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Report Highlights:

In 2023, EU wood pellet consumption fell by 1.2 percent to 24.5 million metric tons (MMT), the first reduction since 2015. This drop is caused by a mild winter and a reduced demand from the commercial power sector. Current low prices, combined with government incentives, are forecast to support the popularity of biomass for residential heating in 2024. Demand for pellets by the industrial power sector is anticipated to remain stagnant this year. As EU pellet production is not keeping up with the growing demand, EU imports are projected to partially recover from the dip reported in 2023. A potential trade barrier is the EU Deforestation-free Supply Chain Regulation (EUDR).

I. Summary

Policy and Programs

In 2018, the European Union (EU) adopted the Renewable Energy Directive II (REDII). Most of the provisions of the REDII entered into force on January 1, 2021. It sets a new overall renewable energy target of 32 percent by 2030. With the REDII, the EU expanded the sustainability criteria to cover forestry biomass. In October 2023, the REDII was aligned with the EU's Green Deal goals of a reduction of greenhouse gas (GHG) emissions of 55 percent by 2030 and carbon neutrality by 2050, and an overall renewable energy target of at least 42.5 percent by 2030. The revised REDII (REDII+) entered into force on November 20, 2023, with an 18-month period to transpose most of the Directive's provisions into national law.

As part of the Green Deal, the European Commission (EC) adopted the EU Deforestation-free Supply Chain Regulation (EUDR) aimed to prevent products causing deforestation entering the EU market. The EUDR targets products which are identified by the EC as the main drivers of deforestation including wood pellets and wood chips. The requirements will go into force on December 30, 2024.

EU Wood Pellet Market Developments

In 2023, EU wood pellet consumption fell by 1.2 percent to 24.5 million metric tons (MMT), the first reduction since 2015. This drop is caused by a mild winter and a reduced demand from the commercial power sector. As a result of the lower demand, pellet prices dropped from the record price levels reported in 2022. These low prices, combined with government incentives, are forecast to support the popularity of biomass for residential heating in 2024. In the revised REDII, renewable energy targets are set for the heating of buildings, in contrast to the prior directive, which is anticipated to further support the demand for pellets for residential use in the long term. As demand for pellets by the industrial power sector is anticipated to remain stagnant this year, the residential market will be the main driver for further growth of EU demand.

Although EU pellet production is expanding, it is not keeping up with the growing demand at the Member State as well as the EU level due to the limited supply of woody biomass and high input costs. Based on the widening gap between production and consumption, EU imports are projected to partially recover from the dip reported in 2023. The region with the best prospects for transatlantic pellet exports is Western Europe due to the availability of deep seaports. While the increased import demand is currently attracting imports from Brazil, Vietnam, Malaysia, and Thailand, the United States remained the top supplier to the EU (with a volume of 2.91 MMT and import value of \$686 million) in 2023. A potential trade barrier is the EU Deforestation-free Supply Chain Regulation (EUDR).

The broader biofuels market reporting is contained in the separate FAS GAIN report: [the EU Biofuels Annual 2024](#).

II. EU Biomass Policy

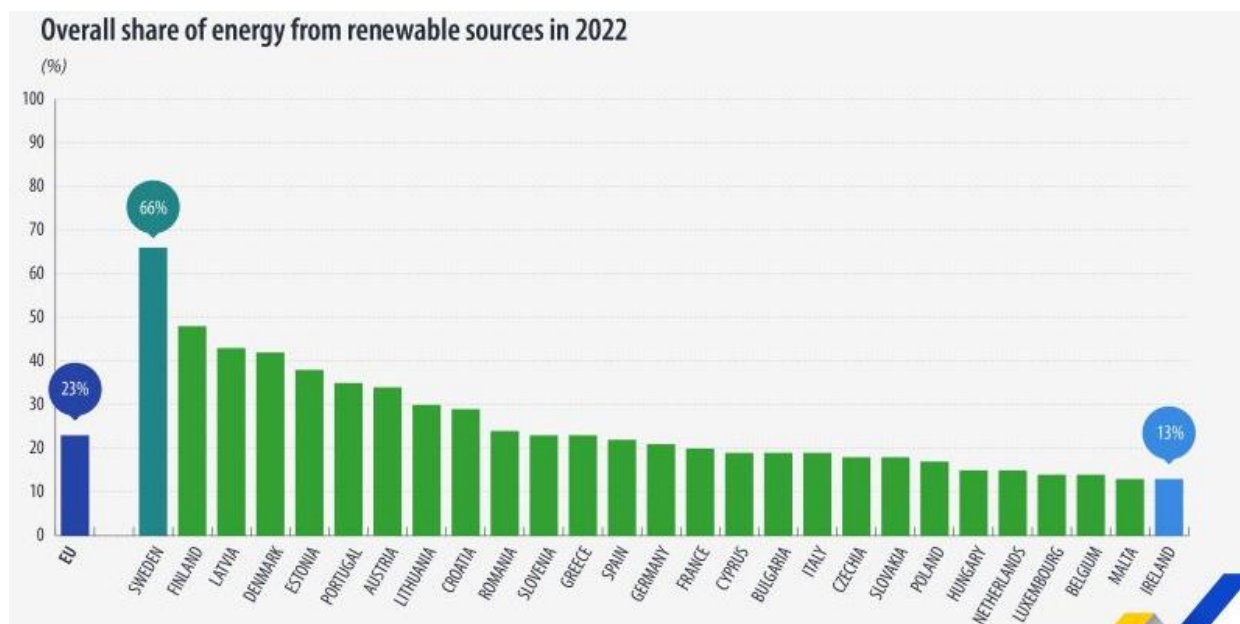
The EU's Renewable Energy Directive (RED)

The EU [Energy and Climate Change Package](#) (CCP) ran from 2010-2020. The [RED](#), which was part of the CCP package, entered into force on June 25, 2009 and expired on December 31, 2020. The CCP required the EU to achieve a binding target whereby 20 percent of its overall energy use would be powered from renewable sources by 2020. For more on the 2009 RED, see the [2020 Biofuels Report](#).

The Renewable Energy Directive II (REDII)

The European Union (EU) adopted the new REDII for the period 2021-2030 in 2018. Most of the provisions of [Directive 2018/2001](#) entered into force on January 1, 2021. The Directive was amended in October 2023 by [Directive 2023/2413](#) to align the REDII with the EU's Green Deal ambitions of a reduction of greenhouse gas (GHG) emissions of 55 percent by 2030 (compared to 1990) and carbon neutrality by 2050. The revised REDII (REDII+) entered into force on November 20, 2023, with an 18-month period to transpose most of the Directive's provisions into national law in the Member States. The REDII+ sets out an overall renewable energy target of at least 42.5 percent binding at EU level by 2030. For the heating and cooling sector, the revised Directive requires that each Member State increase the share of renewable energy in that sector by at least 0.8 percent as an annual average calculated for the period 2021-2025 and by at least 1.1 percent as an annual average calculated for the period 2026-2030, starting from the share of renewable energy in that sector in 2020. National policies with regard to the heating sector for select countries are covered in the residential consumption section of this report.

Uptake of Renewables in the European Union (Eurostat)



In October 2023, the European Commission (EC) published a report on [the State of the Energy Union 2023](#). In 2022, the EU reached a 23 percent share of its gross final energy consumption from renewable sources, up 1.1 percent from 2021.

The REDII Sustainability Criteria

To qualify for counting towards the REDII targets, biomass consumed in the EU must comply with strict sustainability criteria provided in Article 29 of the REDII. The criteria were strengthened with the 2023 revision of the Directive. Article 29 requires that the country in which forest biomass was harvested has laws applicable to harvesting as well as monitoring and enforcement systems in place. Forestry biomass will also need to follow land-use, land-use change and forestry (LULUCF) criteria, notably regarding the existence of management systems to ensure that carbon stock and sink levels in the forest are maintained or strengthened over the long term. Sustainability will be assessed at the country level or at sourcing area level. The sustainability criteria governing feedstock sourcing practices apply to EU power plants with a total rated thermal input equal to or exceeding 7.5 megawatts (MW) for installations producing power, heating, cooling, or fuels from solid biomass fuels and to plants with total rated thermal input capacity equal to or exceeding 2 MW for installations using gaseous biomass fuels.

Additionally, Member States are requested to take measures to ensure that energy from biomass is produced in a way that minimizes undue distortive effects on the biomass raw material market and an adverse impact on biodiversity, the environment, and the climate. To that end, they must ensure the application of the cascading principle based on the [Waste Framework Directive](#). In December 2022, the EC published an [Implementing Regulation](#) establishing operational guidance on the evidence for demonstrating compliance with the sustainability criteria for forest biomass laid down in REDII.

Compliance With Sustainability & GHG Emission Saving Criteria - Voluntary Schemes

EU Member State voluntary and national certification schemes help to ensure that biomass is sustainably produced by verifying that they comply with EU sustainability criteria. Following the entry into force of the REDII, voluntary schemes recognized under the Directive must adjust their certification approaches to meet the new requirements. Those additional rules are enshrined in [Implementing Regulation 2022/996](#) which lays down the rules to verify sustainability and GHG emissions saving criteria and low indirect land-use change-risk criteria. This Regulation states the implementing rules to ensure economic operators comply with sustainability criteria and provide accurate data on GHG gas emission savings of the REDII. More information about the recognition process can be found on the European Commission (EC) [website](#). The updated assessment protocol can be found [here](#).

Recognition by the EC is not a pre-requisite for certification. EU countries may accept evidence from voluntary schemes or national certifications schemes set up by EU countries not recognized by the EC if the competent authorities in those countries are confident about the quality of the certification services provided by these schemes.

Additional National Sustainability Requirements

REDII allows Member States to establish additional sustainability criteria for biomass fuels. Before December 31, 2026, the EC will assess the impact of such additional criteria on the internal market, accompanied, if necessary, by a proposal to ensure harmonization at EU-level.

A key factor in being able to capture the demand in the EU market and benefit from its growth potential is the sustainability of the supply. European traders and end-users of industrial wood pellets are calling for clear, consistent, harmonized, and long-term government regulations. Taking this in account, the industry is actively formulating its own criteria. For residential wood pellets, the European Pellet Council (EPC) developed sustainability criteria called ENplus, based on EN 14961-2. It includes sustainability requirements for the entire supply chain. For *industrial pellets*, the [Sustainable Biomass Partnership](#) (SBP) developed a sustainability scheme based on existing programs, such as the Forest Stewardship Council (FSC) or Program for the Endorsement of Forest Certification (PEFC).

The European Green Deal

On December 11, 2019, the EC presented its [Communication on the European Green Deal](#). On July 9, 2021, Regulation 2021/1119, also known as the [EU Climate Law](#), was published in the EU Official Journal. The Climate Law enshrines a legally binding target of net zero GHG emissions by 2050. EU Institutions and Member States are bound to take the necessary measures at EU and national level to meet the target. The Climate Law includes measures to keep track of progress and adjust the EU's actions accordingly. The text also includes a reduction of net GHG emissions by at least 55 percent compared to 1990 levels by 2030. The Law also includes a process for setting a 2040 climate target.

Deforestation-Free Supply Chain Initiative

As part of the Green Deal, the EC adopted the EU Deforestation-free Supply Chain Regulation (EUDR), [Regulation 2023/1115](#), aimed to prevent products causing deforestation entering the EU market. The proposal targets products which are identified by the EC as the main drivers of deforestation including wood pellets and wood chips (HS code 4401). To sell any of the covered products in the EU or export them from the EU, business operators will be required to provide extensive information about the product's origins, including the precise location(s) and general time of production. The Regulation establishes a country benchmarking system through which the EC will assess the risk that countries, or parts thereof, produce commodities that contribute to deforestation. Products sourced from standard- or high-risk origins must comply with additional risk assessment and mitigation procedures.

Major concerns of suppliers relate to the requirement of the EUDR to provide the geolocation and plot information through the supply chain, specifically for bulk products sourced from small forest plots and many forest owners. An additional complication for wood pellets is that the majority is produced from a by-product. For more information, please see GAIN Report: [European Institutions Finalize Deforestation-Free Supply Chain Regulation](#). The requirements for economic operators will start on December 30, 2024.

The EU Taxonomy for Sustainable Activities

In order to meet the EU's climate targets for 2030 and reach the objectives of the European Green Deal, the EC adopted the [Taxonomy Regulation](#) in June 2020. This Regulation establishes the framework for an EU classification system for sustainable activities by setting out four overarching conditions that an economic activity must meet in order to qualify as 'environmentally sustainable'. The Taxonomy Regulation aims to act as a screening mechanism to define sustainable activities to steer private investment to activities the EC deems sustainable. It creates three different categories: sustainable activities, transitional activities, and enabling activities. The taxonomy includes bioenergy activities, and the EC classifies forestry biomass as sustainable activities. More information can be found in GAIN Report: [Commission Adopts Taxonomy for Green Investments](#).

EU Policy Response to the War in Ukraine

On April 8, 2022, EU agreed on a fifth package of restrictive measures against Russia. As part of this package, the EU adopted import bans on wood pellets from Russia through [Council Regulation \(EU\) 2022/576](#).

III. EU Wood Pellet Market Developments

EU Production, Supply and Demand Table

Biomass, sourced from the agricultural and related food processing sector, and the forestry sector, is increasingly used as input for renewable heat and power production. Because wood pellets are generally traded over longer distances than other biomass types (such as wood chips, firewood, and pellets made from other biogenic sources), this report is restricted to the wood pellet market.

**Table 1. EU27 Wood Pellets Market Balance and Production Capacity
(1,000 MT)**

Calendar Year	2015	2016	2017	2018	2019	2020	2021	2022	2023 ^e	2024 ^f
Beginning Stocks	569	762	1,078	957	1,128	1,067	1,317	1,107	1,010	1,039
Production	14,641	14,545	14,957	15,772	18,668	18,993	19,631	20,300	20,800	21,200
Imports	2,556	2,523	3,012	3,906	4,192	4,679	5,318	5,890	4,889	5,300
Exports	1,517	944	900	994	1,193	1,170	2,208	1,487	1,160	1,000
Consumption	15,487	15,808	17,190	18,513	21,728	22,252	22,951	24,800	24,500	25,400
Ending Stocks	762	1,078	957	1,128	1,067	1,317	1,107	1,010	1,039	1,139
Biomass Use Capacity										
Number of Plants	NA	630	700	710	NA	753	774	NA	NA	NA
Capacity	20,220	21,640	22,574	23,094	23,710	24,100	25,600	26,500	27,200	27,500
Capacity Use (%)	72.4	67.2	66.3	68.3	78.7	78.8	76.7	76.6	76.5	77.1

Sources: Eurostat, Bioenergy Europe, Trade Data Monitor, and FAS Post Estimates. e=estimate f=forecast. NA=not available. Note: The source for production was switched from Member State sources to Eurostat when report coverage was adjusted from EU28 to EU27.

The EU is the world’s largest wood pellet market and consumed 24.5 million metric tons (MMT) of pellets in 2023, which is a slight reduction from the 24.8 MMT used in 2022. Impacted by European Commission’s (EC) mandates, EU Member States incentives, and competitive prices of wood pellets, demand is expected to recover significantly to 25.4 MMT in 2024. In addition to EU renewable energy policy and EU Member State incentives, future consumption will continue to depend on a range of climate and market factors, such as weather conditions and the price level of coal, heating oil, and natural gas.

Consumption

Residential use (domestic stoves and dedicated heat boilers with a capacity below 50 kW) and small-to-medium scale commercial use (with a capacity of more than 50 kW, which generally includes dedicated heat boilers used in residential buildings and public buildings) of pellets represents approximately 50 percent of EU pellet consumption, leaving the remaining half for large scale industrial use, with a capacity of generally more than 5 MW (source: [Bioenergy Europe](#)). The major users of wood pellets in the EU are Germany, France, Italy, the Netherlands, Denmark, Sweden, Austria, and Belgium (in declining order of importance).

Table 2. EU27 Main Pellet Consumers (1,000 MT)

Calendar Year	2017	2018	2019	2020	2021	2022 ^e	2023 ^e
Germany	2,085	2,195	2,190	2,240	2,900	3,200	3,400
France	1,335	1,430	1,800	2,000	2,400	2,800	3,150
Italy	3,400	3,300	3,400	3,400	3,400	3,000	2,700
Netherlands	360	615	1,240	2,560	2,915	2,950	2,500

Denmark	3,160	3,075	3,000	2,500	2,500	2,600	2,300
Sweden	1,530	1,785	1,730	1,300	1,500	1,500	1,600
Austria	920	955	1,000	1,050	1,130	1,250	1,330
Belgium	1,375	1,490	1,550	1,500	1,150	600	620
Total	17,190	18,513	21,728	22,252	22,951	24,800	24,500

Source: Bioenergy Europe and Member State sector organizations, e = estimate EU FAS Posts

Residential Use of Pellets

Residential use for heating, fluctuates annually, but is a relatively stable market compared to industrial heat and power generation. Demand depends on the winter temperatures and fossil fuel prices. Demand from medium-sized users of pellets (by industries or public buildings such as hospitals and sport facilities) is generally less impacted by weather conditions. The Member States with a large residential market for wood pellets are Italy, Germany, France, Austria, Sweden, and Spain. Most are also important producers of wood pellets, except for Italy, which is the largest European market for household use of pellets and a major importer.

In 2021, the rising prices of fossil fuels (such as diesel oil, coal, and natural gas) boosted the demand for wood pellets. With Russia's invasion of Ukraine, fossil fuel prices increased to even higher levels. Furthermore, the availability of pellets was restricted as a large share (more than 40 percent) was generally imported from both Russia and Belarus (for more information see the EU Biomass Policy chapter and trade section of this chapter). Limited supply and increased demand led to a doubling and, in some EU Member States, even to a tripling of wood pellet prices during the winter of 2022. Reportedly, French buyers of residential pellets lost confidence due to the shortages and high prices. A similar trend was reported in Poland, where household decided to choose heat pumps above biomass heating systems.

In 2023, the residential sales of pellets were tempered by the mild winter conditions and the stockpiling of pellets during 2022. Due to lower-than-expected sales for residential use, combined with a significant lower demand by the industrial power sector (see next section), prices of wood pellets came down in 2023 from record prices reported in 2022. Due to these low prices the popularity of biomass for heating is forecast to recover in 2024. In absolute terms the most significant growth in wood pellet sales is anticipated in Germany.

The vast majority of wood pellets in Germany are used for residential heating. In 2023, the number of wood pellet-based heating units in Germany was estimated at 722,000. The German Pellet Institute forecasts this number to increase to 763,000 over the course of 2024. German law mandates that all buildings erected after 2009 must use a certain share (depending on form of energy used) of renewable energy to satisfy their heating/cooling requirements. Wood pellets are one of the options. Additionally, the German Building Energy Act limits the installation of oil heating systems as of 2026. Furthermore, beginning in July 2026, in cities of more than 100,000 inhabitants newly installed heating units need to

use a minimum of 65 percent renewable heat. In mid-2028, this requirement will be extended to small villages.

Outside Germany, incentives for residential bioenergy are provided in for instance Austria, Poland, and Sweden. These incentives are often tied to the revised second Renewable Energy Directive (REDII+). In the REDII+ renewable energy targets are set for the heating of buildings, which is anticipated to further support the demand for pellets for residential heating.

In 2024, Austria is subsidizing the replacement of fossil oil and gas heating systems with more sustainable heating systems (including fuel wood and pellets boilers) up to 75 percent with a maximum €18,000. For low-income households the subsidies may even be 100 percent of the costs of the heating replacement. The funding campaign is called the “get out of oil and gas bonus”. Wood pellets are mainly and increasingly used in household heating and receive subsidies by the federal government, the state governments, and the communities.

With the Clean Air program, the Polish government offers subsidies to exchange coal-fired stoves with more ecological options. Additionally, the expected increase in electricity costs and the simultaneous decrease in the cost of purchasing pellets contributed to a significant increase in the popularity of pellet boilers. According to data on the "Clean Air" program, the number of applications for subsidies for biomass boilers doubled between September 2023 and January 2024.

In Sweden, there are around 20,000 pellet stoves installed, and almost 2 million biomass local space heaters, mostly wood stoves, wood boilers and pellets boilers. The Swedish Pellets Association has started a campaign to raise awareness of pellets and pellet stoves. The objective is to reach 200,000 new pellet stoves installed in 10 years.

The government incentives combined with the competitive pellet prices is forecast to further boost EU residential use through 2024. This is causing an increasing deficit of pellets, particularly in France where demand is pacing out production, and Italy where imports already cover almost ninety percent of the domestic use. The increased residential use is also causing a declining exportable supply of pellets in the traditional pellet producing countries (particularly in Germany, Poland, Latvia, Estonia, Czechia, Slovakia, Romania, Bulgaria, Croatia, and Portugal), and overall, an expanding EU import demand of pellets.

Industrial Use of Pellets

In markets such as the Netherlands and Denmark, residential use is relatively small and the demand for wood pellets is dominated by large scale power plants. These countries opted to fulfill their obligations for renewable energy consumption by using biomass for the generation of electricity. In case of pellet demand, they largely depend on imports as they lack sufficient domestic production. Within the EU, the

potentially large industrial pellet markets are Germany and Poland, but they currently do not specifically support the use of wood or wood pellets for large scale power generation. Germany supports the use for heat production through the support program for the energy transition away from coal, which includes financial support for the erection of plants that generate heat from solid biomass. However, it does not provide subsidies for the biomass use itself. In several EU Member States, such as Denmark, Poland, and Hungary, locally sourced wood chips are often preferred above wood pellets for generating power. For more information see the GAIN Report - [Markets for Wood Chips in Northwestern Europe](#), published on April 23, 2024.

The Netherlands is the primary EU industrial market for wood pellets. In 2023, the Netherlands imported 2.33 million metric tons (MMT) of wood pellets with a value of \$529 million. This is a reduction of 21 percent from the volume of 2.94 MMT reported in 2022. Reportedly, power plant outages were the main reason for this significant reduction of imports. The United States is the top supplier to the Netherlands, with a volume of 1.55 MMT, and a value of \$358 million. The Netherlands is also the second largest destination for U.S. wood pellets, after the United Kingdom and surpassing Japan, Denmark, France, and Belgium. Most of the wood pellets are used by Dutch power plants and co-fired with coal. All the imported wood pellets which are used for renewable energy generation are subject to stringent sustainability requirements.

On April 22, 2022, the Dutch government laid out their policy for the application of biomass to the Dutch Parliament. The government will support the application of biomass for high value applications, uses which have no renewable alternative, and applications by which carbon is stored. The Dutch Cabinet confirmed it will phase out its support for the applications for low value purposes (i.e., electricity and low temperature heat) and will advocate for stricter sustainability criteria at the EU level. Subsidies for biomass for power and low temperature heat will be phased out in 2027. For more information, see the GAIN Report - [Dutch Government Lays Out New Biomass Policy](#), published on April 29, 2022.

On April 26, 2023, the Dutch Cabinet [informed](#) (Dutch language) the Dutch Parliament about additional measures to reach the renewable energy targets. The document underlines the government's ban on coal for power production by 2030 at the latest. This ban on coal has the potential to further increase the demand for wood pellets by the Dutch power sector in the long term. Both the Dutch government and power sector are looking into the application of Bioenergy Carbon Capture and Storage (BECCS), reaching negative carbon emissions.

The second largest industrial pellet market is Denmark. Most of the Danish large-scale combined heat and power (CHP) plants have now converted from fossil fuels to woody biomass. Based on the approved funding, the consumption of woody biomass for heat and power is guaranteed and expected to remain unchanged by the [Danish Energy Agency](#) (DEA). On May 19, 2020, the EC approved a [€550 million state aid scheme](#) to support the production of electricity by Danish biomass installations. The scheme

will be in place until December 31, 2029. The goal of the program is to phase out coal and generate 55 percent of electricity from renewable energy by 2030.

A large portion of the pellets consumed in Denmark are imported. In 2023, Danish pellet imports fell for the second successive year, from 3.23 MMT in 2021 to 2.24 MMT in 2023. While pellet imports fell, Danish wood chips imports increased significantly during this period (for more information see the GAIN Report - [Markets for Wood Chips in Northwestern Europe](#), published on April 23, 2024). In 2023, Danish wood pellet imports from the United States fell by 17 percent to 498,000 MT (value of \$109 million), but the share remained nearly a quarter of the total. Most Danish pellet imports are sourced from the Baltic Region, such as Estonia and Latvia. But in 2022 and 2023 imports from these sources declined as a higher share of the pellet production in those countries was used domestically due to an increased domestic demand because of the EU ban on Russian natural gas.

To further reduce carbon dioxide (CO₂) emissions, or even make them negative, Denmark is examining the option to capture and store the CO₂ output of the bioenergy installations, also known as bioenergy carbon capture and storage (BECCS). The [Danish Council on Climate Change](#) - a climate advisory board to the government - has estimated the reduction potential for CCS technology on Danish biomass CHP plants to be between 1.0 and 2.45 MMT of CO₂ per year towards 2030. The Danish Economic Council - an independent advisory body - [estimated](#) that the negative emissions through BECCS account for about one-third of the total Danish reduction target for 2030.

Another important industrial pellet market was Belgium. From 2012 to 2020, Belgian pellet use was estimated at about 1.5 MMT per year. Because the main bioenergy plant in Wallonia only uses recycled wood and stopped the use of pellets from primary wood, Belgian annual consumption fell to about 750,000 MT. With the lower industrial use of pellets in the Netherlands, Denmark, and Belgium, the total EU pellet consumption fell from 24.8 MMT in 2022 to 24.5 MMT in 2023. In 2024, the industrial use of pellets is forecast to recover only marginally. In the short term, the main driver for further growth of the EU pellet market is the residential use.

Production

Table 3. EU27 Main Pellet Producers (1,000 MT)

Calendar Year	2017	2018	2019	2020	2021	2022	2023 ^e
Germany	2,250	2,415	2,820	3,100	3,300	3,570	3,710
France	1,350	1,450	1,600	1,700	1,860	2,050	2,250
Latvia	1,465	1,715	2,210	2,265	2,140	1,980	1,950
Sweden	1,740	1,640	1,700	1,660	1,755	1,810	1,850
Austria	1,225	1,345	1,440	1,540	1,610	1,690	1,750
Estonia	1,435	1,345	1,600	1,600	1,650	1,650	1,650
Poland	480	410	1,105	1,265	1,280	940	1,000
Spain	529	593	714	616	642	716	800

Portugal	690	735	1,010	860	730	745	750
Lithuania	315	315	605	510	530	540	540
Total	14,957	15,772	18,668	18,993	19,631	20,300	20,800

Source: Eurostat (dataset Roundwood, fuelwood and other basic products), Bioenergy Europe, and Member State sector organizations, e = estimate EU FAS Posts.

The dip in demand for wood pellets during 2023, the resultant low prices, and the increased costs of inputs negatively affected the profit margins of the EU wood pellet sector. Even so, the current strong growth of residential demand is forecast to support a further increase in production in 2024. Below is a brief overview of the main pellet producers by region:

Strong production growth is forecast in Western Europe, led by Germany and France. Germany is the third largest wood pellet producer after the United States and Canada. It has currently 40 companies with 50 production facilities for wood pellets with a total annual production capacity of 4.1 MMT. In 2023, production amounted to 3.71 MMT, of which 90 percent was produced from timber industry residues. The remaining ten percent consisted of non-sawable round logs. French production passed 2.0 MMT in 2022, In France, there are about 70 pellet plants operational. Three new sites opened their doors in 2023, for an additional production capacity of 270,000 MT of pellets, and an additional actual production volume of 200,000 MT. The [French Wood Pellet Association](#) expects an additional one MMT of production capacity between 2021 and 2024 and a doubling of production by 2028. According to Eurostat statistics, the production of wood pellets in Belgium has almost doubled since 2019 to around 650,000 MT currently. Belgium's maximum capacity to produce pellets is estimated at 820,000 MT per year.

The Nordic (Sweden and Finland) and Baltic Region (Estonia, Latvia, and Poland) is a relatively isolated market for pellets. In Sweden there are about 56 pellet plants with a total capacity of about 2.4 MMT. Swedish wood pellet production is fluctuating around 1.8 MMT. Beginning in 2022, Finland plans to add 300,000 MT of new production capacity through 2025. The Finnish pellet production fluctuates around 350,000 MT and is forecast to expand based on an increased demand by the residential as well as industrial market. Wood pellet production has expanded rapidly in the Baltic Region over the past ten years. Current production is estimated at about 2.0 MMT in Latvia, 650,000 MT in Estonia, and 525,000 MT in Lithuania. The Baltics are producing both for the residential and industrial markets, with the latter market mainly in Denmark, the United Kingdom, and the Netherlands. In 2021, combined Baltic exports reached a record of 4.69 MMT, but plummeted back during two successive years to 2.87 MMT in 2023 as a higher share remained in the Baltics because the ban on Russian gas boosted domestic demand. A similar trend is reported in Poland, where pellet production is rising but an increasing share is consumed domestically. Another factor which limits the Baltic pellet production is the limited (according to the Estonian government) sustainable supply of woody inputs. The new Estonian government, installed in early 2023, believes that the burning of Estonian-grown wood in western European furnaces must stop.

Portugal and Spain are also net exporters of wood pellets. Post estimates Portugal's production at about 750,000 MT with an installed annual capacity at around 1.4 MMT of pellets. In 2023, Portuguese exports fell by 23 percent to 387,000 MT far below the record volume of 709,000 MT achieved in 2019. Portuguese production is constrained by the limited availability of woody inputs, The main markets are Spain, the United Kingdom, Denmark, and France. Currently, France is the main growth market for Portuguese wood pellet exports. Spanish wood pellet production continued its ongoing expansion trend and amounted to currently about 800,000 MT. In Spain, there are about 68 pellet production plants with a total theoretical capacity of 1.95 MMT per year. During 2023, Spanish exports fell by 23 percent to 160,000 MT, with France and Italy as the main destinations.

The main wood pellet producer in Central Europe is Austria. In 2023, Austria produced about 1.75 MMT of wood pellets in 42 plants. Austrian pellet production is on a steadily rising trend. Comparable with Germany and France, Austrian production is mainly driven by domestic demand. In 2023, Czech pellet mills produced a total of 470,000 MT of wood pellets. Only one third, about 160,000 MT, was consumed on the local market. The rest of the Czech pellets were exported mainly to Western Europe, especially to Italy, Austria, and Germany, where more modern pellet boilers are already installed than in Czechia. In 2023, production fell by 12 percent due to the lower sawlog production level because of lower construction activity and the improvement of the bark beetle situation. Production in Romania is also stagnating, at about 500,000 MT annually. Slovakian pellet production grew rapidly from around 100,000 MT during 2012 – 2016 to around 400,000 MT currently.

Commercial wood pellet production is expanding rapidly in the Balkan Region. Croatia produces about 430,000 MT of wood pellets, of which 80-90 percent is destined for foreign markets. The main export destinations in 2023 were Italy, Slovenia, and Serbia. Wood pellet furnaces are becoming more popular for home heating in Croatia, which means that more domestic production is consumed locally. Based on expanding domestic and export demand, Croatian wood pellet production is forecast to increase. In Bulgaria, manufacturers have made efforts to increase domestic supply since 2022. The authorities encouraged higher fuelwood and wood pellets production and supply to meet the expectations of the rural population and its social needs. The total number of producers is close to 80 although no official data exists. Due to the growing interest in alternative fuels, a stable increase in domestic production and trade can be expected in the future. Current production is estimated at 200,000 MT.

The local shortages of woody biomass supported the production of pellets made from other biomass sources. With an increasing competition for sawdust resources, a broader sustainable raw material is becoming necessary. There is increased interest in agricultural residues for pellet production, but even the volume of these additional feedstocks will not be sufficient to satisfy the full demand. Overall, EU wood pellet production is not expected to be able to keep up with the increasing demand, particularly from the residential heating market.

Trade

Table 4. Main EU27 Importers of Wood Pellets (1,000 MT)

Calendar Year	Total Imports ^a		Imports from U.S.	
	2022	2023	2022	2023
Netherlands	2,938	2,328	1,873	1,546
Denmark	2,674	2,237	600	498
Italy	3,616	2,058	17	60
France	775	1,014	146	290
Belgium	1,134	606	489	429
Germany	450	463	0	5
Sweden	200	295	0	0
Poland	289	280	0	60
Austria	344	266	0	0
Total EU	-	-	3,125	2,907

Source: Trade Data Monitor (HS Code: 440131) (a) Includes EU intra-trade.

Cost differentials between shipping and rail access to deep seaports noticeably impact European wood pellet trade flows. In Western Europe, in particular the Netherlands, Belgium, and France, importers are sourcing a large share of their pellets from non-EU suppliers, mainly the United States, Canada, Ukraine, and recently also from Brazil, Malaysia, Vietnam, Malaysia, and Brazil. This is due to these markets have access to deep seaports. Dutch and Belgium ports also serve as a hub for Northwestern European markets. Port restrictions (size and depth) in Scandinavia favor supplies from the Baltic Sea, which are generally shipped using smaller vessels than those used in Atlantic trade. In Denmark, one plant is located at a deep seaport and is supplied from North America. The markets for pellets in Germany, Austria, and, to a lesser extent Italy, are more isolated and depend mostly on local and regional production.

Table 5. Main Suppliers of Wood Pellets to EU27 (1,000 MT)

Calendar Year	2018	2019	2020	2021	2022	2023
United States	1,259	1,295	1,247	1,781	3,125	2,907
Ukraine	380	431	441	411	401	466
Brazil	77	147	174	196	268	369
Canada	330	80	517	292	337	337
Vietnam	0	0	0	0	33	203
Malaysia	0	44	0	0	93	189
Turkey	9	14	11	21	117	90
Russia	1,186	1,475	1,510	1,881	1,021	0
Belarus	262	375	524	594	248	0
Total	3,906	4,191	4,679	5,318	5,890	4,889

Source: Trade Data Monitor (HS Code 440131)

EU demand for pellets has significantly outpaced domestic production over the past ten years, resulting in increased imports from the United States, and to a lesser extent Canada, Russia, Ukraine, Belarus, and more recently Brazil, Vietnam, Malaysia, and Thailand. In 2023, EU wood pellet imports totaled 4.89 MMT (with a value of \$1.32 billion), which is exactly 1.0 MMT less than reported in 2022. The main reason for this dip is the power plant outages in Northwestern Europe and the stock building of pellets during 2022 (see the section Consumption). Despite the fact that EU year-to-year imports from United States fell 7 percent to 2.91 MMT (value \$686 million) in 2023, the share of U.S. pellets in total EU imports increased from 53 to 59 percent.

Following Russia’s invasion of Ukraine, the wood pellet imports from Russia and Belarus are significantly affected. On April 8, 2022, the EU agreed on a fifth package of restrictive measures against Russia. As part of this package, the EU adopted import bans through Council Regulation (EU) 2022/576, which banned Russian wood pellets from entering the EU market. This ban increased the opportunity for transatlantic trade now including Brazil as well as Asian sources.

Based on the strong growth of the residential market, EU wood pellet imports are forecast to recover to 5.30 MMT, which is still well below the 5.89 MMT achieved in 2022. Suppliers external to the EU could be affected by the implementation of sustainability requirements by the EC and individual EU Member States. A potential trade barrier is the EU Deforestation-free Supply Chain Regulation (EUDR), which includes the requirement to provide the geolocation and plot information through the supply chain governments (for more information, see the EU Biomass Policy chapter of this report).

Appendix - Related Reports from FAS USEU and FAS Posts

Country	Title	Date
Denmark	Markets for Wood Chips in Northwestern Europe	04/23/24
EU	Wood Pellet Annual 2023	08/20/23
EU	Biofuels Annual 2023	08/14/23
EU	Biofuel Mandates in the EU by Member State - 2023	07/06/23
Spain	Spanish Wood Pellet Market Outlook 2023	05/08/23
EU	EU Parliament Adopts Negotiating Positions on Deforestation-Free Supply Chains and Renewable Energy	09/30/22
EU	Biofuels Annual 2022	07/13/22
EU	Wood Pellet Annual 2022	07/13/22
Netherlands	Dutch Government Lays Out New Biomass Policy	04/29/22
Germany	Fuel of the Future Congress Concludes Biofuels are Indispensable for Reaching EU Climate Goals	03/02/22
Netherlands	Sustainable Marine and Aviation Fuels in Northern Europe	12/13/21
EU+UK	Biofuels Annual 2021	06/22/21
EU	EC Adopts its EU Taxonomy for Green Investments	05/14/21
Netherlands	Dutch Wood Pellet Imports Reach New High	04/26/21
Netherlands	Dutch Government Advised to Cascade Biomass	07/14/20

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Disclaimer: This report presents the situation and outlook for biofuels in the EU. This report presents the views of the authors and does not reflect the official views of the U.S. Department of Agriculture (USDA). The data are not official USDA data. Official government statistics on biofuels are not available in many instances. This report is based on analytical assessments, not official data.

Attachments:

No Attachments