

# Wood Pellets Market Profile

Office of Business Development,  
Domestic Trade Program

Maine DECD

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## Overview

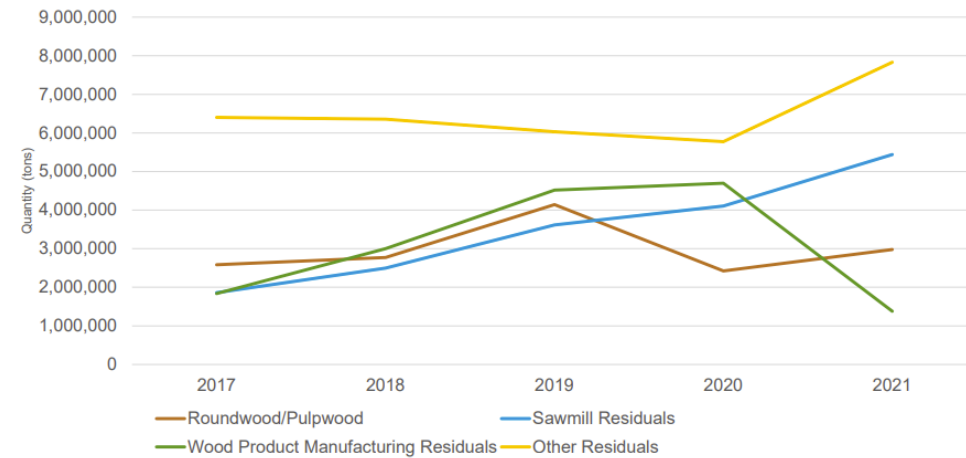
Wood pellets are biofuels made from compressed wood fiber. Wood pellets are primarily made from the residuals left over from the sawmilling process when logs are converted into lumber and other high-value wood-products and are then used in residential and industrial applications. Wood pellets are often used in wood stoves to heat homes and are used as a low-carbon alternative to coal for industrial electricity generation.

Wood pellets are a component of the Wood Product Manufacturing Industry (NAICS 32199). According to IBISWorld, this industry includes the production of wood products not produced by sawmills or by manufacturers of veneer, engineered wood, millwork and mobile homes. Aside from wood pellets, other industry products include wood ladders, cabinets, kitchenware, broom handles, reels, toothpicks, and other miscellaneous wood products. Wood stock and fuel products (which includes wood pellets) is the largest segment in the Wood Product Manufacturing industry, generating an estimated 15.4% of industry revenue in 2022 according to IBISWorld.

## Industry Trends

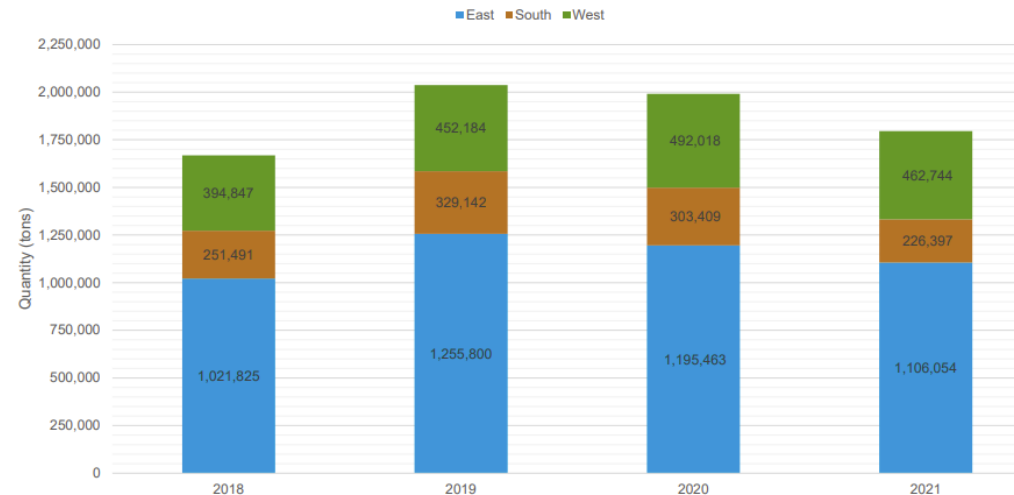
- ◆ Use of wood pellets for heating (as opposed to energy production) dominates the market. Wood pellets are a cost-effective option compared to other heat sources, and government incentives have contributed to boosting the use of wood pellets for heat. This includes the U.S.' 2021 Wood and Pellet Heater Investment Tax Credit which allows consumers to claim a tax credit for the purchases of a pellet stove or biomass heating system.
- ◆ Some scrutiny over the environmental benefits of wood-fired electricity generation exists, centered around the idea that the loss of trees potentially offsets the reduction in emissions gained from the use of wood.
- ◆ In 2021, sawmill residuals were the largest feedstock category used by manufacturers (of the three major categories – roundwood/pulpwood and wood product manufacturing residuals).
- ◆ Domestically, the eastern region of the United States is the largest producer of wood pellets, producing over 1.1 million tons in 2021. Over the last four years, production peaked in 2019, with slight decreases in 2020 and again in 2021.
- ◆ Exports are dominating the market compared to domestic wood pellet purchases. European biofuel regulations have boosted demand for North American wood pellets. Renewable fuel targets set by the EU will likely continue to drive export growth, with the policy already increasing the scale of wood-based energy generation and the emergence of wood-fired electricity plants leading to wood input requirements that exceed the timber resources of many countries. According to IBISWorld the United Kingdom has been the industry's top export destination over the last five years.

## Feedstock Purchase By Type



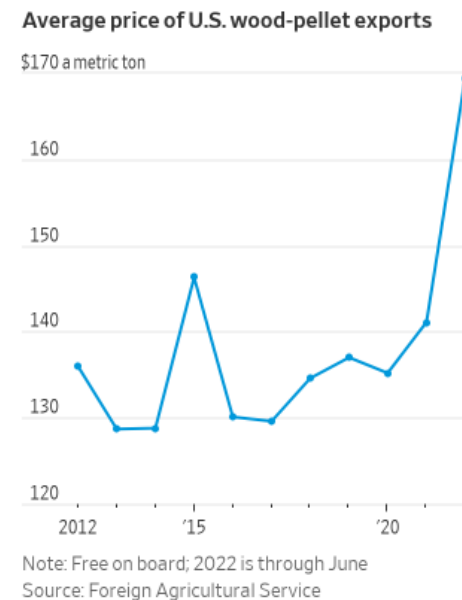
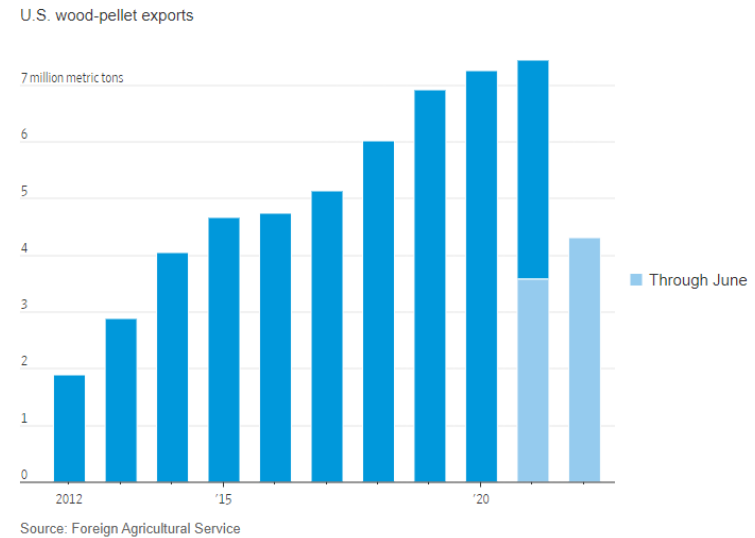
Source: EIA, 2022 Pellet Fuels Institute Conference

## Premium/Standard Production by Region



Source: EIA, 2022 Pellet Fuels Institute Conference

- ◆ Russia is one of the world’s largest wood pellet producers, accounting for a 7.6% share of the global market as of 2020. 85% of Russia’s wood pellet products are sold to foreign markets, particularly in Europe.<sup>1</sup> As of July 2022 EU sanctions have limited the supply of wood products from Russia and Belarus. As a result, demand from power plants in Western Europe that burn wood pellets instead of coal has increased demand on pellets from North America. According to the Wall Street Journal, 2022 U.S. export volume of wood pellets is outpacing that of 2021. Additionally, prices are rising with the average price before shipping costs increasing to nearly \$170 a metric ton, from around \$140 in 2021.<sup>2</sup>
- ◆ U.S. producers are responding to the increased demand for wood pellets. For example, Enviva is building several new pellet plants in the Southern Pine Belt and hopes to double production capacity over the next five years. The company buys branches, bark, understory, brush, sawdust, spindly or diseased logs and other waste wood from landowners and sawmills and process them into wood pellets. Enviva is building the largest plant in the world, in Epes, Alabama. This plant will have the capacity to produce 1.1 million metric tons annually.<sup>3</sup>



Charts to the right sourced from the Wall Street Journal.

<sup>1</sup> Frolova, M. *Russia’s Global Wood Pellet Supply Potential*. Biomass Magazine, 24 Feb. 2021.

<sup>2</sup> Dezember, R. *Wood-Pellet Exports Boom Amid Ukraine War, Environmental Concerns*. The Wall Street Journal. 8 Aug. 2022.

<sup>3</sup> *ibid*

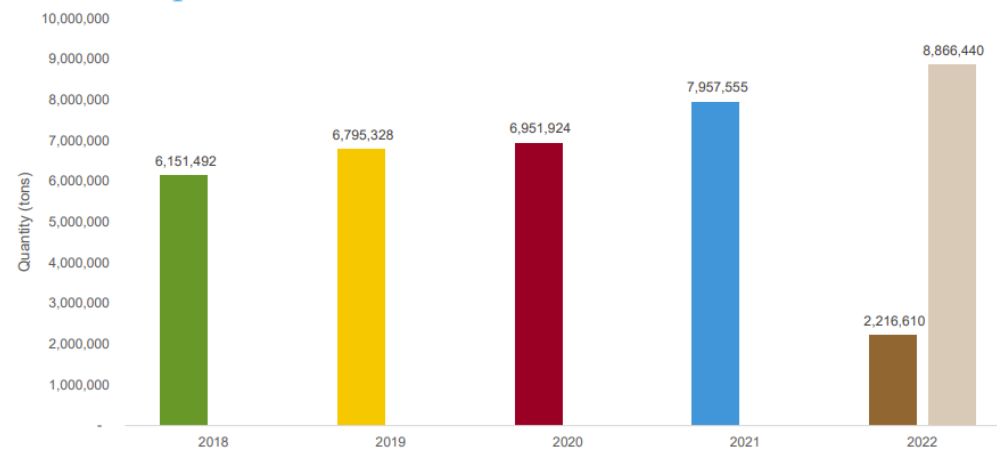
- ◆ Industry demand and expansion continues to increase despite some recognition from the European Union on the environmental risks of continued use of wood as an energy source. In September 2022 European lawmakers voted to phase out some wood-energy subsidies. This follows the release of findings that showed the EU released more carbon dioxide by burning wood than would have been emitted had that energy come from fossil fuels. As a result of the vote, incentives that encourage logging entire trees for energy will likely be unlawful by 2024 while wood energy from sawdust waste, trees logged for fire prevention, and naturally fallen trees would still be eligible for subsidies.<sup>4</sup>
- ◆ Despite the change in rules related to subsidies and incentives, producers remain optimistic about the direction of the market. The EU maintains committed to burning wood as a source of energy to help meet its target of cutting carbon emissions by 55% by 2030 (there is a loophole that counts wood biomass as carbon neutral). Lawmakers voted not to declassify woody biomass as renewable energy leaving the industry optimistic about continued growth opportunities.<sup>5</sup>

## Market Size

The total wood pellet market is estimated to be over \$10.5 billion as of 2020 and is expected to grow to nearly \$16.8 billion by 2027.<sup>6</sup> Europe currently represents more than 50% of global pellet demand, and is expected to further increase their demand by 30-40% through 2026.

Total U.S. export sales of wood pellets have steadily increased over the last five years. According to the EIA, exports have increased from nearly 6.2 million tons in 2018 to a projected 8.9 million in 2022. As of March 2022 the average price of wood pellets was nearly \$184 per ton.

### Total Export Sales



Source: EIA, 2022 Pellet Fuels Institute Conference

<sup>4</sup> Hurtes, S. *European Union Signals a Move Away from Wood Energy*. The New York Times. 15 Sept. 2022.

<sup>5</sup> Catanoso, J. *EU Votes to Keep Woody Biomass as Renewable Energy, Ignores Climate Risk*. Mongabay, 16 Sept. 2022.

<sup>6</sup> *Wood Pellet Market – Growth, Trends, COVID-19 Impact, and Forecasts*. Mordor Intelligence. Retrieved from: <https://www.mordorintelligence.com/industry-reports/wood-pellet-market>

## Wood Pellet Products

Historically, wood pellet production has focused on white pellets. White pellets can be burned to meet various heating and power generation needs. Demand for these pellets has increased over the last several years as an environmentally friendly heat and energy source. There are however a few drawbacks to using white pellets in these applications compared to coal. The chemical properties of wood pellets are very different from coal, requiring expensive boiler upgrades for industrial users to convert from coal to wood pellets. Similarly, even with boiler upgrades, the combustion conditions required by most coal plants prevent them from burning large amounts of biomass other than pellets made from specific trees. To burn all other types of biomass, energy companies would need to install new boilers.<sup>7</sup>

To overcome these limitations, work is ongoing to develop wood pellets with improved characteristics. The development of black pellets through torrefaction is one way to achieve this. Torrefaction is a thermal process where biomass is heated in the absence of oxygen at atmospheric pressure to create a coal-like material. This creates a fuel that has a 30% higher energy density compared to white wood pellets, which improves heating value. Black pellets can be used to replace natural gas or fossil coal in industrial boilers, and can be used to cater to thermal power generators and gasification power generators. The demand for black pellets is not growing as fast as originally expected however. High initial investment in a torrefaction reactor is a barrier for producers to start processing these effective pellets, especially compared to the low investment needed for white pellets.<sup>8</sup>

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<sup>7</sup> *The Multiple Failures of Black Pellet Technologies*. Biofuelwatch, retrieved from: <https://www.biofuelwatch.org.uk/2021/black-pellet-report/>

## Industry Leaders

According to the EIA and the Pellet Fuels Institute, there are currently about 80 domestic wood pellet manufacturers. These are producers with a capacity of at least 10,000 tons per year.

- ◆ **Enviva Partners:** Enviva is a leading global energy company specializing in sustainable wood bioenergy and one of the largest producers of wood pellets. Enviva is headquartered in Bethesda, Maryland and operates plants and ports in Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, and Virginia, with other corporate offices in four countries.
- ◆ **Graanul Invest:** Graanul Invest is a leading biomass and bioenergy producer, operating in the field for over 18 years. Graanul Invest is an international group with 12 pellet plants in the Baltics and the U.S. The organization is headquartered in Estonia.
- ◆ **Drax Group Plc:** A UK energy company that recently acquired Canadian-based wood pellet producer Pinnacle Renewable Energy, Inc. With the addition of Pinnacle's 11 sites, Drax now owns 17 pellet plants and development projects.
- ◆ **Fram Renewable Fuels:** Established in 2005, Fram is one of the first large scale wood pellet producers in the southeast U.S. and a key supplier of wood pellets to the growing European industrial market. The organization is headquartered in Hazlehurst, Georgia.

<sup>8</sup> *How to Make a More Effective Fuel: Black Pellets*. Making.com, retrieved from: <https://making.com/how-to-make-a-more-effective-fuel-black-pellets/>