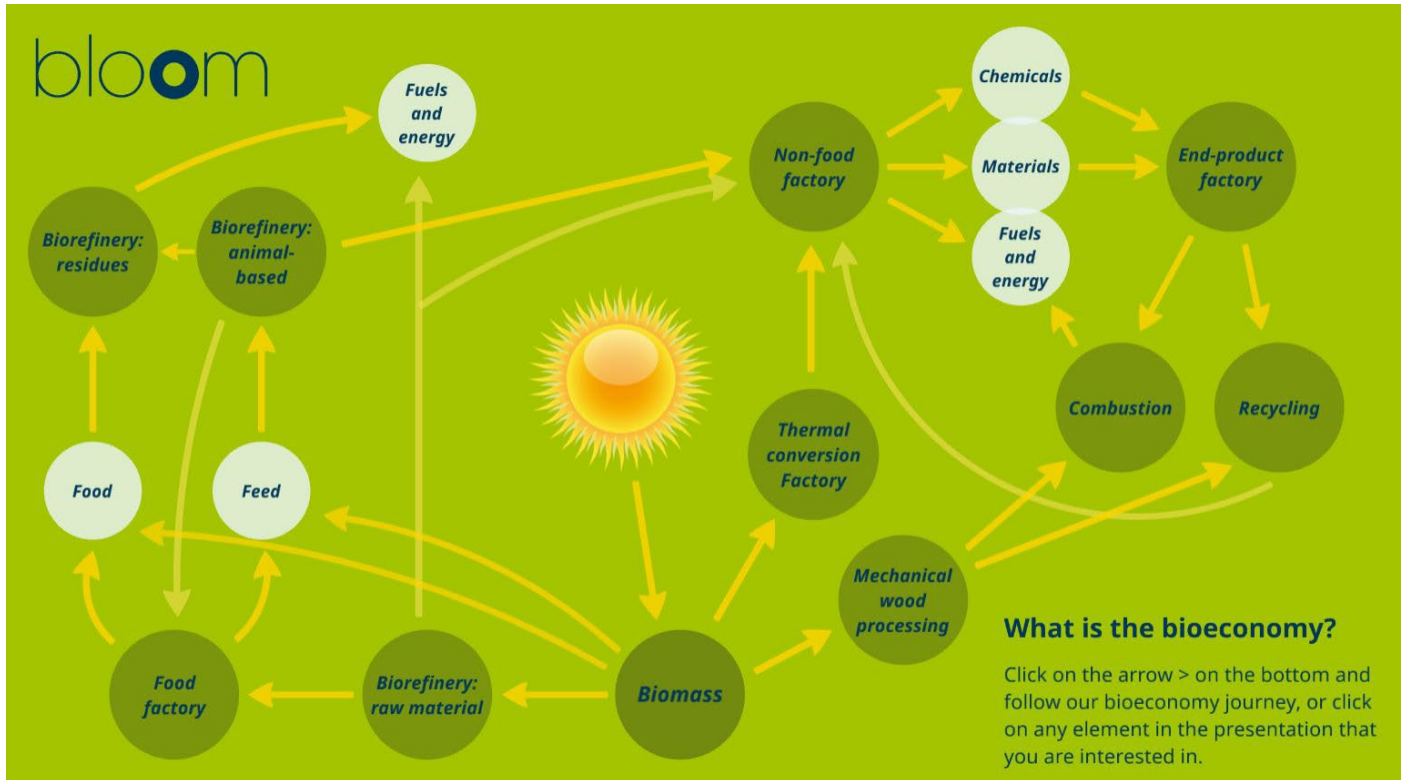
The main reason that the bioeconomy is gaining attention is because existing production practices contribute to serious environmental and climate problems. Ongoing fossil fuel extraction releases more carbon in the atmosphere, contributing to the well-known greenhouse effect. The bio-based economy focuses on substituting fossil fuels in combustion and material production with renewable biomass. The bioeconomy as a whole system also encompasses food and feed production - another major source of emissions.

A circular bioeconomy has the potential to contribute to more sustainable practices and to mitigate climate change with techniques ranging from simple ones such as re-using waste generated in one process as resource in the manufacturing of new products, to highly complex ones like building new materials such as bioplastics from components of the original biomass. The aim is always to maximise the efficiency of material flows, especially of carbon.

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To get a deeper insight into the bioeconomy value chain, we invite you on an interactive journey through our bioeconomy infographic. Click on the image to visit:



An economy founded on biomass instead of fossil fuels represents a significant shift in socio-economic, agricultural, energy and technical systems. In order to make this shift happen, regions and countries need better information and the participation of the general public, including all potential stakeholders in existing and new value chains (farmers, SMEs, national and international companies, consumers, consumer associations, environmental NGOs, media, waste collectors and converters, citizens, schools and public services etc.).



WHAT ARE BIOBASED PRODUCTS?

The bioeconomy is already part of our everyday lives. Many traditional products are bio-based, for example fibres from cotton, hemp or flax, or paper and other wood products. Bioethanol from sugar cane and biodiesel from oil waste are other well-known examples. Biobased materials can also be found in many other products, for example in construction materials, cosmetics, furniture or cleaning products, amongst others.

Many companies are making efforts to replacing fossil feedstock with renewable biological resources in other products and processes, using innovative technologies. Here are some examples of innovative everyday products:



© Spinnova

Shirt by Spinnova

Spinnova produces textiles and clothing from 100 % wood-based fibers. The textile is warm as a lambswool, doesn't contain any harmful chemicals and its production is more sustainable than that of cotton.

www.spinnova.fi



© Vibers

Bioplastics and paper by Vibers

Vibers products are made from miscanthus. Miscanthus or Elephant grass is a fast-growing crop that captures CO₂, four times more than European wood. Miscanthus grows on marginal land and can be processed into bioplastics and biobased materials.

www.vibers.nl



© Naporo

Naporo hemp insulation board

NAPORO Q-flex hemp is a flexible insulation board for walls, ceilings and roofs. The extraordinary advantages it offers are found in its excellent performance in thermal, heat and sound insulation. The raw material is hemp, a sustainable annual plant.

www.naporo.com



© Cellutech,
Rasmus Malbert

Helmet by Cellutech

Safety helmet made out of wood veneer, a strap of durable paper and wood-based cushioning making the product entirely renewable and biodegradable.

www.cellutech.se

THE BIOECONOMY IN EU POLICIES AND FRAMEWORKS

Europe is setting course for a resource-efficient and sustainable economy. In October 2018, the European Commission published an updated strategy and action plan for a sustainable bioeconomy in Europe (update of the 2012 Bioeconomy Strategy). This strategy is Europe's response to key environmental challenges the world is facing today. It's meant to reduce dependence on fossil fuels, transform manufacturing and promote sustainable production of renewable resources, while growing new jobs and industries.

“To be successful, the European bioeconomy needs to have sustainability at its heart and be circular by definition. The purpose of the updated European Bioeconomy Strategy is therefore to further develop a bioeconomy that valorises and preserves ecosys-

tems and biological resources, drives the renewal of our industries and the modernisation of our primary production systems through bio-based innovation, involves local stakeholders, protects the environment and enhances biodiversity.”¹

The Bioeconomy Strategy and Action Plan focuses on the following key aspects:

- Strengthen and scale up the bio-based sectors, unlock investments and markets
- Deploy local bioeconomies rapidly across the whole of Europe
- Understand the ecological boundaries of the bioeconomy.

¹ [Bioeconomy: the European way to use our natural resources](#). Action Plan 2018, European Commission



Picture: [European Commission](#)

ETHICAL QUESTIONS: CREATING A SPACE FOR DIALOGUE ON BIOECONOMY

If the demand for certain natural resources such as wood increases, how are we going to make sure that this does not increase the pressure on forest ecosystems and that the wood comes from sustainable forest management practices? An increased demand is very likely to also increase the imports of biomass. In doing so, how can we avoid exacerbating issues of sustainability in supplier countries? How can we find new balances within the planetary boundaries and work on integrated and holistic visions and strategies?

As in every change of a complex system, there are potential side effects and ethical questions that need to be addressed. Under the term “bioeconomy” some controversial approaches are also being discussed that might not be in line with sustainability goals and/or raise issues with ethical implications. Some of these questions are related to topics like genetic modification in production processes, the use of fertilizers, or the potential increase of the demand for some natural resources.

Besides focusing on sustainable production, a circular bioeconomy would want to optimally use waste from production processes. This has the potential to reduce the pressure on re-

source acquisition, and reduce pollution and environmental impact. In implementing a bioeconomy, choices for degradable products or recycling systems can be made.

The BLOOM Approach

BLOOM is addressing these questions as part of the activities of its bioeconomy hubs. The main objective of the project is to establish open and informed dialogues, co-created by European citizens, civil society, bioeconomy innovation networks, local research centres, business and industry stakeholders and various levels of government. BLOOM is creating spaces for the needed debate on preferences and values concerning the bioeconomy; for interaction and exchange of information, knowledge, meaning and aspirations, with the aim of establishing consensus on how a bioeconomy can be realized. Across Europe, five regional hubs have been established to foster public engagement in the bioeconomy and to create a space of exchange and debate. The hubs are focusing on different areas important to the regions. You can find out more about the BLOOM hubs on our website:

bloom-bioeconomy.eu

