

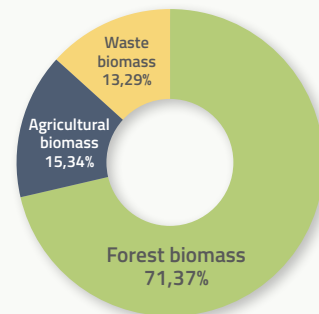
Biomass Supply

Bioenergy makes up the majority (55,7%) of renewable energy in the EU and is its largest indigenous energy source. Not only is it essential in promoting the green transition, but it also strengthens energy independence. Bioenergy works by transforming the potential energy stored in biomass into useful heat and electricity. As an important part of the bioeconomy, bioenergy primarily relies on material from other biobased sectors. Most of the feedstocks for bioenergy are residues and waste such as branches and sawdust from forest-based industries, agricultural residues from farming, and organic waste from both the food and beverage industry and municipal collection.

The largest feedstock for bioenergy is woody biomass, which accounts for over 70% of all biomass used for bioenergy, while agricultural and waste biomass represent approximately 15% each. In EU 2050 policy scenarios, the amount of waste biomass is expected to at least double, and the use of agricultural biomass is expected to at least quintuple, as greater focus on the circular bioeconomy increases material utilisation and the valorisation of residues.

One of the key aspects to ensure that biomass for bioenergy (and forest-based industries more broadly) is sustainably sourced is to ensure that harvesting remains below the net annual increment. The net annual increment is the total growth of the forest after accounting for natural mortality and harvesting. As long as removals remain below the net annual increment, the forest continues to grow and gets bigger each year. Thanks to improved management, Europe's forests have been growing for the past three decades and it is not just the forest area, but also the forest carbon stock which has been rising. In 1990, the average forest stock was 133 m³/ha and in 2020, that number had increased by more than 30% to 173 m³/ha.

Distribution of the various biomass feedstock for energy in 2021 (%)



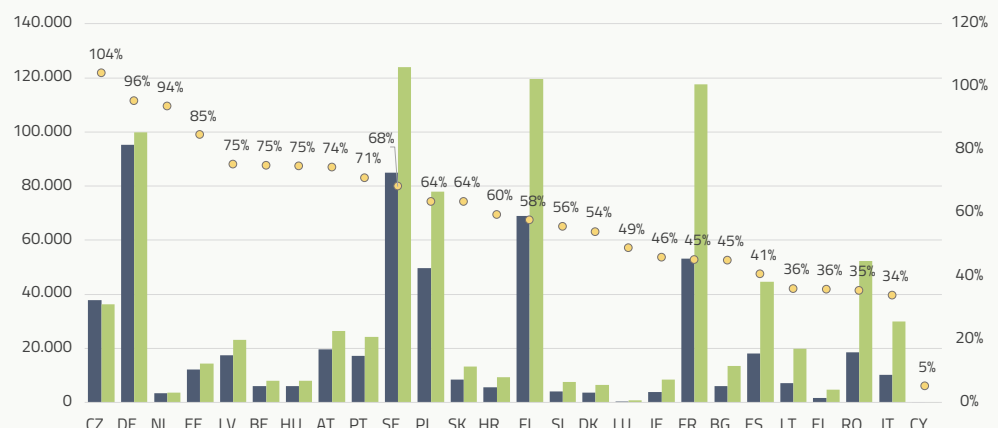
Source: Eurostat and Bioenergy Europe's estimate

For all European countries except the Czech Republic, harvesting levels were below their net annual increment value. This means that the amount of wood harvested from the forest is less than what grows every year. This ensures that forests continue growing and that forest resources are sustainably harvested. Czechia and Germany have such high removal rates due to recent disasters, particularly bark beetles which have increased in frequency and severity in recent years leading to extensive salvage logging beyond regular forest management activities. While the increase in disturbances is a concerning, it is encouraging that forestry broadly across Europe is operating in a sustainable way allowing for the maintenance and growth of forests.

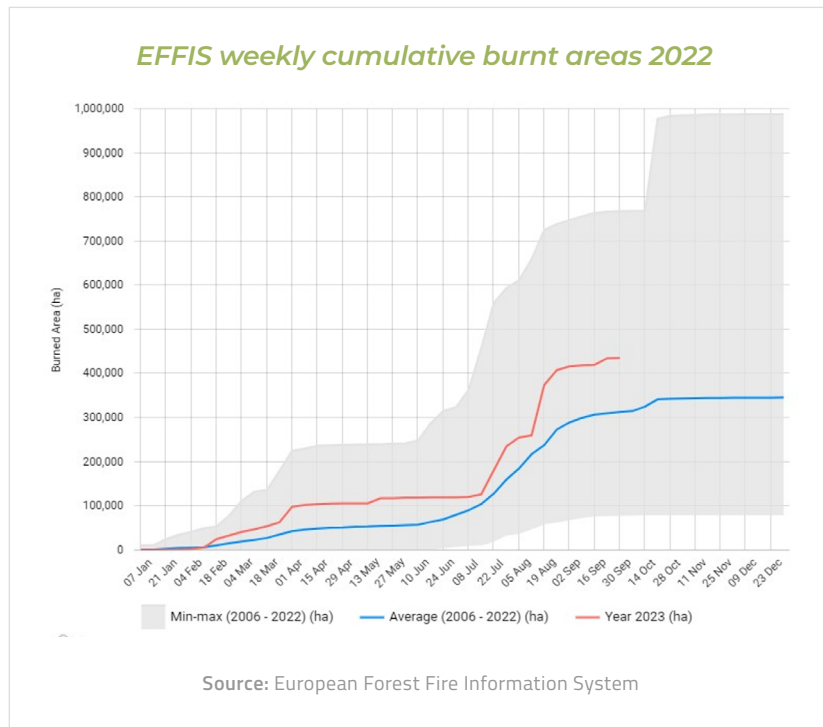
Removals and net annual increment, in m³ and %, 2021

■ Removals
 ■ Net annual increment
 ● Removals as % of net annual increment

Note: Last available data for Portugal is 2015
 Source: State of Europe's Forests 2020 (Forest Europe)



Forests are being subjected to more stress due to climate change, weakening the defence systems of individual trees and increasing the overall vulnerability of forests. As we have seen in recent years, stronger storms, hotter and drier summers, together with milder winters are all affecting the forests negatively by increasing the number of disturbances. The combination of lower forest resilience and increased frequency of extreme events is a major threat to the survival of forests, and it is important to take action to preserve these ecosystems. One particularly striking example is the dramatic increase in the cumulative burnt area for 2022, showing destruction due to a record-breaking fire season. The vast majority of the year broke records for the amount of cumulative burnt areas surpassing anything seen since before 2006. The only way to mitigate the increasing number of disturbances that occur is to support the sustainable management of forests, in order to actively reduce the risk factors which contribute to these negative events.



It is important to not confuse the absence of human management with greater protection. Excessive fallen material can result in more fuels for wildfires and sometimes visually impactful measures like establishing firebreaks, clearcutting sections of the forests to create gaps in fuel which can stop a forest fire from spreading, are necessary. Responding to forest disturbances, bioenergy plays an important role in providing a use for salvage logging which harvests low quality wood which cannot meet the quality or physical characteristics required by sawmill, pulp and panel industries. This valorisation can thus help defray costs and provide funding for forest owners to improve the health of their forests and respond to these disturbances.

Key Messages

- Promote the bioeconomy.** The bioeconomy is a key driver in promoting a green transition and reducing reliance on fossil fuels. Bioenergy, with its ability to utilize low value biomass, can and will play a key role in the bioeconomy.
- Climate smart forest management should be promoted to safeguard forest conservation.** Sustainable forest management is key to developing resilient, multifunctional forests. An integrated approach should be promoted to help reduce both forest vulnerability and the risk of disasters such as forest fires.
- Increase the valorisation of agricultural wastes and residues.** Agricultural biomass is forecasted to grow substantially in the decades to come and should be promoted. As of now, a lot of agricultural residues are not being properly valorised; however, by expanding the bioeconomy and increasing its circularity, bioenergy could be further developed keeping today's production levels.