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## **Report Name:** Wood Pellets Annual

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**Prepared By:** Bob Flach and Sophie Bolla

**Approved By:** Laura Geller

### **Report Highlights:**

In 2022, EU wood pellet consumption hit a new record of 24.8 million metric tons (MMT) mainly due to increased residential use. In 2023, EU demand is expected to further grow to 25.6 MMT, based on a further expansion of the residential markets supported by Member State (MS) incentives and the implementation of the third Renewable Energy Directive (REDIII). EU demand for pellets has significantly outpaced domestic production for the past ten years, which resulted in increased imports from mainly the United States, Russia, Belarus, and Ukraine. In 2022, EU wood pellet imports totaled 5.89 MMT with a value of \$1.32 billion. The EU adopted import ban for wood pellets from Russia since the summer of 2022 has created an opportunity for transatlantic trade of wood pellets.

# 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 December 2022, the European Commission (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. In 2019, the EC presented the European Green Deal which aims to make the EU carbon neutral by 2050. As part of the Green Deal, the EC published a proposal for a Regulation aimed at preventing 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. On December 6, 2022, the proposal was adopted by the EU institutions. It will then enter into force late 2024 or early 2025. On April 8, 2022, EU agreed on a fifth package of restrictive measures against Russia. This includes wood pellets, which means that wood pellets from Russia are now banned from entering the EU market.

## EU Wood Pellet Market Developments

Consuming 24.8 million metric tons (MMT) of pellets in 2022, the EU is the world's largest wood pellet market. Since the autumn of 2021, rising prices of fossil fuels boosted the residential demand for wood pellets. With Russia's invasion of Ukraine, fossil fuel prices increased to even higher levels. In 2023, the growth in residential use is forecast to continue, and is anticipated to be the main driver for the further expansion of the EU market for pellets. In the third Renewable Energy Directive (REDIII), renewable energy targets are set for the heating of buildings, in contrast to the preceding directive, which is anticipated to further support the demand for pellets for residential use on the longer term. While EU production increased continuously since 2016, EU demand for pellets has significantly outpaced domestic production. In 2022, EU wood pellet imports grew to a new record of 5.89 MMT with a value of \$1.32 billion. EU wood pellet imports from the United States totaled 3.12 MMT, valued at \$682 million in 2022, with the Netherlands as the leading market. The EU adopted import ban for wood pellets from Russia since the summer of 2022 has created an opportunity for transatlantic trade of wood pellets to further expand.

The broader biofuels market reporting is contained in the separate FAS GAIN report: the [EU Biofuels Annual 2023](#).

# II. EU Biomass Policy

## Brexit

The United Kingdom (UK) withdrew from the European Union (EU) as of February 1, 2020. The Agreement on the withdrawal of the UK from the EU entered into force on the same date. This Agreement provided for a transition period, which ended on December 31, 2020. During the transition period, EU law was applicable to and in the UK. On December 24, 2020, the EU and UK negotiators

reached [an agreement](#) that sets out the rules on the new partnership between the EU and UK which took effect from January 1, 2021. More information: [https://ec.europa.eu/info/relations-united-kingdom/new-normal/consequences-brexit\\_en](https://ec.europa.eu/info/relations-united-kingdom/new-normal/consequences-brexit_en)

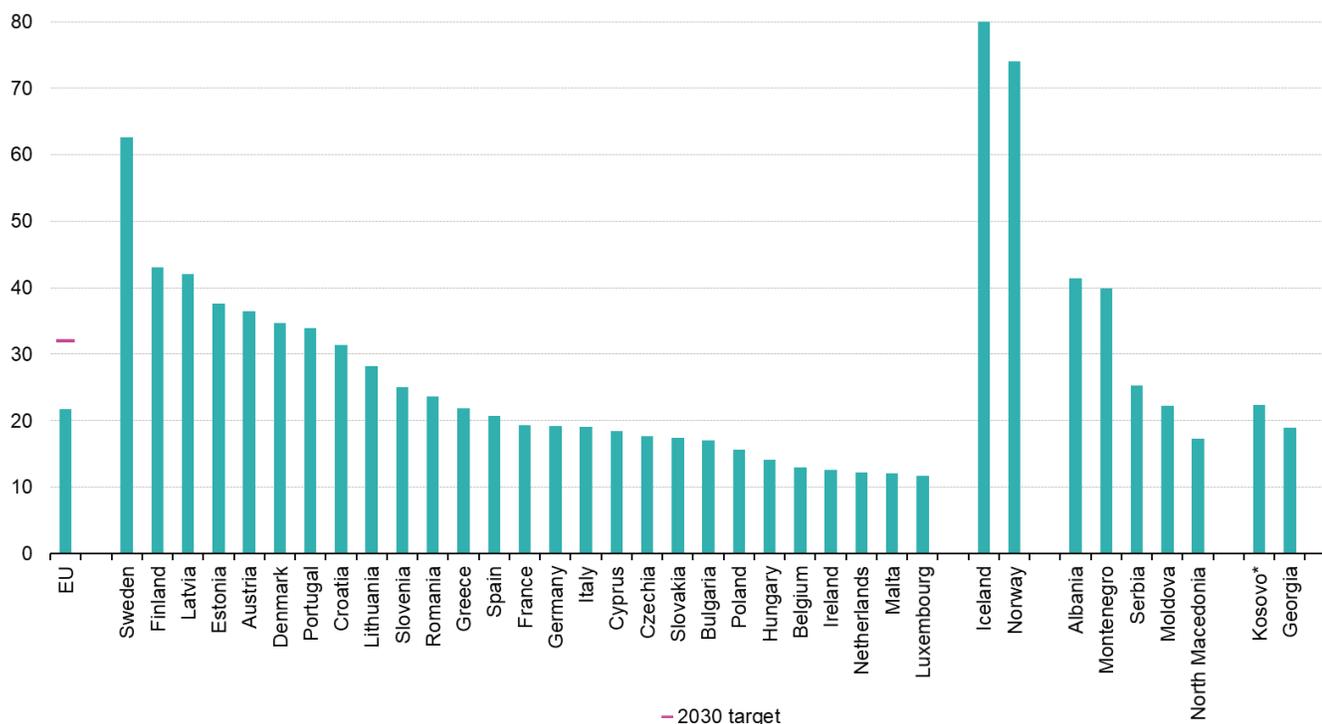
## The EU's Renewable Energy Directive (RED)

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 information about the 2009 RED, please see the [2020 Biofuels Annual Report](#).

## The Renewable Energy Directive II (the REDII)

### Share of energy from renewable sources, 2021

(% of gross final energy consumption)



\* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Source: Eurostat (online data code: nrg\_ind\_ren)

eurostat 

Source: Eurostat and European Commission.

The EU adopted the new Renewable Energy Directive for the period 2021-2030 (the REDII) in 2018. Most of the provisions of [Directive 2018/2001](#) entered into force on January 1, 2021. The EU MS were required to transpose the REDII by June 30, 2021, into national legislation.

### ***Uptake of Renewables in the European Union***

In October 2023, the European Commission (EC) published a report on [the State of the Energy Union 2022](#). In 2021, the EU reached a 21.8 percent share of its gross final energy consumption from renewable sources in 2021, around 0.3 percentage points lower than in 2020. The EC explains that this is likely due to the lifting of the restrictions linked to the COVID-19 pandemic. The average share of energy from renewable sources in transport was of 9.1 percent in 2021.

### ***The REDII Sustainability Criteria***

In order 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 include that the country in which forest biomass was harvested has laws applicable in the harvest area 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 with regard to 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. 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. The sustainability criteria apply to plants with a total rated thermal input above 20 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.

### ***Compliance with Sustainability and GHG Emission Saving Criteria - Voluntary Schemes***

Voluntary schemes and national certification schemes of EU MS help to ensure that biomass is sustainably produced by verifying that they comply with the EU sustainability criteria. Following the entry into force of the REDII, voluntary schemes recognized under the RED must adjust the 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 greenhouse gas (GHG) emissions saving criteria and low indirect land-use change (ILUC) risk criteria. This Regulation lays down implementing rules to ensure economic operators comply with the sustainability criteria and provide accurate data on GHG emission savings of the REDII. More information about the recognition process can be found on the EC [website](#) and in the [updated assessment protocol](#). The 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***

The REDII allows MS 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.

## **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. The

EU Institutions and the MS 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 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.

### ***The Fit for 55 Package***

To achieve the Green Deal objective of climate neutrality by 2050 and a 55 percent reduction of net GHG emissions compared to 1990 levels by 2030, the EC released its [‘Fit for 55’ legislative package](#).

### ***Updated Renewable Energy Directive***

As part of this package, the EC proposed to amend the RED. On March 29, 2023, the EU institutions agreed on the review of the RED (REDIII). The [text](#) still needs to be formally adopted. It is expected that it will enter into force in late 2023 or early 2024.

The new Directive increases the Union's target for the share of renewable sources from 32 per cent to 42.5 per cent by 2030. Additionally, REDIII introduces changes to the sustainability criteria for forestry biomass:

- Introduction of the cascading principal, which means that woody biomass is used according to its highest economic and environmental added value in the following order of priorities: (1) wood-based products; (2) extending their service life; (3) re-use; (4) recycling; (5) bioenergy; and (6) disposal.
- Introduction of “no-go areas” for countries where there is no national legislation regarding sustainable forest management.
- The sustainability criteria will now apply to plants with a total rated thermal input above 7.5 megawatts (MW) for installations producing power, heating, cooling, or fuels from solid biomass fuels.
- Direct financial support will be banned for energy produced using saw logs, veneer logs, industrial grade roundwood, stumps and roots.

### ***Deforestation-free Supply Chain Initiative***

As part of the Green Deal, the EC adopted Regulation [2023/1115](#) to prevent products causing deforestation entering the EU market. The Regulation targets products which are identified by the EC as the main drivers of deforestation including wood pellets. It will enter into application on December 30, 2024. 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 relevant commodities and products that contribute to deforestation. Products sourced from standard- or high-risk origins must comply with additional risk assessment and mitigation procedures. For more information, please see GAIN Report: [European Institutions Finalize Deforestation-Free Supply Chain Regulation](#)

### ***The EU Taxonomy for Sustainable Activities***

In June 2020, 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](#). This Regulation establishes the framework for an EU taxonomy for sustainable activities by setting out four overarching conditions that

an economic activity has to 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 through [Council Regulation \(EU\) 2022/576 of 8 April 2022 amending Regulation \(EU\) No 833/2014 concerning restrictive measures in view of Russia’s actions destabilizing the situation in Ukraine](#). This Regulation states that “It shall be prohibited to purchase, import, or transfer, directly or indirectly, goods which generate significant revenues for Russia thereby enabling its actions destabilizing the situation in Ukraine, as listed in Annex XXI into the Union if they originate in Russia or are exported from Russia.” This includes wood pellets, which means that wood pellets from Russia are now banned from entering the EU market.

## 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.

<b>Table 1. EU27 Wood Pellets Market Balance and Production Capacity (1,000 MT)</b>									
Calendar Year	2015	2016	2017	2018	2019	2020	2021 <sup>e</sup>	2022 <sup>e</sup>	2023 <sup>f</sup>
<b>Beginning Stocks</b>	569	762	1,078	957	1,128	1,067	1,317	1,107	1,008
<b>Production</b>	14,641	14,545	14,957	15,772	18,668	18,993	19,631	20,300	20,700
<b>Imports</b>	2,556	2,523	3,012	3,906	4,192	4,679	5,318	6,888	6,200
<b>Exports</b>	1,517	944	900	994	1,193	1,170	2,208	1,487	1,500
<b>Consumption</b>	15,487	15,808	17,190	18,513	21,728	22,252	22,951	24,800	25,600
<b>Ending Stocks</b>	762	1,078	957	1,128	1,067	1,317	1,107	1,008	808
<b>Production Capacity</b>									
Number of Plants	NA	630	700	710	NA	753	774	NA	NA
Capacity	20,220	21,640	22,570	23,090	23,710	24,100	25,600	26,500	27,200
Capacity Use (%)	72.4	67.2	66.3	68.3	78.7	78.8	76.7	76.6	76.1

Sources: Eurostat, Bioenergy Europe, Trade Data Monitor, and FAS Post Estimates. e=estimate f=forecast. NA=not available. Note: historic EU27 statistics don’t fully match historic statistics of the EU28 and the United Kingdom based on the switch of source from EU MS statistics to Eurostat data.

The EU is the world’s largest wood pellet market and consumed 24.8 million metric tons (MMT) of pellets in 2022. Based on European Commission’s (EC) mandates and EU Member States (MS) incentives, demand is expected to further expand to 25.6 MMT in 2023. Future consumption will significantly depend on a range of market factors, such as weather conditions and the price level of coal, heating oil, and natural gas. In addition, the demand is subject to EU MS incentives and conditions to support the use of wood pellets as a renewable energy source.

## 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 percent for large scale industrial use of pellets, with a capacity of generally more than 5 MW (source: [Bioenergy Europe](#)). The major users of wood pellets in the EU are Italy, Germany, the Netherlands, Denmark, France, Sweden, Austria, and Belgium (in declining order of importance).

The COVID-19 crisis had a limited effect on total EU pellet consumption during 2020 - 2022. The EU MS lockdown measures have predominantly restricted transport activities resulting in a reduction in liquid biofuel use. Solid biomass applied for heat and power has been less affected, save for a shift from office to residential use. During 2021 and 2022, consumption stagnated in Italy, the Netherlands, Denmark, Sweden, and Belgium. While a strong growth was reported in Germany, France, and Austria.

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

Calendar Year	2016	2017	2018	2019	2020	2021 <sup>e</sup>	2022 <sup>e</sup>
Italy	3,200	3,400	3,300	3,400	3,400	3,400	3,400
Germany	2,000	2,085	2,195	2,190	2,240	2,900	3,200
Netherlands	200	360	615	1,240	2,560	2,915	2,950
Denmark	2,570	3,160	3,075	3,000	2,500	2,750	2,750
France	1,210	1,335	1,430	1,800	2,000	2,400	2,500
Sweden	1,605	1,530	1,785	1,730	1,350	1,500	1,550
Austria	880	920	955	1,000	1,050	1,130	1,270
Belgium	1,340	1,375	1,490	1,550	1,150	1,250	1,250
<b>Total</b>	<b>15,808</b>	<b>17,190</b>	<b>18,513</b>	<b>21,728</b>	<b>22,252</b>	<b>22,951</b>	<b>24,800</b>

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. Medium-sized users of pellets (by industries or public buildings such as hospitals and sport facilities) are generally less dependent on weather conditions. The MS 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.

Since the autumn of 2021, rising prices of fossil fuels (such as diesel oil and natural gas) boosted the demand for wood pellets. This was demonstrated by the increased sales of pellet stoves (mainly in Spain, France, Italy, and Poland) and pellet boilers (mainly in Germany, France, and Austria). The increased domestic demand for pellets outpaced the expansion of domestic production in several traditional pellet producing countries such as France, Austria, and Finland, and in countries of which the pellet sector just recently took off, such as in the Czech and Slovak Republic and Bulgaria.

With Russia's invasion of Ukraine, fossil fuel prices increased to even higher levels. Furthermore, the availability of pellets has also been restricted as a large share (more than 40 percent) was generally imported from both Russia and Ukraine (for more information see the EU Biomass Policy chapter and trade section of this chapter). The limited supply and increased demand led to a doubling and in some EU MS even to a tripling of wood pellet prices during the winter of 2022. Pellet prices also increased because of the rising prices of the raw material, energy, and transportation.

In 2023, the growth in residential use is forecast to continue, and is anticipated to be the main driver for the further expansion of the EU market for pellets. In absolute terms the most significant growth in wood pellet sales is anticipated in Germany and France. Sales of pellet stoves and boilers are supported by the phasing out of incentives for fossil fuels in the heating sector and subsidizing renewable alternatives, according to Bioenergy Europe. Incentives for residential bioenergy are provided in Sweden, Germany, France, Austria, Spain, the Czech Republic, Poland, and Bulgaria. In the third Renewable Energy Directive (REDIII), renewable energy targets are set for the heating of buildings, in contrast to the preceding directive, which is anticipated to further support the demand for pellets for residential heating.

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 and/or cooling requirements. Wood pellets are one of the options. The replacement of existing heating systems with certain wood pellet ovens can also be subsidized but only if combined with a solar thermal heat unit or a heat pump. With the Clean Air program, the Polish government offers subsidies to exchange coal-fired stoves with ecological alternatives. In Poland, biomass stoves are the second-most popular source of heat, although with the increase of prices of pellets in 2022, their popularity decreased significantly. To financially support the residents, Polish government subsidized the purchase of wood pellets with a single allocation of approximately \$725 per household in 2022. In Romania, the price of wood pellets was temporarily capped to support residential use, which led to a reduction in supply to cover the demand. Bulgaria is traditionally a net wood pellet exporter. However, due to the surging domestic use in 2021 (from 142,200 MT in 2020 to 193,300 MT) and 2022 (237,100 MT), exports declined in favor of the domestic residential market. In 2022, Bulgarian consumption is forecast to exceed production for the first time.

### *Industrial Use of Pellets*

In markets such as the Netherlands, Denmark, and Belgium, 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. Potential large industrial pellet markets for foreign suppliers are Germany and Poland, but the countries currently

do not support the use of wood or wood pellets for electricity generation. Germany currently does not provide direct support for the use of wood for electricity generation. It indirectly 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.

The Netherlands is the primary EU industrial market for wood pellets. In 2022, the Netherlands imported a record 3.10 MMT of wood pellets with a value of \$582 million. The United States is the top supplier to the Netherlands, with a volume of 1.87 MMT, and a value of \$362 million. With this value, the Netherlands is also the second largest destination for U.S. wood pellets, after the United Kingdom and surpassing Japan, Denmark, 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 funded by the Dutch government 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. 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. Because production of biopower has reached its maximum capacity. Dutch pellet imports are estimated to stagnate around 3 MMT in 2023. For more information, see the GAIN Report - [Dutch Government Lays Out New Biomass Policy](#), published on April 29, 2022.

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. During the past 6 years, the Danish pellet imports fluctuate around the 3 MMT, with the share of U.S. wood pellets ranging between 5 to 20 percent. In 2022, Danish wood pellet imports from the United States reached a new record of 600,000 MT with a value of \$157 million. Most Danish pellet imports are sourced from the Baltic Region, such as Poland, Estonia, and Latvia. In 2022, imports from these sources declined as a higher share of the pellet production remained in Poland and the Baltics due to an increased domestic demand because of the EU ban on Russian gas.

To further reduce carbon dioxide (CO<sub>2</sub>) emissions, or even make them negative, Denmark is examining the option to capture and store the CO<sub>2</sub> 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 CO<sub>2</sub> 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 is 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 roughly 1.2 MMT. A bioenergy plant in Flanders continued to use wood pellets, of which the majority is imported from third countries.

## Production

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

Calendar Year	2016	2017	2018	2019	2020	2021 <sup>e</sup>	2022 <sup>e</sup>
Germany	1,930	2,250	2,415	2,820	3,100	3,300	3,570
Latvia	1,600	1,465	1,715	2,210	2,265	2,140	2,150
Sweden	1,740	1,740	1,640	1,700	1,660	1,755	1,800
France	1,150	1,350	1,450	1,600	1,700	1,850	2,050
Estonia	1,210	1,435	1,345	1,600	1,600	1,600	1,600
Austria	1,070	1,225	1,345	1,440	1,540	1,610	1,690
Poland	800	480	410	1,105	1,265	1,270	1,300
Portugal	605	690	735	1,010	860	730	730
Lithuania	245	315	315	605	510	530	540
Spain	460	460	575	620	530	650	770
<b>Total</b>	<b>14,545</b>	<b>14,957</b>	<b>15,772</b>	<b>18,668</b>	<b>18,993</b>	<b>19,631</b>	<b>20,300</b>

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

Recent increases in demand for pellets has supported further increase in domestic production in most EU MS. Since 2017, strong expansion was reported in Germany, France, Austria, and Poland. Germany is the third largest wood pellet producer after the United States and Canada. It has currently 50 production facilities for wood pellets with a total annual production capacity of 3.9 MMT. In 2022, about 90 percent of the pellets were produced from residues of the timber industry. The remaining 10 percent consisted of non-sawable round logs. In France, there were 70 factories operational in 2021. Reportedly, three new sites will open their doors in 2023, for an additional production capacity of 270,000 MT of pellets. The [French wood pellet association](#) expects an additional 1 MMT of production capacity between 2021 and 2024 and a doubling of production by 2028. Another EU MS which reports a significant expansion of wood pellet production is Austria. Comparable with Germany and France, Austrian pellet production is mainly driven by domestic demand.

Wood pellet production has expanded rapidly in the Baltic Region (Latvia, Estonia, and Lithuania) over the past 10 years. The Baltics are producing both for the residential and industrial markets, mainly in Denmark, the United Kingdom, and the Netherlands. In 2021, combined Baltic exports reached a record of 4.7 MMT, but plummeted back to 3.6 MMT in 2022 as a higher share remained in the Baltics due to an increased domestic demand as a result of the ban on Russian gas. A similar trend is reported in Poland, where pellet production is rising but an increasing share is consumed domestically, currently 60 percent.

Portugal and Spain are also net exporters of wood pellets. In 2022, Portuguese exports stabilized around 510,000 MT, down from the record figure of 709,000 MT achieved in 2019. The main markets are the United Kingdom, Denmark, and Spain. Post estimates Portugal’s production at about 900,000 MT. Because the installed annual capacity is estimated at around 1.4 million MT of pellets, a potential exists to increase exports. While Portuguese pellet exports fell, Spanish exports almost doubled to 205,000 MT in 2022, with France and Italy and the main destinations. Spanish exports were supported by a record wood pellet production in 2022, amounting to 768,000 MT.

Two medium-sized producers with an expanding capacity are the Czech Republic and Croatia. In 2020, five new pellet plants were established adding 30,000 MT to the Czech Republic's total production capacity. In 2022, 538,000 MT of wood pellets were produced by the Czech pellet sector. Further production growth is forecast in 2023 based on the expanding domestic market. Croatia has the potential to employ more of their biomass resources due to large forests that occupy almost half of the land area of the country. According to the Croatian biomass producer’s organization (CROBIOM), wood pellet production in Croatia totals approximately 400,000 MT, from which between 80 to 90 percent is generally intended for export. The main export destinations in 2022 were Italy, Slovenia, and Serbia. Based on expanding domestic and export demand, Croatian wood pellet production is forecast to increase.

The local shortages of woody biomass supported the production of pellets made from other biomass sources. In the EU, secondary feedstocks, such as sawdust, wood industry residues, and shavings, comprise nearly 85 percent of the raw materials used for pellet production, according to an EPC survey in 2019. 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 <sup>a</sup>		Imports from U.S.	
	2021	2022	2021	2022
Netherlands	2,742	3,104	1,131	1,873
Denmark	3,225	2,660	329	560
Italy	2,124	1,916	4	17
Belgium	945	1,142	162	489
France	661	755	154	146
Germany	404	477	1	0
Latvia	593	355	0	0
Austria	413	346	0	0
Poland	234	289	0	0
<b>Total EU</b>	-	-	<b>1,781</b>	<b>3,125</b>

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

The large power utilities in the Netherlands and Belgium are sourcing most of their pellets from non-EU suppliers, mainly the United States, Russia, Ukraine, and Canada, due to their location at seaports and limited domestic production. 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 and France 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	2017	2018	2019	2020	2021	2022
United States	940	1,259	1,295	1,247	1,781	3,125
Russia	1,148	1,186	1,475	1,510	1,881	1,021
Ukraine	213	380	431	441	411	401
Canada	222	330	80	517	292	337
Brazil	50	77	147	174	196	268
Belarus	212	262	375	524	594	248
Turkey	2	9	14	11	21	117
<b>Total</b>	<b>3,012</b>	<b>3,906</b>	<b>4,191</b>	<b>4,679</b>	<b>5,318</b>	<b>5,888</b>

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, Russia, Ukraine, Belarus, and Canada. In 2022, EU wood pellet imports totaled 5.89 MMT with a value of \$1.32 billion. EU wood pellet imports from the United States totaled 3.12 MMT, valued at \$682 million in 2022, with the Netherlands as the leading market. Following Russia's invasion of Ukraine, the wood pellet imports from Russia, Ukraine, 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 means that wood pellets from Russia were banned from entering the EU market since the summer of 2022. This ban has created an opportunity for transatlantic trade of wood pellets. But also imports from other directions increased, such as from Turkey, South American sources (Brazil and Panama), and Asian sources (Malaysia and Vietnam). Due to the high demand for wood pellets and scarcity of supply, EU imports of wood waste and scrap from the United States (1.1 MMT in 2022) and Canada (0.5 MMT) surged in 2022. The opportunity for imports has been further boosted by the elevated prices of fossil fuels and the implementation of renewable energy targets. But third country trade could also be affected by the implementation of sustainability requirements by the EC and individual EU MS governments. Major concerns relate to the documentation of a wider scope of the sustainability criteria related to deforestation and criteria preventing primary woody biomass from counting towards EU renewable energy targets (for more information see the EU Biomass Policy chapter of this report).

### **National Pellet Sustainability Criteria**

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. However, EU MS may place additional sustainability requirements for biomass fuels. Several EU MS (Belgium, Denmark, and the

Netherlands) have developed their own rules in response to the growing use of imported wood pellets. By December 31, 2026, the EC shall assess the impact that such additional criteria may have on the internal market to ensure harmonization of sustainability criteria for biomass fuels (for more information about the RED II and the RED II see the EU Biomass Policy chapter of this report).

Meanwhile, 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).

## Appendix - Related Reports from FAS USEU and FAS Posts

Country	Title	Date
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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### This report was a group effort by the following FAS analysts:

Ornella Bettini of FAS/Rome covering Italy  
 Sophie Bolla of USEU/FAS Brussels  
 Mila Boshnakova of FAS/Sofia covering Bulgaria  
 Luigi Castaldi of USEU/FAS Brussels covering Belgium  
 Monica Dobrescu of FAS/Bucharest covering Romania  
 Dimosthenis Faniadis of FAS/Rome covering Greece  
 Bob Flach of FAS/The Hague covering the Netherlands and the Nordics  
 Jana Fischer of FAS/Prague covering the Czech Republic and Slovakia  
 Anna Galica of FAS/Warsaw covering Poland and the Baltic States  
 Gellert Golya of FAS/Budapest covering Hungary

Marta Guerrero of FAS/Madrid covering Spain and Portugal  
Steve Knight of FAS/London covering Ireland  
Roswitha Krautgartner of FAS/Vienna covering Austria and Slovenia  
Sabine Lieberz of FAS/Berlin covering Germany  
Andreja Misir from FAS Zagreb covering Croatia  
Marie Anne Omnes of FAS/Paris covering France

**The chapters were coordinated by:**

Executive Summary by Sophie Bolla and Bob Flach  
Policy and Programs by Sophie Bolla  
EU Wood Pellet Market Developments by Bob Flach

**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