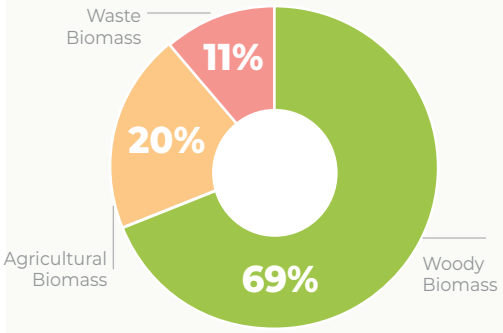
BIOMASS SUPPLY

Biomass is derived from organic material such as wood (including residues from forest-based industries), agricultural residues and crops, and organic waste. Bioenergy is the main renewable energy source in the EU and its use diversifies Europe's energy supply, creates growth and jobs, and lowers greenhouse gas emissions. The main feedstock used by the bioenergy sector is woody biomass, currently covering 69% of sector's supply. Agricultural biomass and biomass from waste represent a smaller portion and supply together 30% of the supply, although in its policy scenarios, the European Commission forecasts a better mobilisation of agricultural residues and a more important use of perennial lignocellulosic energy crop.

Distribution of the different biomass feedstock for energy in 2018 (%)

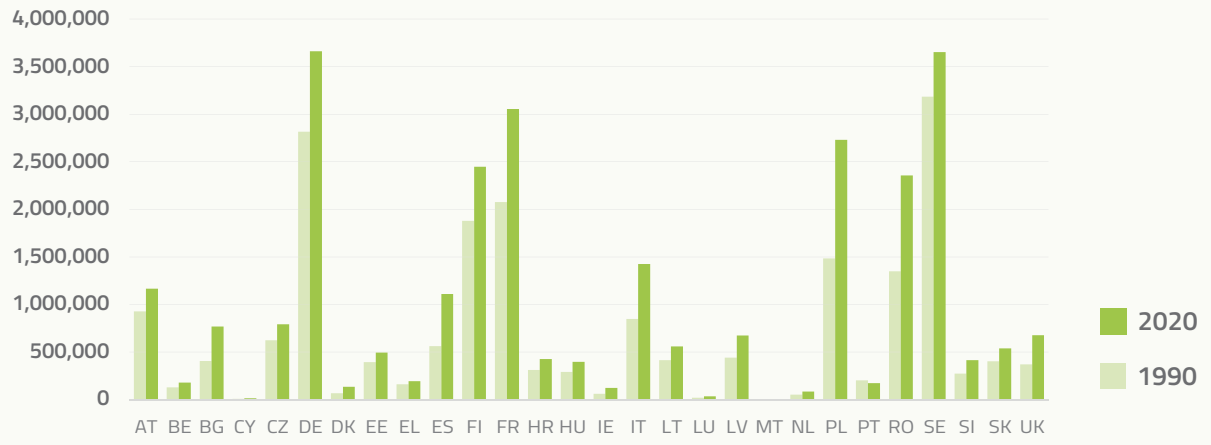
(Sources: Eurostat and Bioenergy Europe's estimates)



EU28 forests have been growing over the past decades. In 1990, European forests represented a total of 19,2 billion m^3, meaning that the forest stock has increased by 47% since. According to FAO, EU-28 forest coverage gained on average 482.000 hectares every year from 1990 to 2020, meaning that European forests are increasing by the size of 1,3 football fields every minute. Also, the overall forest density is rising: from 130 m^3/ ha in 1990 to 174 m^3/ ha in 2020 (considering the forest area and growing stock) as the growing stock is increasing at a higher rate than forest area. Increases ranging from of 10% to 26% were observed in Bulgaria, Denmark, Estonia, Greece, France, Italy, Lithuania, Hungary and the United Kingdom. Spain and Ireland recorded rises of 34% and 69% in forest area since 1990. In the last two decades, both forest area and the forest stock (carbon stock per ha) are increasing. In general, the harvesting are less than the growth: more than 30% of the annual forest increment remains in the forest, creating additional wood availability for the future.

Evolution of available stock of forest in EU28 Member States between 1990 and 2020 (1000 m^3)

(Source: FAO Global Forest Resources Assessment 2020, Eurostat)

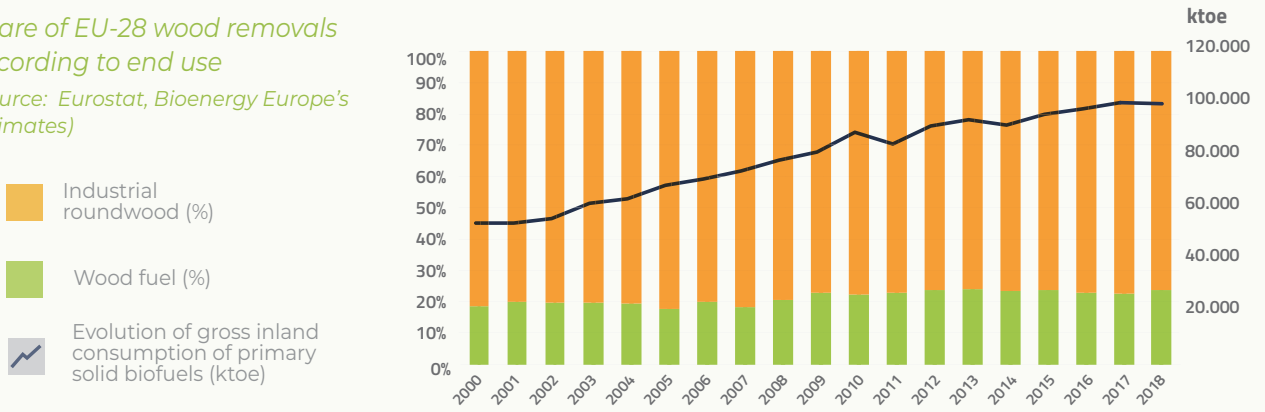


Note: Last available data for Belgium, Malta and Portugal is from 2015.

While bioenergy has grown in the last decades, the percentage of wood removal harvested for energy purposes remains stable and represented in 2018, 23% of the total. This demonstrates that bioenergy is not a driving force behind forest harvesting and that the sector increasingly uses residues from forest-based industries.

Share of EU-28 wood removals according to end use

(Source: Eurostat, Bioenergy Europe's estimates)

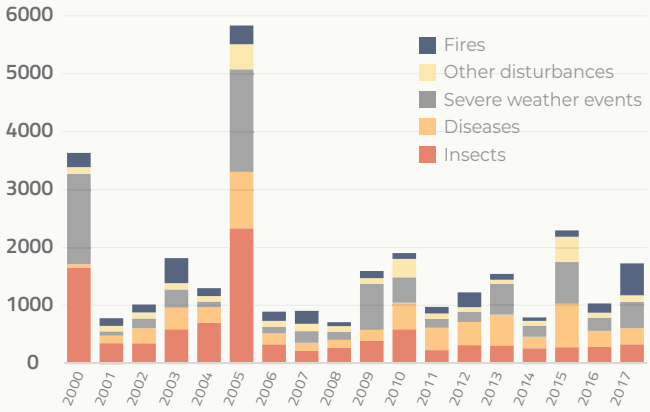


Forests play an active role in the fight against climate change by storing carbon and by substituting fossil energy and materials respectively with bioenergy and wood-based products. At the same time, forests are endangered by climate change related disturbances such as wild fires; extreme weather events, pests and diseases. On average, 1,3% of EU28 forests area is annually affected by pests and climate disturbances, causing unplanned salvage logging to result in high volumes of low-quality wood not meeting the quality or physical characteristics required by sawmill, pulp and panel industries.

It is estimated that between 2018 and 2019, more than 1,2 million ha of forest have experienced damage, resulting in more than 36 million m^3 of damaged wood. Czech Republic experienced the most significant loss, with 12 million m^3 of damaged wood.

Evolution of forest area affected by disturbances in EU28 between 2000 and 2017 (1000 ha)

(Source: FAO Global Forest Resources Assessment 2020)



Note: Considered diseases caused by bacteria, fungi, phytoplasma or viruses and severe weather events such as snow, storms or drought. 2000 and 2005 high values are due to inconsistencies of data: countries with large forest damaged areas were introduced in those years (Romania in 2000; Italy, Romania and Slovenia in 2005).

Bioenergy is an important asset to climate change mitigation, through the substitution of fossil fuels, but also to climate change adaptation. In fact, forest management is key in reducing the risk of forest fires and diseases. Bioenergy contributes to developing markets for low value forestry residues which makes climate adaption measures more attractive for forest owners.

RECOMMENDATIONS

1. **Support synergies between bioenergy and agriculture.** Valorisation of agricultural residues through energy and cultivation of perennial energy crops provides income diversification for farmers, promotes socio-economic development at a local scale and contributes to provide a clean source for farm's own energy requirements.
2. **Support synergies between bioenergy and sustainable land management.** Bioenergy brings a market value for forest and agricultural residues and will thus make sustainable management in agriculture and forests economically attractive for farmers and forest owners. Additional environmental benefits from energy crops should be acknowledged.
3. **Support a bio-based economy.** Feedstock supply will encourage a necessary transition from fossil based economy to a bio-based economy.