



The EU Bioeconomy:

trends, biomass, and competitiveness

Trends in the EU Bioeconomy

The European Commission's Joint Research Centre monitors the **development of the bioeconomy** in the EU with the [EU Bioeconomy Monitoring System](#) and assesses related supply chains. Aggregated 10-year trends [1] indicate progress in **food security**, **energy efficiency**, and **reduced dependency** on non-renewable resources. **Fisheries** provide a clear example that regenerative management has **measurable impact**: the share of fish stocks in EU waters exploited *at or below* maximum sustainable yield rose from 28% (2003) to **70%** (2022). However, persistent environmental and climate **challenges** remain, specifically the decline of the **LULUCF** (Land Use, Land-Use Change, and Forestry) carbon sink and deterioration of **land-based habitats** and **species diversity**.

Biomass, the foundation of the EU Bioeconomy

The bioeconomy depends on ecosystems' capacity to **regenerate biomass** and sustain key services over time. Biomass serves as the **finite material foundation** of the bioeconomy [2], yet its **extraction** from ecosystems bears significant social, economic, and environmental consequences [see [overleaf](#)]. Strengthening the **foundations** of the bioeconomy requires a shift from predominantly **extractive logic** to **regenerative management**, with greater emphasis on sustainable harvesting, biomass cascading, improved recovery of secondary streams, nature-based solutions, restoration of degraded ecosystems and **more efficient allocation** of limited biological resources across competing uses.

Strategic demand for biomass

Current **biomass demand** [3] is primarily distributed across **food, feed, and bedding** (47%), **energy production** (29%), and **material production** (24%). Demand is expected to expand through **lead markets** identified for their high potential in value-added applications [see [overleaf](#)]. In 2023, **bio-based plastics** and polymers only accounted for **~1%** of annual EU plastic production [4], while **bio-based fibres** maintained a **30–40%** share of EU textile production [5]. In the **construction** sector, renewable materials such as **timber** and **hemp** can reduce **embodied carbon in buildings** by **~40%**, as indicated in the [Strategic Framework for a Competitive and Sustainable EU Bioeconomy](#). Bio-based **fertilisers** and plant protection products are increasingly utilised to reduce reliance on synthetic inputs and enhance soil fertility. Scaling this demand-side dynamic relies on **lead technologies**, including integrated biorefineries, advanced fermentation, and biogenic carbon capture and storage.

Value added, employment, and innovation

In 2023, biomass producing and converting sectors employed **17.1 million people** and generated **€863 billion** in value added, contributing to **5% of EU GDP** [6]. R&D investment in these sectors represents **9%** of total EU business **R&D expenditure**. These sectors have grown faster than the overall economy over the past decade, demonstrating essential potential for fostering long-term European **competitiveness** and **strategic autonomy**.

Discover more

Main sources JRC Science for Policy Briefs and reports:

- [1] *Trends in the EU bioeconomy - update 2024*. [JRC140285](#)
- [2] *EU Biomass supply, uses, governance and regenerative actions*. [JRC140117](#)
- [3] *Biomass supply and demand in the EU 2012-2022*. [JRC143910](#)
- [4] *Bio-based plastics in a sustainable and circular bioeconomy*. [JRC145443](#)
- [5] *Bio-based textiles in a sustainable and circular bioeconomy*. [JRC140676](#)
- [6] *The EU bioeconomy at a glance: Focus on economic value added, employment and innovation*. [JRC143759](#)

Explore the
[Knowledge Centre for Bioeconomy](#)



enhancing the knowledge base
for EU policymaking on the bioeconomy



6 Waste and Wastewater

for example:



Food waste



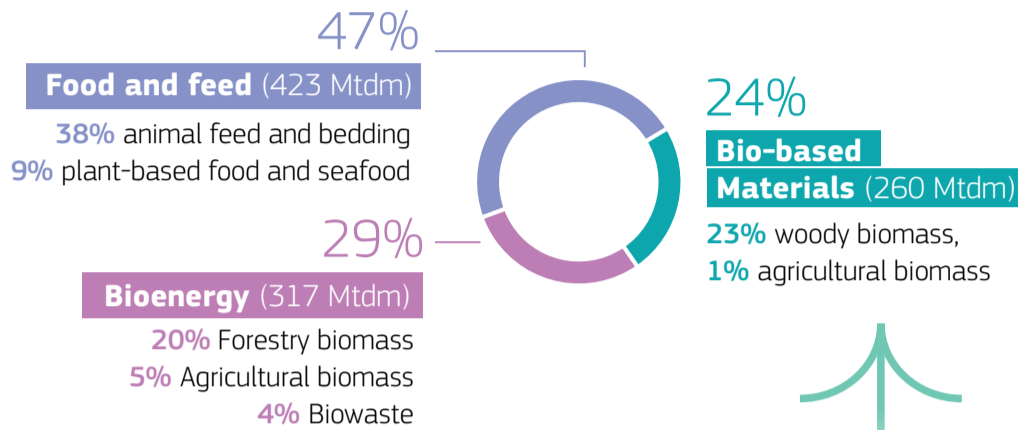
Garden / Park waste
mainly used for composting



Sludges
currently: **40%** applied on farmland, **27%** incinerated, **10%** composted, **11%** landfilled

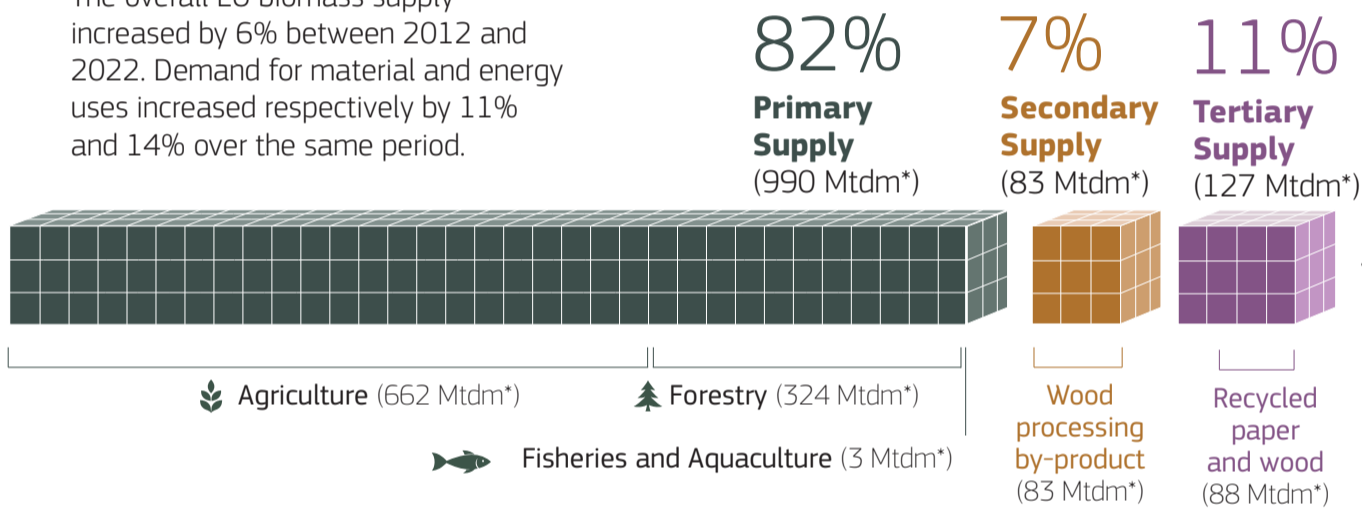
4 EU Biomass demand (2022)

Demand for food, animal feed and bedding increased by 6% over the past decade. The increase in demand was mainly driven by the growth in food and feed exports. During the same period the EU population grew only by 1.2%



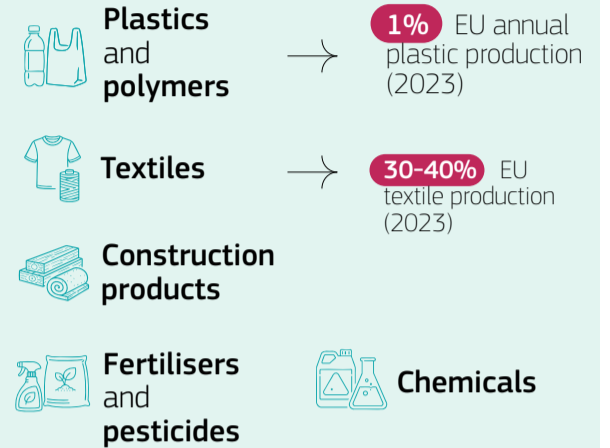
3 EU Biomass supply (2022)

The overall EU biomass supply increased by 6% between 2012 and 2022. Demand for material and energy uses increased respectively by 11% and 14% over the same period.



5 Bio-based products in Lead Markets of today and of tomorrow

Strategic Framework for a Competitive and Sustainable EU Bioeconomy COM(2025) 960



Expected to expand due to new **Lead Markets**

Will increase the demand for...

... additional **Secondary Biomass** and ... additional **Tertiary Biomass**

Biomass Gap?

New Supply needs to meet the 2040 Bioeconomy ambitions

2 Agriculture, forestry and fisheries

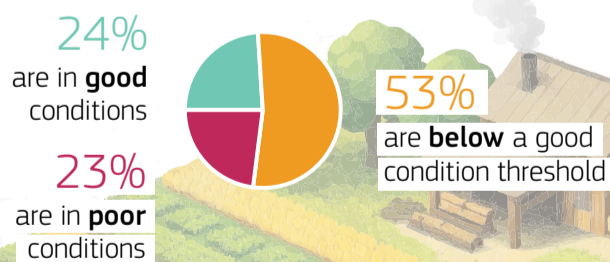
are the primary, foundational suppliers of biological resources (biomass) for the bioeconomy, providing renewable raw materials for food, feed, bioenergy, and bio-based materials.



1 Biomass sourcing

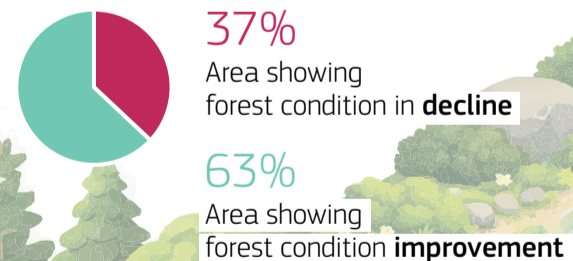
Agroecosystems

Source: [2]



Forests

Change in European forest condition (2000-2018)
Source: [2]



Soils

62% EU soils are in **unhealthy** conditions
Source: EUSO dashboard

Water

Urban areas

*Mtdm = Million Tons Dry Matter