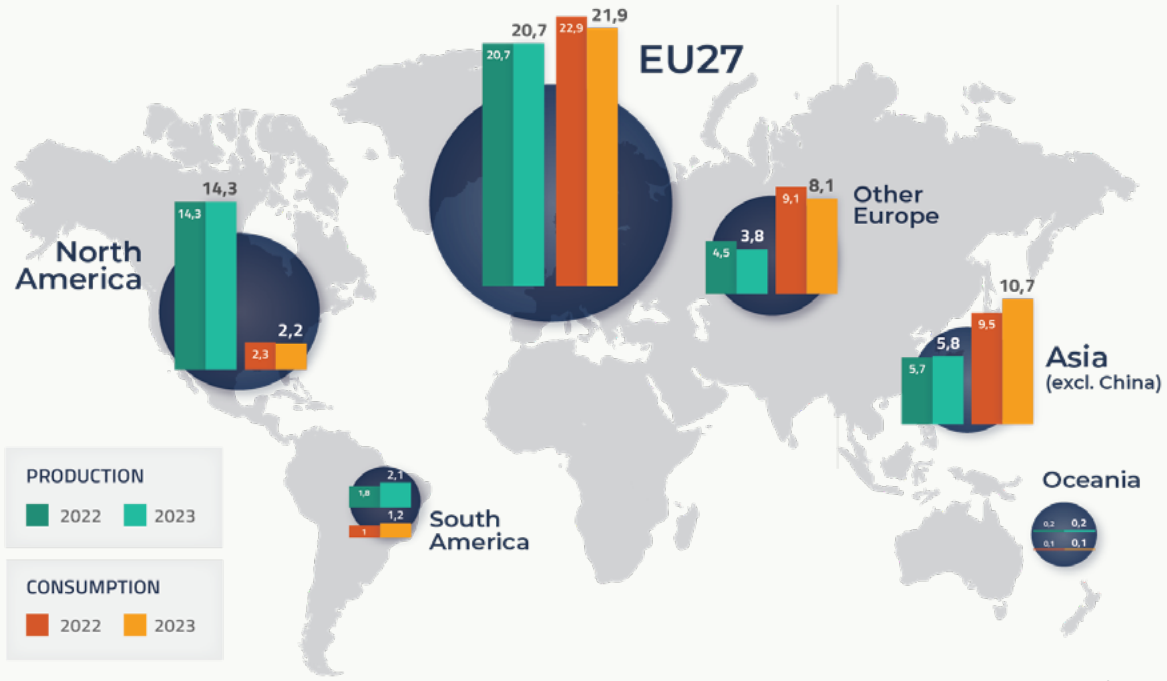
Wood Pellets: Resilient in the Face of Unprecedented Disruptions

Wood pellets are a refined form of biomass that have a greater uniformity and a higher energy density than many other biomass feedstocks. This enabled wood pellets to become an emerging energy commodity that can be transported over longer distances while remaining economically competitive and environmentally friendly (since the amount of fossil energy needed for their transportation is significantly less than their own energy content.

Wood pellets are an important part of the bioenergy mix, promoting sustainable solutions and displacing fossil fuels to contribute to the EU's climate and energy goals. The main feedstocks for pellet production are wood residues such as sawdust. The EU continues to be the global leader in both wood pellet production and consumption.

World pellet map of production and consumption in 2022 and 2023 (million tonnes)



Source: EPC Survey 2023; Hawkins Wright

The EU consumes only slightly more wood pellets than it produces; in 2023 it produced 20,7 million tonnes and consumed 21,9 million tonnes. Although in the past, Russia was a significant exporter of wood pellets to Europe, following the sanctions imposed in 2022, Russian imports have stopped and the European wood pellet consumers have found alternative sources of supply, either through increased local production, for example in Poland (+10%,), France (+10%), Germany (+4%), Spain (+12%), and Lithuania (+10%), or through imports by trusted partners, primarily from US and Brazil.

For the first time in two decades, the European (EU-27 + UK) pellet consumption contracted by 2 million tons, from 32,1 million tonnes in 2022 to 30,1 million tonnes while it has hereto experienced mostly uninterrupted growth. This is mainly due to conditions in the industrial wood pellet market.

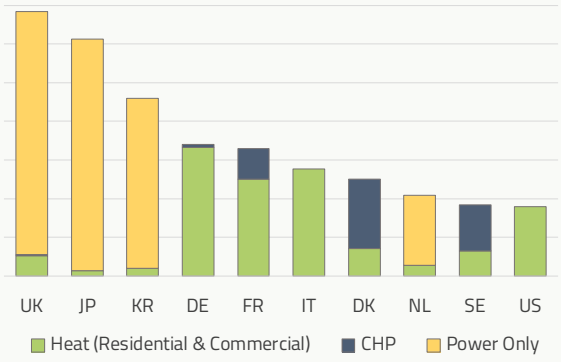
CHP and Residential Use Lead the Way in the EU

In terms of consumption, pellet use in the EU is rather different than outside of it. While Asia and the UK focus more intensely on power-only, except for the Netherlands, EU consumption is focused on either Combined Heat and Power (CHP) or heat production in residential units.

Pellet heating can be a good option for households, especially in rural areas rich in biomass with lower connections to the energy system. Biomass heating reduces heat-related electricity demand at the time of year when renewable electricity production is often lowest and electricity-based heating systems are less efficient.

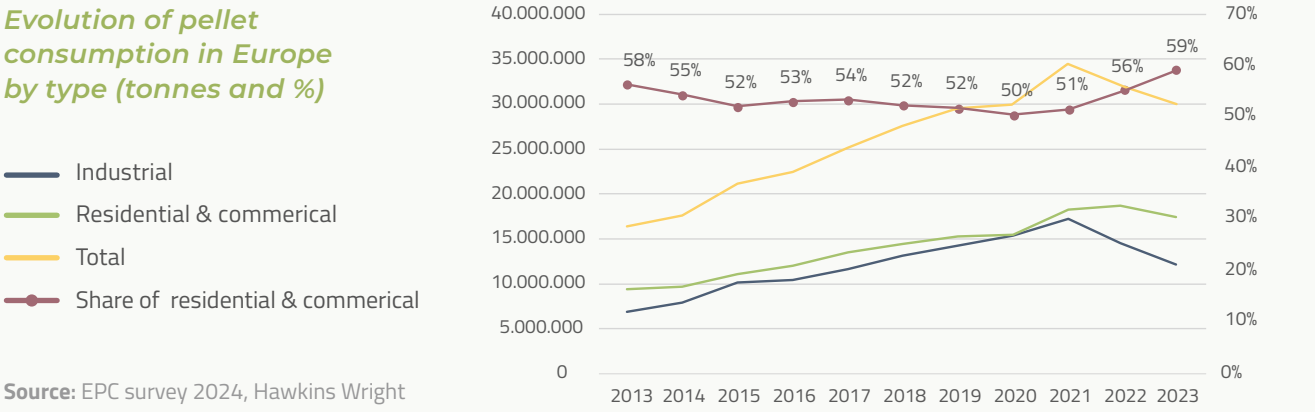
By reducing the load on electricity grid, bioenergy can complement electrification, lower energy use, increase energy efficiency, and safeguard the EU's energy future.

Top 10 pellet consuming countries by end-use in 2023 (tonnes)



Source: EPC survey 2024; Hawkins Wright; Bioenergy Europe research

Evolution of pellet consumption in Europe by type (tonnes and %)



Source: EPC survey 2024, Hawkins Wright

Declining Industrial Use

The drop in consumption can largely be explained by changes in profitability for electricity-only production. Although In 2021 industrial wood pellet prices fell below coal, the invasion of Ukraine and resulting energy crisis in 2022 caused dramatic price fluctuations and in many countries, pellet prices doubled in the short-term.

Now prices have fallen and stabilized but are still noticeably above their historical average. As such it seems that the recovering economic landscape is largely responsible for the decisions by industrial users to reduced consumption.

Residential Market Remains Strong

Across Europe as a whole (including countries outside the EU) 2023 saw the significant shift from industrial use towards residential and commercial use continue.

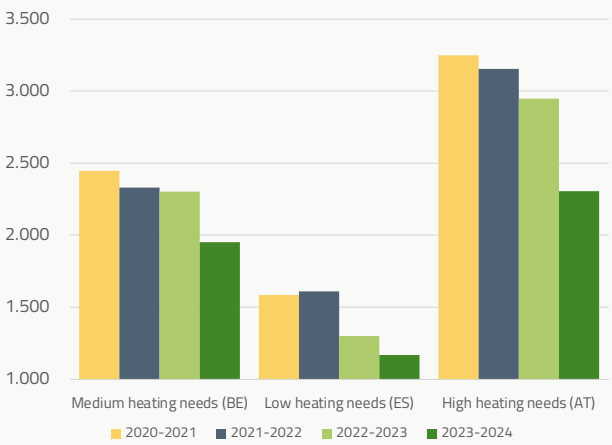
In 2023 the share of residential and commercial consumption reached 59%, the highest in a decade which has been marked by a nearly equal distribution between the two uses.

This change was driven less by an increase in residential consumption which remained relatively stable but by a decrease in industrial pellet consumption. This was particularly stark in the UK and the Netherlands where consumption fell by roughly 900 000 tonnes each. While this represented a 12.5% drop in British industrial consumption, it was an astonishing 33% decrease in the Netherlands.

Decrease in Heating Degree Days

The other significant change in 2023 was the shocking decrease in Heating Degree Days. Heating Degree Days (HDD) are means to combine both the number of days that require heating with the amount of heating needed and are used as a proxy to estimate the heating needs. Here three different countries are used to represent different climatic zones Austria, Belgium and Spain. Although there are fluctuations, it is notable that across the past four years, there is a clear trend that HDD have decreased, and this change was most remarkable this past winter for the 2023-2024 heating season. Compared with the previous heating season in Spain, HDD decreased by 10%, in Belgium by 15%, and in Austria by nearly 22%. The steady residential consumption despite lower heating demand across Europe is a positive sign, not stagnation.

*Heating Degree Days (HDD) per heating season for 3 climatic zones**

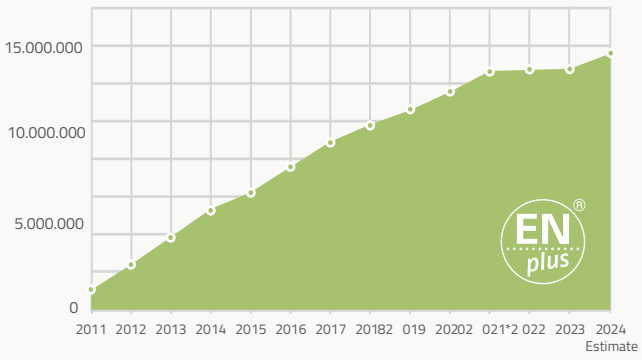


*Period considered: September to April. Climatic zones defined by Tsikaloudaki, Laskos and Bikas (2011), 'On the Establishment of Climatic Zones in Europe with regard to the Energy Performance of Buildings' **Source:** Eurostat & Bizee

Improved Consumer Reliability through Fuel Certification

Residential consumers are much more sensitive to quality than industrial ones. The ENplus® fuel quality certification scheme has been a huge success for over ten years now, ensuring wood pellet quality from production to end-user delivery. Higher wood pellet quality benefits both the environment by reducing emissions and consumers by keeping their appliances functioning well and prolonging their life. The scheme's strong international presence indicates it is becoming the global standard for the pellet industry. This helps reinforce Europe's reputation for quality and strengthens the European market's position as the leading producer of both wood pellets and linked appliances.

Worldwide ENplus® certified pellet production (tonnes)



Source: ENplus®

Policy Recommendations

1. The European Commission should focus on successfully implementing the Green Deal and the EU Deforestation Regulation (EUDR) in a way that supports renewable energy while minimizing administrative burdens.
2. Support renovation of renewable heating – including pellet appliances. Sustainable pellet heating reduces reliance on imported fossil fuels; maintains European leadership in pellet appliance design and manufacturing; and reduces air emissions from old inefficient appliances.
3. Recognize the role of the industrial wood pellet sector in delivering negative emissions through bioenergy with carbon capture and storage (BECCS). Large scale installations can deliver significant volumes of cost-effective carbon removals that Europe needs to reach carbon neutrality by 2050.