

# A sustainable Bioeconomy for Europe: Strengthening the connection between economy, society and the environment

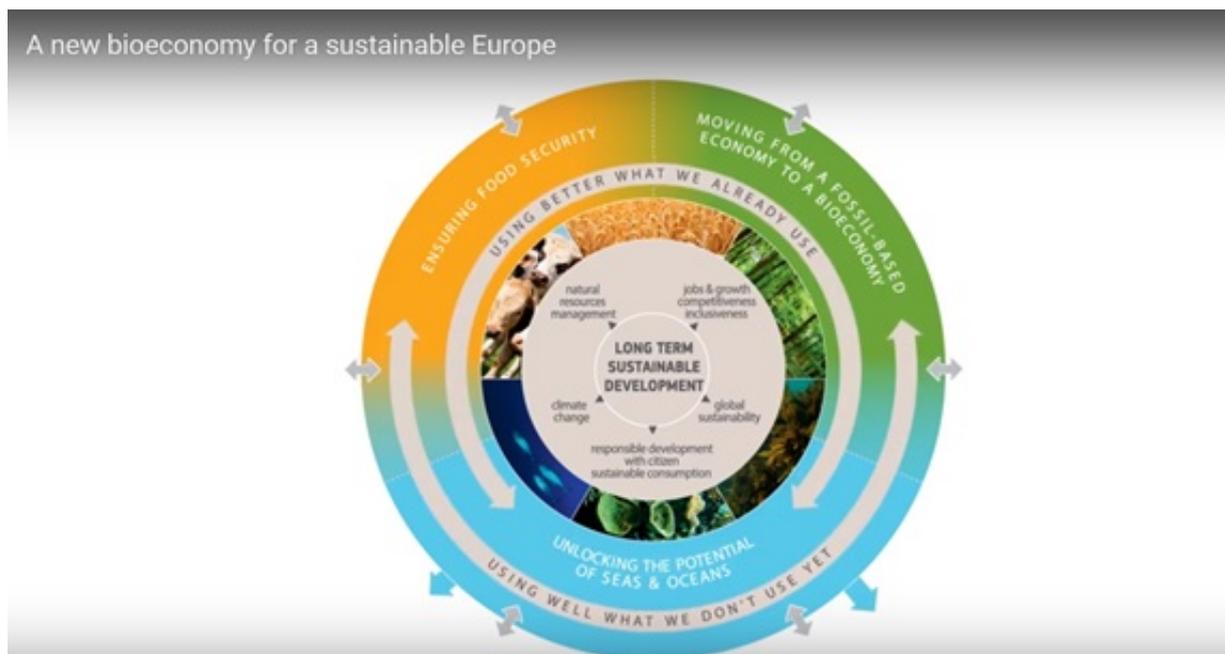


**The European Union is a global leader in the sustainable use of natural resources** within an efficient bioeconomy, which is essential to most of the Sustainable Development Goals.

## ***Bioeconomy encompasses***

*all sectors and systems that rely on biological resources (animals, plants, micro-organisms and derived biomass, including organic waste), their functions and principles, including and interlinking: 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.*

With a turnover value of **€2.3 trillion** and accounting for **8.2% of the EU's workforce in 2015** (Ronzon, T. et al., 2018), the bioeconomy is a central element to the functioning and success of the EU economy. **Sustainability** and **circularity** are at the heart of the European bioeconomy, driving the EU industry renewal, the EU primary production system modernisation, as well as environmental protection and biodiversity enhancement.



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#### Understanding the [European Bioeconomy Strategy](#):

Launched and adopted on 13 February 2012, Europe's Bioeconomy Strategy addresses the production of renewable biological resources and their conversion into vital products and bio-energy. It aims to achieve five objectives: i. **ensure food and nutrition security**; ii. **sustainably manage natural resources**; iii. **reduce dependence on non-renewable, un-sustainable resources, whether sourced domestically or abroad**; iv. **mitigate and adapt to climate change**; and v. **strengthen European competitiveness and create jobs**, through a set of three areas of action, namely investments in research, innovation and skills; reinforced policy interaction and stakeholder engagement; and enhancement of markets and competitiveness in bioeconomy.

The 2018 update of the Bioeconomy strategy aims to accelerate the deployment of a sustainable European bioeconomy so as to maximise its contribution towards the 2030 Agenda and its Sustainable Development Goals (SDGs), as well as the Paris Agreement. The update also responds to new European policy priorities, in particular the renewed Industrial Policy Strategy, the [Circular Economy Action Plan](#) and the Communication on Accelerating Clean Energy Innovation, all of which highlight the importance of a sustainable, circular bioeconomy to achieve their objectives.

The updated strategy for a sustainable bioeconomy in Europe supports the same five objectives, but in the context of an evolved policy context, puts forward three new main action areas:

1. **Strengthening and scaling-up the bio-based sectors, unlocking investments and markets.** EU efforts are directed towards the mobilisation of public and private stakeholders in bio-based products related research, demonstration and deployment, with a targeted financial instrument under [Horizon 2020](#) - the EUR 100 million Circular Bioeconomy Thematic Investment Platform - to reinforce synergies with on-going and future initiatives, such as the Capital Markets Union, the InvestEU Programme, the Common Agricultural Policy and the ETS Innovation Fund. The EU will also promote the bio-based sector's positive impacts and a level playing field with fossil-based industries, as regards market and regulatory conditions, including for the development of new sustainable biorefineries, and of substitutes to fossil resources, in particular biobased, recyclable and marine biodegradable substitutes for plastic.

- 2. Rapidly deploying local bioeconomies across Europe:** The European Commission will actively support and promote all types of innovations and practices for sustainable food and farming systems, forestry and bio-based production, in a systemic approach addressing, among others, the following areas: Food waste and losses, resilience, nutrition-sensitive food production, sustainable use of seas and oceans with increased share of EU aquaculture production; Bio-based innovations like the development of new chemicals, products and processes for bio-based markets; New opportunities arising for the forestry sector in view of replacing non sustainable raw materials in e.g. construction and packaging; and Exploiting the potential of ocean farming.
- 3. Understanding the ecological boundaries of the bioeconomy:** Enhancing the knowledge base on pressures on the environment and on enhancements in the full range of eco-system services, will include forward looking, cross-sector assessments, modelling and scenarios.

A sustainable European bioeconomy **is the renewable segment of the circular economy**. It can turn bio-waste, residues and discards into valuable resources and can create the innovations and incentives to help retailers and consumers **cut food waste by 50% by 2030**. As such, it has several benefits. It is a crucial element of global efforts to build a **carbon neutral future** in line with the **Climate objectives** of the **Paris Agreement**, strongly contributing to meeting the **EU renewable energy targets of 20% in 2020** and of at least **32% in 2030**. It supports the modernisation and strengthening of the EU industrial base through the creation of new value chains and greener, more cost-effective industrial processes, based on innovative solutions. It enhances the capacity to **substitute fossil raw materials** in very significant parts of European industry (e.g. construction, packaging, textiles, chemicals, cosmetics, pharma ingredients, consumer goods), with **demand for industrial biotechnologies expected to almost double within the next decade**. It can also contribute to restoring ecosystems, for instance by achieving **plastic-free seas and oceans**, by contributing to the **Sustainable Development Goals target of achieving land degradation neutrality by 2030** and to the ambition of **restoring at least 15% of degraded ecosystems by 2020**. Moreover, the deployment of a sustainable European bioeconomy would lead to the creation of jobs, with an estimated **one million new jobs** to be created **by 2030** in the bio-based industries.

#### [Lessons learned from the 2012 strategy:](#)

- Further mobilisation of investments is still needed, which requires a stable regulatory environment. Existing and new technologies need to be up-scaled and rolled out. Especially private investment in integrated bio-refineries, which are capital intensive and are associated with high technological and market risks, require specific support and a stable regulatory environment.
- Policy coherence needs to be better addressed, with more explicit and direct links between strategic objectives and corresponding actions.
- Raising public awareness and broadly engaging stakeholders is of utmost importance for the future development of the bioeconomy.
- **Realising the potential of bioeconomy will not happen on its own.** It requires investments, innovation, developing strategies and implementing systemic changes that cut across different sectors (agriculture, forestry, fisheries, aquaculture, food, biobased industry). **Maximising the impact of EU Research and Innovation is key in this respect.**
- Regulation and financing must be innovation friendly for Europe to become a front-runner in market creating innovation. The **Commission proposals** for the next **Multiannual Financial Framework for 2021** intend to give a significant boost for systemic research and innovation in the areas and sectors covered by the bioeconomy, in particular with **EUR 10 billion** foreseen for the **Horizon Europe cluster for "Food and Natural Resources"**.
- It is necessary to move beyond research and innovation and have a strategic and systemic approach to the deployment of innovations to fully reap the economic, social and environmental benefits of the bioeconomy. Such an approach should bring together all actors across territories and value chains to map the needs and actions to be taken.

## INTERNATIONAL DIMENSION

While having a **focus on Europe**, the EU Bioeconomy Strategy and Action Plan capitalise on **international expertise and initiatives**. Responding to a clearly identified need for a space where regular and strategic international cooperation at multi-partner level can take place, the European Commission set up the **International Bioeconomy Forum in 2017**, with a focus on building policy coherence and on exploiting synergies between countries and regions, taking into account existing mechanisms. The Forum promotes the active participation of European Union Member States, International partners, Industry, Academia, and NGOs, as well as farming, forestry, fisheries, and other relevant stakeholders. The International Bioeconomy Forum is expected to develop a global policy dialogue on selected aspects of the bioeconomy, through international co-operation for coherent, joint and impactful delivery of the world bioeconomies on **Sustainable Development Goals**, to align research with funding programmes, and to increase research and innovation cooperation and international awareness of the central role of bioeconomy.

Bioeconomy in practice: experience in the EU

- [H2020 ERIFORE](#) – European Research Infrastructure for Circular Forest Bioeconomy: An EU Horizon 2020 project aiming at establishing an open access research infrastructure to facilitate the development of technologies enabling research and commercialization of new value-added products from forest biomass.
- [AGRICHEMWHEY](#): A EUR 30M H2020 project aiming to develop the world's first integrated biorefinery for converting dairy industry food-processing by-products – whey protein and delactosed whey protein – into products such as bio-based fertiliser and mineral supplements for human nutrition and bio-based fertiliser. The project creates jobs in rural areas and makes milk production more sustainable.

Bioeconomy in practice: experience outside the EU

- [Bioeconomy: Sustainable Socioeconomic Development of cross-border biodiversity Andalusia-Morocco](#)
- [BiomassWeb](#): a project that aims at contributing to food security in Sub-Saharan Africa through harnessing productivity and efficiency gains in the whole biomass-producing, processing and trading system, including through various research activities in Ghana, Nigeria and Ethiopia.
- [Malaysia's Bioeconomy Transformation Programme](#) (BTP) launch and [progress](#): an initiative aiming at developing Malaysia's bio-based industry, through 10 Entry-Point Projects, and numerous private sector-driven Trigger Projects. BTP is targeted to create 170,000 job opportunities and attract about EUR 10.7 billion in investments by 2020.