

United States of America Forest Products Annual Market Review and Prospects: Country Market Report, 2019-2024

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Abstract

The lingering effects of the COVID-19 pandemic remain as a factor affecting United States of America economic and wood products activity in 2021 and 2022. For 2022 and 2023, the Russia-Ukraine war and the Federal Reserve Board of Governors decision to control inflation are affecting forest products markets, production, and consumption. This also holds true for world economies. In addition, trade tensions, events in nature, and geo-political issues are influencing global economies and forest products consumption and demand. Presented are data and information on the current state of the United States economy and wood products markets, and near-term prospects. This report is supported by conventional information and statistical data regarding forest product markets in terms of consumption, consumer credit, industrial production, prices, and trade. Information on sawn softwood and hardwood, softwood and hardwood log trade, wood-based panels, paper and paperboard, fuelwood, forest product prices, and new housing sales and starts are presented. Policy initiatives, which may affect domestic markets and international trade in wood products also are discussed. Selected data are provided for the years 2010 through 2021, with estimates for 2022, and forecasts for 2023 and 2024.

Keywords: United States of America wood product's markets, composite wood products, engineered wood products, fuelwood, furniture, forest product markets, forest products prices, hardwood lumber and log markets, international wood products trade, log and lumber exports and imports, new housing construction, repair and remodeling, roundwood/pulpwood, softwood lumber agreement, softwood lumber and log markets, structural and non-structural panels, woody biomass consumption and production, and biomass and wood energy.

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Executive Summary

This report provides an analysis and evaluation of the current status and near-term prospects for forest product markets and the United States of America economy. Unless otherwise stated, all dollar figures are expressed in nominal value and all indexes are 2017 based (i.e., 2017=100). The Federal Reserve Board of Governors forecast United States of America gross domestic product growth at 0.2 percent in 2022, 1.2 percent in 2023, 1.7 percent in 2024, and 1.8 percent in 2025. The Federal Reserve Bank of Philadelphia's forecasters survey estimated the gross domestic product at 1.6 for 2022 and 1.3 in 2023.

The United States of America housing markets continued their recovery in 2021 into the first-half of 2022. New construction was influenced by record forest products prices, labor shortages in several industries, and the unavailability of products necessary to complete houses (e.g., appliances, heating and plumbing products, and windows and doors). Total starts were 16.0 percent and single-family starts were 13.8 percent greater than reported than in 2019. New house sales, in 2021, were 6.2 percent less than reported for 2020. Total residential construction spending increased 25.0 percent year-over-year; single family expenditures increased 37.0 percent, multi-family spending increased 9.7 percent, and residential repair and remodeling's volume increased by 15.2 percent in 2021.

Positive aggregate housing construction and sales growth have an explicit effect on many wood products markets. In 2021, several wood product categories production and consumption volumes were negligibly more than reported for 2020 – other categories reported moderate increases as well. Softwood lumber production and consumption both increased year-over-year in 2021. Structural and non-structural panel products and hardwood plywood consumption increased in 2021, primarily due to plant reopenings, increased logistics, and increased demand. Wood pellet production and sales continue to increase.

Sawn hardwood production and consumption increased in 2021 and in the first-half of 2022; paper and paperboard production remain in a long decline; pulpwood consumption increased in 2021; and furniture production increased in 2021. Softwood lumber imports and exports increased in 2021 as well.

In closing, lingering effects of the COVID-19 pandemic remain as a factor affecting United States of America economic and wood products activity in 2021 and 2022. For 2022 and 2023, the Russia-Ukraine war and the Federal Reserve Board of Governors decision to

control inflation are affecting forest products markets, production, and consumption. This also holds true for world economies. Global forest products demand is in flux as result of the Russia-Ukraine war and lingering effects of the pandemic, and exacerbated by trade tensions, events in nature, and geo-political issues.

United States of America General Economy

Analysis of the United States of America real Gross Domestic Product (GDP) indicates signs of economy contraction over the first two quarters of 2022, with a decrease of 1.6 percent in the first quarter followed by a 0.6 percent decrease in the second quarter of 2022 (United States of America (U.S.) Bureau of Economic Analysis (BEA) 2022a). Those contractions follow a growth period in 2021, with a GDP of 5.6 percent, after decreasing growth levels observed in 2019 and 2020 (GDP of 2.3 and -3.5, respectively). Forecasts from the Federal Reserve Board of Governors (FOMC) and the Federal Reserve Bank of Philadelphia's Third Quarter 2022 Survey of Professional Forecasters (FRBP-SPF) indicate slight growth is expected in 2022, with their GDP projections at 0.2 percent and 1.6 percent, respectively. The forecast for the United States of America real gross domestic product was downgraded for 2022, from 5.5 to 0.2 percent (FOMC 2022a, b; FRBP-SPF 2022). Further, the FRBP-SPF (2022) predicts sluggish growth over the 2023-2025 period with GDP forecasts at 1.3; 2.3; and 2.1 percent for each year, respectively. The FOMC's September Beige Book (2022c) noted that "The outlook for future economic growth remained generally weak, with contacts noting expectations for further softening of demand over the next six to twelve months", while the FRBP-SPF (2022) noted "...about a one-in-three chance of a contraction in real GDP in any of the next five quarters. The forecasters have increased their estimate of the risk of a downturn this quarter to 33.9 percent, compared with 19.7 percent in the survey of three months ago.

The FOMC (2022a) and FRBP-SPF (2022) project the 2022 unemployment rate at 3.8 and 3.7 percent, respectively, a marginal decrease from the 2021 rate of 3.9 percent (BLS 2022). Forecasts for 2023-2025 by these two entities indicate potential marginal increases in unemployment rates. FOMC forecasts rates of 4.4 percent for 2023 and 3.9 percent for 2024 and 2025, while FRBP-SPF projects a flat 3.9 percent unemployment rate for 2023-2025. The FOMC labor market estimates and forecasts reflect Russia's war against Ukraine, supply and demand imbalances related to the pandemic, higher food and energy prices, and broader price pressures effects.

Core inflation, as measured by personal consumption expenditures (PCE), was estimated at 5.4 percent for 2022, decreasing to 2.8 percent in 2023, 2.3 percent in 2024, and 2.0 percent in 2025 (FOMC 2022b).

The headline Consumer Price Index (CPI) for personal consumption expenditures was estimated at 4.1 percent for Quarter Three 2022, projected to decrease to 3.5 percent in Quarter Four, and total 7.5 percent for 2022. The forecast for 2023 is 3.2 percent and 2.5 percent in 2024. From 2022 to 2031, headline CPI inflation is projected at an average annual rate of 2.8 percent and the personal consumption expenditures (PCE) inflation is forecast at an average annual rate of 2.45 percent (FRBP-SPF 2022).

Consumer spending, and associated consumer credit, are often attributed as the primary drivers for the aggregate United States of America economy. The Council of Economic Advisers (2022) reported that consumer spending influences aggregate GDP growth as it accounted for 70.1 percent of GDP in 2021. The Federal Reserve Bank of New York (FRBNY) stated that total household debt was \$16.15 trillion in Quarter Two of 2022. Included in this total, house mortgages were \$11.39 trillion and home equity line of credit balances were \$319 billion; student loans were \$1.59 trillion; auto loans of \$1.50 trillion; credit card debt was \$89 billion; and “other” loans were \$41 billion (FRBNY 2022). Credit cards represent the largest consumer lending market in the United States of America and credit card loans are a component of revolving consumer credit. In Quarter Two of 2022, revolving credit increased by 11.5 percent to \$1,125.7 billion from Quarter Two of 2021 (FOMC 2021d).

Real personal consumption expenditures (PCE) increased 12.7 percent in 2021 from 2020 (\$15,903 billion). PCE increased 2.3 percent (\$17,261 billion) in the first-half of 2022 versus the first-half of 2020 (\$16,874 billion) (United States of America Bureau of Economic Analysis (BEA) 2022a).

Industrial production is an economic indicator measuring real output for all facilities located in the United States of America, which includes manufacturing, mining, electric, and gas utility installations. Reported total industrial production index in August 2022 was 3.7 percent higher than the same month the previous year, at 104.5. The preliminary estimate for manufacturing capacity utilization index was 80.0, which was 1.4 percent more than in August 2021 (FOMC 2021e). Total real private residential fixed investment was \$1,107.6 billion in 2021, a 23.0 percent increase from 2020. The first half of 2021 (\$2,136 billion) was 27.9 percent more than the first half of 2020 (\$1,671 billion). Total real private nonresidential fixed investment was \$2,799 billion in 2020, a 4.7 percent decrease from 2019 (\$2,939 billion). The first half of 2022

(\$2,361 billion) was 9.0 percent more than the same time-period a year earlier (\$2,165 billion) (BEA 2021b).

Major Market Developments in the United States of America Affecting Forest Products Consumption

New housing construction and housing sales

New housing construction in 2021, including manufactured housing, consumed 32.7 thousand cubic meters (m³) or 37.1 percent of total sawn softwood in the United States of America (Western Wood Products Association (WWPA) 2022a). New single-family starts and sales are vital for the wood products industry, with new housing units consuming more value-added products than any other wood-utilizing sector.

In 2021 and the first-half of 2022, new housing construction was a strong component of the United States of America economy. By May 2022, new housing starts began a decline principally due to limited new houses for sale, increasing prices and lack of affordability, and growing interest rates. One factor for 2021's robust housing market was that mortgage interest rates were at historically low-levels. Other factors contributing to the low-housing inventory were lingering effects of the COVID-19 pandemic, labor shortages, supply chain logistics, and the lack of building component availability (e.g., appliances, HVAC, and windows). The 30-year conventional loan rate breached the three percent level in the fourth quarter of 2021 for the first-time since the third quarter of 2020, and averaged close to 5.0 percent by July 2022 (Freddie Mac 2021, 2022). The Mortgage Bankers Association ((MBA) 2021) total housing starts estimate for 2022 is 1,566,000 units (seasonally adjusted annual rate (SAAR)), a decrease of 2.2 percent from 2021. The single-family estimate is 1,047,000 units (SAAR), a decline of 7.1 percent from 2021. Projections for 2023 are 1,487,000 total units and 1,011,000 single-family units (SAAR). New house sales are projected at 668,000 units (SAAR) in 2022, 738,000 in 2023, and 784,000 in 2024 (MBA 2022) (Table 1).

In 2021, total housing starts were 1,601,000 units and single-family starts were 1,127,200 units (SAAR). This results in a 16.0 percent and 13.7 percent year-over-year increase from 2020, respectively (Table 1). Multi-family starts were 473,800 units in 2021 and 389,100 in 2020; a 21.8 percent increase (Census (DOC)-Construction (Census 2022a)).

Table 1. Selected United States of America economic indicators, 2020–2024.

Indicator	Actual		Estimate ^b	Forecast ^b	Forecast ^c
	2020	2021	2022	2023	2024
Gross domestic product	21,060	23,315	23,898	24,505	24,995
New housing starts (thousand units)	1,380	1,601	1,566	1,487	1,616
New single-family starts (thousand units)	991	1,127	1,027	1,011	1,169
New multi-family starts (thousand units)	389	474	539	476	447
New housing sales (thousand units)	822	771	668	738	784
Manufactured housing shipments (thousand units)	94	106	110	114	118
Total residential fixed investment (billion 2012 dollars)	650	719	679	704	730
Total nonresidential fixed investment-structures (billion 2012 dollars)	510	478	444	445	446
Furniture and related products (Index: 2017 = 100)	85.4	88.1	92.1	98.1	98.5
Paper products (Index: 2017 = 100)	93.9	95.5	95.4	95.9	96.2
Wood products (Index: 2017 = 100)	95.9	101.2	103.0	99.8	100.1
Total industrial production (Index: 2017=100)	95.3	100.0	104.1	102.5	102.7

Sources: ^a BEA 2022b, c; Census 2022a, b, d; FOMC 2022e, f, g; FRBP-SPF 2022; MBA 2022.

^b FOMC 2022e, f, g; MBA 2022; USDA FS estimates based on historical and first-half 2022 data; The World Bank 2022.

^c FOMC 2022e, f, g; FRBP-SPF 2022; MBA 2022; USDA Forest Service estimates based on historical and first-half 2022 data; The World Bank 2022, Y Charts 2022.

Total housing permits in 2021 were 1,737,000 units and single-family permits were 1,115,400 units (SAAR). This results in an 18.1 percent increase and 13.8 percent year-over-year increase, respectively from 2020. Multi-family permits were 621,700 units in 2021 and 491,700 in 2020; a 26.5 percent increase. In 2022's first-half total permits were 1,729,000 units and single-family permits were 1,115,667 units (SAAR). Total permits were 3.0 percent more than the same period in 2021 and single-family permits were 3.5 percent less than recorded in 2020. Multi-family permits, in the first-half, averaged 682,833 units (SAAR) and this was 15.7 percent more than reported for the same 2020-time frame (Census 2022a).

In 2021, total housing completions were 1,341,900 units and single-family housing completions were 969,700 units (SAAR). This results in a 4.2 percent and 6.4 percent year-over-year increase, respectively. Multi-family housing completions were 371,400 units in 2021 and 375,200 in 2020; a 1.0 percent decrease. In the first-half of 2022, total housing completions were 1,360,500 units and single-family completions were 1,019,833 units (SAAR). Total completions were 0.9 percent less than the same period in 2020 and single-family completions were 3.1

percent greater than recorded in 2020. Multi-family completions, in the first-half, averaged 340,667 units (SAAR) and this was 11.1 percent less than reported for the same 2020-time frame (Census 2022a).

New house sales in 2021 were 771,000 units (SAAR) (Table 1). This results in a 6.2 percent year-over-year decrease. In 2022s first-half, new house sales were 694,167 units, which was 15.9 percent less than the same 2020-time period (825,333 units) (Census 2022b). Common themes proffered for decreasing new house construction and sales market include increasing mortgage costs; an undersupply inventory of affordable new houses; a lack of available lots for new construction; shortage of construction workers; regulatory burdens; stringent builder financing requirements; student loan debts accrued from higher education; shifting attitudes towards home ownership; under-employment; and stagnant-to-declining median incomes. In addition, new sales are obfuscated by the delay in completions. Builders are having a difficult time in procuring numerous products necessary for completions.

Existing housing, and sales, are important for the residential repair and remodeling (R&R) subsector. In 2021, 6.1 million units were sold, and existing sales were 5.1 million units (SAAR) by first-half of 2022. (National Association of Realtors 2022, as cited in Federal Reserve Bank of St. Louis (FRED) 2022). A factor for existing housing's importance to wood products consumption is the aging United States of America housing stock, as 94.6 percent of United States of America housing stock was built before the year 2010. The median age of a housing unit is 39 years and increasing – 1979 is the median year in which a residential structure was built (Census 2022c).

Historically, manufactured housing fabrication and sales played a pivotal role in meeting United States of America housing demand. Manufactured housing (e.g., mobile, modular, etc.) production and shipments have increased, yet remain well less than the greatest shipment years of 1973 (580,000 units) and 1998 (373,000 units). Shipments in 2021 were 105,800 units, 12.1 percent more than 2020 (Table 1).

Construction expenditures

The United States of America total residential construction expenditures in 2021 were \$793.7 billion, single-family spending was \$423.9 billion, multi-family was \$100.6 billion, and repair and remodeling was \$269.2 billion (all nominal dollars) (SAAR). This results in a

25.0 percent, 37.0 percent, 9.7 percent, and 15.2 percent year-over-year increases, respectively. In the first-half of 2022, total construction expenditures were \$919.9 billion (SAAR), which was \$155.0 billion more than the first-half of 2019 (\$598.5 billion) – a 20.3 percent increase. Single-family construction spending was \$472.3 billion (16.2 percent more than 2021), multi-family expenditures were \$100.5 billion (0.3 percent less than 2021), and R&R was 347.2 billion (34.6 percent more than 2021) (Census 2022e). Harvard University’s Leading Indicator of Remodeling Activity (2022) estimated expenditures to “soften” for R&R in 2023 to \$446 billion in Quarter Two. The fourth quarter of 2022 estimate is \$431 billion.

Residential R&R currently utilizes a greater quantity of wood products than new housing construction. Expenditures on wood products are affected by the types of expenditures in any given year. R&R extends to varied projects, some that require substantial amounts of solid wood products and other projects that do not. Three major repair and remodeling activity types exist: maintenance and repairs, additions and alterations, and major replacements. Maintenance and repair expenditures are for upkeep of a residential property rather than additional investment in the property. Addition and alteration expenditures are for enlargements or improvements to or within the residential structure, or the property. Major replacements are construction improvements to the property and are closely related to maintenance and repair.

Nonresidential expenditures are being affected by work-at-home, lingering COVID-19 effects, electronic commerce, and over saturation of commercial buildings. Nonresidential construction is typically segmented into several categories. Of interest to this report are the commercial, conservation and development, educational, health care, lodging, manufacturing, office, and religious construction subsectors, which comprise the largest markets for wood products in the nonresidential construction sector. These nonresidential subsectors were estimated at \$823.5 billion (SAAR) in 2021, a 3.7 percent (\$31.8 billion) decline from 2020. In the first-half of 2022, total spending for these subsectors has increased 1.8 percent: \$842.1 billion from \$827.5 billion (Census 2022e).

Overview of United States of America Forest Products Markets

With ample forest resources and prodigious production capacity, the United States of America is the world’s leading producer and largest single-consumer of wood products; the United States of America continues to play an essential role in global forest products markets.

The United States of America is the world's greatest producer of industrial roundwood (i.e., wood in rough form; whole and/or chipped logs used in industrial manufacturing) (19 percent), wood pellets (17 percent), and pulp for paper (26 percent). The United States of America is the second leading producer of sawnwood (17 percent), wood-based panels (9 percent), recovered paper (18 percent), and paper and paperboard (17 percent). The United States of America is a leading consumer of industrial roundwood (18 percent), sawnwood (22 percent), wood-based panels (13 percent), recovered paper (12 percent), and paper and paperboard (16 percent) (Food and Agriculture Organization of the United Nations (FAO) 2022).

The paper and paperboard industry consumed 204.7 million metric tons (MT) of pulpwood in 2021, which was 1.2 percent more than the 2020 consumption (202.3 million MT). Pulpwood for wood pulp production is primarily via domestic production and imports from Canada (American Forest & Paper Association (AF&PA 2022a)). In 2021, domestic paper and paperboard production was 67.5 million MT, 1.9 percent greater than reported for 2020 (AF&PA 2022a, b). This increase was led by growth in packaging materials with a 5.8 percent production expansion between 2020 and 2021, while other paper categories declined. The paper and paperboard, and wood products, industries contributed \$298.1 billion to the total United States of America manufacturing GDP in 2021 (17.5 percent of 'all' United States of America manufacturing industries). The paper products sector added \$180.3 billion and wood product manufacturing sectors added \$117.7 billion (not seasonally adjusted) (Census 2022f).

In 2021, the United States of America wood industry manufactured 63,417 thousand m³ of softwood lumber (WWPA 2022a); 15,930 thousand m³ of hardwood lumber (*Hardwood Market Report* (HMR) 2022a); 21,217 thousand m³ of structural panels; 569 thousand m³ of engineered wood (i.e., glued laminated timber (Glulam) and laminated veneer lumber (LVL)); 565 million linear feet of I-joists (APA-The Engineered Wood Association (APA) 2022); and 10,364 thousand m³ of nonstructural panels (Composite Panel Association (CPA) 2022, USDA Forest Service estimates (USDA FS) 2022) (Table 2).

There are four-major indexes for forest products: furniture and related products, paper products, wood products, and total industrial production (Table 1):

1. Furniture and related products are key indicators for higher-grade hardwood lumber. This index increased 3.2 percent from 2020 to 2021 (2020: 85.4, 2021: 88.1) (FOMC 2021g, Table 1D).
2. Paper products are an important gauge for pulpwood and wood residues, as well as recycled fiber. This index increased 1.7 percent from 2020 to 2021 (2020: 93.9, 2021: 95.5) (FOMC 2021g, Table 1C)
3. Wood products are an important indicator for the overall forest products industry. This index increased 5.5 percent from 2020 to 2021 (2020: 95.9, 2021: 101.2) and was 101.2 in August 2022 (FOMC 2021g, Table 1C).
4. Industrial production and capacity utilization (G.17) are a principal indicator for pallet lumber, containerboard, and discrete grades of paper. This index increased 4.9 percent from 2020 to 2021 (2020: 95.3, 2021: 100) (FOMC 2021f).

As presented in Table 1, three of these indices are projected to increase in the near term with 2024 forecasted levels up 0.7 percent for paper products, 11.8 percent for furniture and related products, and 2.7 percent for industrial production, compared to 2021 levels. Wood product index is projected to decrease 1.1 percent by 2024 from the 2021 level.

Timber Products Production, Trade, and Consumption Statistics and Projections

The United States of America solid wood and biomass products consumption, production, and foreign trade data are collected monthly and annually by United States of America governmental agencies and industry associations. This information provides an overview of wood consumption and production sectors of the United States of America economy, and it indicates change over time. The information does not provide detailed information required to assess in-depth changes of consumption and production for discrete end-use markets. In this report, markets of interest include new housing construction (single-family, multi-family, and manufactured/modular); repair and remodeling of existing residential structures; low-rise nonresidential buildings and ‘other’ nonresidential construction types; furniture and other manufactured wood products; and packaging and shipping. These end-use markets typically

account for 80- to 90-percent of all solid wood products consumption. The market share data presented are based on results obtained from analysis of limited public and private research reports. These data are related to readily available, annual economic indicator data specific to each end-use market. Consumption was estimated for all end uses, and market shares developed. These estimates provide consistent and reliable observations of solid wood products markets in the United States of America (McKeever and Howard 2011).

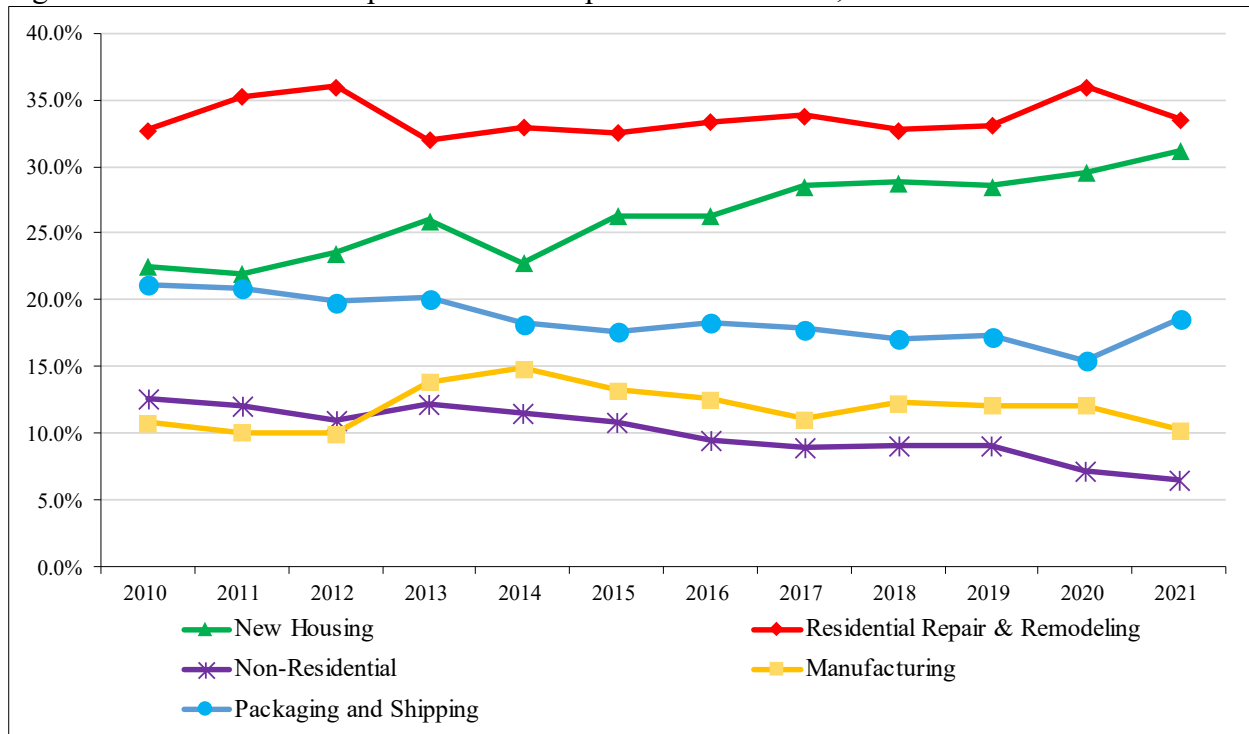
The following section provides data estimates and forecasts, and narratives from industry professionals for leading sectors and sub-sectors of the United States of America wood product's markets. Estimates and forecasts for forest and wood products are presented in Table 2. The percentage of wood products consumption by industry sector is presented in Table 3. In this report the majority of volumes are reported in nominal 1,000 m³ volumes, with the exceptions being I-joists (lineal feet) and pulpwood (metric tons). Data for 2021 are estimates, and 2022 and 2023 are USDA FS forecasts.

United States of America Wood Product's Markets

With plentiful forest resources and exceptional production capacity, the United States of America is the world's leading producer and largest consumer of wood products. As such, the United States of America continues to play a significant role in global forest products markets. The United States of America is the largest consumer of paper and paperboard products and the largest producer of industrial roundwood, wood pellets, and pulp for paper; the second leading producer of sawnwood, wood-based panels, recovered paper, and paper and paperboard; and is the leading consumer of industrial roundwood, sawnwood, wood-based panels, recovered paper, and paper and paperboard (FAO 2022).

Figure (Fig.) 1 exhibits combined market shares, on a value basis, for solid wood products for the years 2010 to 2021. Production estimates for United States of America forest and wood products for the years 2021–2023 are exhibited in Table 2. The tables exhibit reported data for the years 2020 and 2021, estimates for 2022, and forecasts for 2023.

Figure 1. Solidwood timber products consumption market shares, 2011-2021.



Sources: AF&PA 2022a, APA 2022, CPA 2022, HMR 2022a, WWPA 2022a.

Sawn Softwood

The largest value-added market for sawn wood products, including softwoods, is the new housing construction sector. Since 2010, the housing sector’s consumption (new construction plus R&R) of sawn softwood has increased market share, from 52.4 percent in 2010 to 75.8 percent in 2021 (32,703 thousand m³) (WWPA 2022a) (Fig. 1; Table 2). United States of America housing construction increased minimally during the first-half of 2022, as single-family starts were 0.25 percent more than reported for the first-half of 2021 (Census 2022a). Correspondingly, the R&R sector has been a substantial consumption sector of sawn softwood, with apparent consumption at 34,409 thousand m³ (20.0 billion nominal board feet (bf)) in 2021 (WWPA 2022a). Another positive factor supporting future sawn softwood markets is that new single-family housing units have been under-built for the past decade in relation to population growth.

The WWPA reported United States of America sawn softwood production of 63,417 thousand m³ (37.3 billion nominal board feet (bf)) in 2021, a year-over-year increase of 1.1 percent from 2020 (62.7 thousand m³ nominal). The South produced 35,584 thousand m³, a 0.7 percent improvement from 2020. The West produced 24,990 thousand m³, a 1.7 percent increase

from 2020 and the remaining regions of the United States of America produced 2,842 thousand m³, a 0.7 percent improvement from 2020. In the first-half of 2022, United States of America softwood lumber production decreased 0.8 percent (32,254 thousand m³) from the same period in 2021 (32,514 thousand m³) (WWPA 2022b).

Table 2. Prospects and statistics for forest and wood products, 2021 – 2023^{a, b}

Sawn Softwood (Coniferous)				Sawn Hardwood (Deciduous)			
	2021	2022 ^b	2023 ^b		2021	2022 ^b	2023 ^b
Production	63,417	64,178	64,820	Production	15,930	23,629	19,780
Imports	37,404	36,486	36,851	Imports	593	500	525
Exports	2,896	2,727	2,890	Exports	3,317	2,500	2,650
Consumption	97,925	97,937	98,781	Consumption	13,206	21,629	17,655
Oriented Strandboard (OSB)				Coniferous Plywood (Softwood)			
	2021	2022 ^b	2023 ^b		2021	2022 ^b	2023 ^b
Production	13,839	14,040	14,243	Production	7,378	7,489	7,601
Imports	6,147	6,236	6,326	Imports	2,137	2,169	2,202
Exports	182	185	188	Exports	466	473	480
Consumption	19,804	20,091	20,381	Consumption	9,049	9,185	9,323
Hardboard				Medium Density Fiberboard (MDF)			
	2021	2022 ^b	2023 ^b		2021	2022 ^b	2023 ^b
Production	499	504	509	Production	3,882	3,901	3,921
Imports	252	255	258	Imports	2,552	2,565	2,578
Exports	248	250	253	Exports	422	424	426
Consumption	503	509	514	Consumption	6,012	6,042	6,073
Particleboard				Roundwood Pulpwood			
	2021	2022 ^b	2023 ^b		2021	2022 ^b	2023 ^b
Production	5,983	6,073	6,164	Production	185,734	187,318	186,526
Imports	1,443	1,465	1,487	Imports	12	77	44
Exports	445	452	459	Exports	110	87	113
Consumption	6,981	7,085	7,191	Consumption	185,636	187,308	186,457

^a All volumes are reported in thousand m³

^b USDA FS estimates.

Sources: AF&PA 2022a; APA 2022; CPA 2022; HMR 2022a; United States of America Department of Agriculture (USDA), Foreign Agricultural Service (USDA FAS) 2022, WWPA 2022a.

To prevent release of confidential information, hardwood plywood is not reported.

The United States of America sawn softwood imports increased 5.4 percent in 2021 to 27,197 thousand m³ (15,998 million nominal bf). Canadian exports to the U.S constituted 85.6 percent of all United States of America sawn softwood imports (23,288 thousand m³) (WWPA 2022a, b). In the first-half of 2022, United States of America softwood lumber

imports decreased 8.1 percent (13,379 thousand m³) from the same period last year (14,249 thousand m³). In 2022, sawn softwood lumber exports were 2,448 thousand m³, a 28.8 percent increase from 2020 (1,901 thousand m³). United States of America sawn softwood lumber exports, in the first-half of 2022, increased 7.7 percent (1,139 thousand m³) from the same period last year (1,057 thousand m³) (WWPA 2022a, b). Apparent consumption, in 2021, was 88,043 thousand m³, 1.3 percent less than in 2020. By sector, new residential construction consumed 32,703 thousand m³, R&R utilized 34,049 thousand m³, industrial and other consumed 14,156 thousand m³, and non-residential construction utilized 7,135 thousand m³ in 2021 (WWPA 2021a).

Softwood Log Trade

United States of America softwood log exports were 2,865 thousand m³ in 2021, an increase of 30.2 percent in 2020 from 2,200 thousand m³. In the first-half of 2022, United States of America softwood log exports decreased 20.8 percent (1,124 thousand m³) as compared to the first-half of 2021 (1,420 thousand m³) (WWPA 2021b). The decline in exports to China was a principal factor in the overall decrease.

United States of America softwood log imports typically have been a minor constituent of United States of America softwood consumption, with imports ranging from 0.04 percent to 0.96 percent of total United States of America softwood utilization (1965 to 2020). United States of America softwood log imports increased 8.5 percent to 179 thousand m³ in 2021 from 2020 (165 thousand m³) (WWPA 2022a). United States of America softwood log imports increased 5.4 percent in the first-half of 2022, to 117 thousand m³ as compared to the same 2021 time-period (WWPA 2021b, c).

Sawn Hardwood

The United States of America hardwood resource comprises 46 percent of the total United States of America live tree volume with nearly 80 percent of the eastern deciduous forest owned by private landowners (Oswalt et al. 2019). The number of United States of America temperate hardwood species exceed those available from other world regions. The United States of America has an abundant and growing hardwood resource, well-developed transportation systems, numerous seaports, a modern hardwood sawmilling industry (at larger facilities), and

very few impediments restricting hardwood log and lumber exports. These, and other factors, afford the United States of America a comparative advantage in hardwood lumber production.

From 1990 to 2000, Canada was the largest export market for the United States of America sawn hardwood, on a volume basis. By 2009, China imported the largest share of United States of America hardwood lumber at 45 percent. Similarly, on a value-basis, Canada was the most important export market from 1990 to 2000. China was the largest value-based importer by 2013 (Luppold and Bumgardner 2020).

Sawn hardwood production was 15,930 thousand m³ (nominal) in 2021, 19.5 percent more than produced in 2020 (13,332 thousand m³). As of August 2022, production had increased to 19,293 thousand m³. In 2021, apparent consumption was 17,901 thousand m³, 3.4 percent more than in 2020 (HMR 2022a, b).

Sawn hardwood lumber imports decreased 3.6 percent in 2021 to 593 thousand m³ relative to 2020 and sawn hardwood exports increased 8.1 percent, to 3,317 thousand m³ as compared with 2020. In the first-half of 2022, sawn hardwood lumber imports increased 38.8 percent to 415 thousand m³ as compared to the same 2021 time-period. United States of America sawn hardwood lumber exports, in the first-half of 2022, increased 11.6 percent (1,880 thousand m³) as compared to the first-half of 2021 (thousand m³) (USDA FAS 2022).

Hardwood Log Trade

United States of America hardwood logs also are a valuable United States of America export product; however, hardwood log imports to the United States of America are minor in comparison. From 1990 to 2013, Canada imported the most United States of America logs on a volume basis. In 1990, Japan imported the most logs on a value basis, and from 2000 to 2013, Canada was the leader in log imports by value (Luppold and Bumgardner 2020).

Hardwood log exports increased by 23.8 percent in 2021 (2,024 thousand m³) as compared with 2020 (1,634 thousand m³). Hardwood log exports in the first-half of 2022 increased in the first-half of 2022 by 7.6 percent (127 thousand m³), when contrasted to the first-half of 2021 (USDA FAS 2022).

Historically, Canada has provided nearly 95 percent of total logs imported to the United States of America. Hardwood log imports in 2021 (199 thousand m³) declined by 33.4

percent when contrasted to 2020. Imports decreased by 50.5 percent (127 thousand m³) through the first-half of 2022, when compared to 2021's first-half (USDA FAS 2022).

Pulpwood

The pulp, paper, and paperboard industries are the primary drivers for pulpwood demand. For the past few decades, demand for several categories of papers have gradually declined. Since the advent of electronic media, demand for newsprint, printing (including glossy paper for magazines), and writing paper demand has notably declined. Conversely, the upsurge of on-line shopping (i.e., e-commerce) has enhanced the demand for containerboard products.

In 2021, paper and paperboard production increased 1.9 percent from its 2020 level, at 67.5 million MT. This increase was due to greater production in packaging materials, which expanded 5.8 percent in 2021. Pulpwood consumption by the pulp, paper, and paperboard industry was 1.2 percent greater than in 2020 year-over-year, with the majority of the feedstock coming from softwood roundwood (AF&PA 2022b). The number of paper and paperboard mill closures was reported at 22 in 2020, with three additional facility closures scheduled by end of 2022 (AF&PA 2022b).

Wood Furniture

Historically, United States of America furniture manufacturing was one of the larger consumers of grade hardwood lumber (grade is based on quality, given by size and number of clear pieces a board can produce). The golden age of furniture making in the United States of America was from the early 1970's through the mid-1990s. Furniture manufacturing off-shoring, then and now, has multiple contractionary effects on the United States wood products sector, one being declines in sawn hardwood lumber production and consumption. In 1999, 6.14 million m³ of sawn hardwood lumber was utilized by United States of America furniture industries; 1.00 million m³ in 2013; and 1.08 million m³ in 2020 – a 468.9 percent decline from 1999 (HMR 2021b).

Smith Leonard (2021) reported that in July 2022, new furniture orders decreased 37 percent (1,850 million) from July 2021 (2,917 million). Furniture shipments also declined 6 percent year-over-year (2,549 million) from July 2021 and order backlogs were 24.6 percent (6,091 million) less than July 2021. They stated, “When 2022 is compared to 2021, it is clear business has not

only slowed as we expected after the fantastic growth we had in 2020 and 2021 but also the slowdown in the economy as a whole has clearly affected the levels of business today”.

Structural Panels

Structural panels are value-added products commonly used in residential construction. Softwood plywood and OSB are structural panel products and are available in three classifications: Exterior, Exposure I, and Interior. These classifications provide a measure of moisture resistance (APA 2021, 2022).

Total structural panel production (softwood plywood and OSB) in 2021 was 21,217 thousand m³, a 0.6 percent increase from 2020 (Table 2). In the first-half of 2022, structural panel production was 10,506 thousand m³, a 2.6 percent decrease from 2021. Structural panel imports increased in 2021 (8,227 thousand m³) by 17.0 percent as compared with 2020 (7,030 thousand m³) and exports decreased 1.0 percent to 691 thousand m³ in 2021. In the first-half of 2022, structural panel imports increased by 12.4 percent (4,511 thousand m³) from 4,013 thousand m³ in 2021. Exports decreased by 9.1 percent (292 thousand m³) as compared to the first-half of 2021 (330 thousand m³) (APA 2021, 2022).

In 2021, 13,839 thousand m³ of OSB were produced, a 0.9 percent year-over-year increase (Table 2). Apparent OSB consumption totaled 19,851 thousand m³ in 2021, a 6.7 percent increase from 2021. In the first-half of 2022, OSB production was 6,862 thousand m³, a decrease of 1.3 percent from the first-half of 2021 (APA 2021, 2022). OSB imports increased in 2021 by 21.4 percent (6,147 thousand m³) as compared with 2020 (4,065 thousand m³). OSB exports decreased in 2021 by 10.3 percent (182 thousand m³) as compared with 2020 (203 thousand m³) (Table 2) (USDA FAS 2022). In the first-half of 2022, OSB imports increased by 13.6 percent (3,389 thousand m³) from 2,982 thousand m³ in 2021, and exports declined 46.1 percent to 58 thousand m³ as compared to the first-half of 2020 (USDA FAS 2022).

In 2021, 7,378 thousand m³ of softwood plywood were produced, a 0.1 percent year-over-year increase. Apparent softwood plywood consumption totaled 9,049 thousand m³ in 2021, a 0.3 percent increase from 2020 (Table 2). In the first-half of 2022, softwood plywood production was 3,644 thousand m³, a 4.9 percent decrease from the first-half of 2021 (APA 2021, 2022). Softwood plywood imports increased in 2021 by 9.3 percent (2,137 thousand

m³) as compared with 2020 (1,956 thousand m³). Softwood plywood exports increased in 2021 by 50.6 percent (466 thousand m³) as compared with 2020 (296 thousand m³) (Table 2). In the first-half of 2022, softwood plywood imports increased by 4.7 percent (1,100 thousand m³) from 1,051 thousand m³ in 2021, and exports declined 3.7 percent to 219 thousand m³ as compared to the first-half of 2020 (USDA FAS 2022).

Engineered Wood Products

Engineered wood products include Glulam, I-joists, and Laminated Veneer Lumber (LVL). In 2021, 495 thousand m³ of Glulam was produced, a 10.3 percent increase from 2020 (449 thousand m³). Glulam production increased 1.2 percent in the first-half of 2022, from 271 thousand m³ in 2021 to 275 thousand m³ in 2022 (APA 2021, 2022).

I-joist production was 565 million linear feet (LF) in 2021, a 15.5 percent increase from 2020 (489 million LF). I-joist production decreased 5.9 percent in the first-half of 2022, to 271 million LF from 288 million LF in 2021 (APA 2021, 2022).

LVL production was 74 thousand m³ in 2021, a 7.1 percent increase from 2020 (69 thousand m³). LVL production in the first-half of 2022 was 38 thousand m³, a decrease of 0.3 percent from the first-half of 2021 (APA 2021, 2022).

Mass timber products are a growing market as they utilize cross laminated timber (CLT) and mass plywood building components. Mass timber is a term used for innovative wood product systems that utilize large, solid wood panels for wall, floor, and roof construction. Engineered wood panels can be used in CLT, which include dowel-laminated timber, glue-laminated timber, nail-laminated timber, and mass plywood systems. Mass timber products can be used to build traditional houses, office buildings, and high-rise structures (Think Wood 2021). The Softwood Lumber Board (2021) projects nearly 11.8 billion m³ of mass timber to be consumed in the United States of America residential and non-residential building construction sectors per year by 2035 (with a range of 1.9 to 13.7 billion m³ per year). Previous calculations by the USDA Forest Service indicate that since the adoption and fabrication of mass timber buildings in Canada, Europe, and the United States of America – these structures have consumed about one percent of total softwood production in these respective regions.

Hardwood Plywood

Demand for hardwood plywood in the United States depends, primarily, on the Nation's production of down-stream products that include kitchen cabinets, recreational vehicles, manufactured housing, fixtures, underlayment, and furniture. Cabinets are an especially important end-use, with large quantities of domestically produced and imported hardwood plywood consumed in cabinet manufacture (U.S. International Trade Commission 2017).

In the first-half of 2021, hardwood plywood imports increased 41.2 percent to 2,185 thousand m³ as compared to the same 2020 time-period (1,541 thousand m³). United States of America hardwood plywood exports, in the first-half of 2021, increased 19.5 percent (58 thousand m³) as compared to the first-half of 2020 (48 thousand m³) (USDA FAS 2022).

Particleboard and Medium Density Fiberboard

Particleboard and MDF account for well over one-half of all nonstructural panels consumed in the United States of America (CPA 2021). Particleboard production increased 15.5 percent in 2021 (5,983 thousand m³), as compared to 2020 (5,180 thousand m³) (Table 2) (CPA 2022). Particleboard imports decreased 0.4 percent in 2021, to 1,443 thousand m³. Particleboard exports increased 29.8 percent in 2021, to 445 thousand m³. In the first-half of 2022, particleboard imports decreased 20.7 percent to 623 thousand m³ as compared to the same 2020 time-period (785 thousand m³). The United States of America particleboard exports, in the first-half of 2022, increased 14.3 percent (239 thousand m³) as compared to the first-half of 2021 (209 thousand m³) (USDA FAS 2022).

MDF production was 3,882 thousand m³, an increase of 5.5 percent from 2020 (3,680 thousand m³) (Table 2) (CPA 2022). In 2021, MDF imports increased 10.9 percent (2,552 thousand m³) from 2020 (2,272 thousand m³). MDF exports increased 16.1 percent (422 thousand m³) from 2020 (364 thousand m³). In the first-half of 2022, MDF imports increased 12.3 percent to 1,455 thousand m³ as compared to the same 2020 time-period (1,292 thousand m³). United States of America MDF exports, in the first-half of 2022, increased 30.5 percent (265 thousand m³) as compared to the first-half of 2021 (203 thousand m³) (USDA FAS 2022).

Hardboard

According to CPA (2022), 499 thousand m³ of hardboard were produced in 2021 and 458 thousand m³ in 2020; a 9.1 percent increase. In 2021, 252 thousand m³ were imported, a 15.2 percent increase from 2020 (219 thousand m³). In the first-half of 2022, hardboard imports increased 9.9 percent to 126 thousand m³ as compared to the same 2021 time-period (114 thousand m³). In 2021, 248 thousand m³ were exported, a 7.7 percent increase from 2020 (230 thousand m³) (Table 2). United States of America hardboard exports, in the first-half of 2022, decreased 7.9 percent (125 thousand m³) as compared to the first-half of 2021 (135 thousand m³) (USDA FAS 2022).

Fuelwood

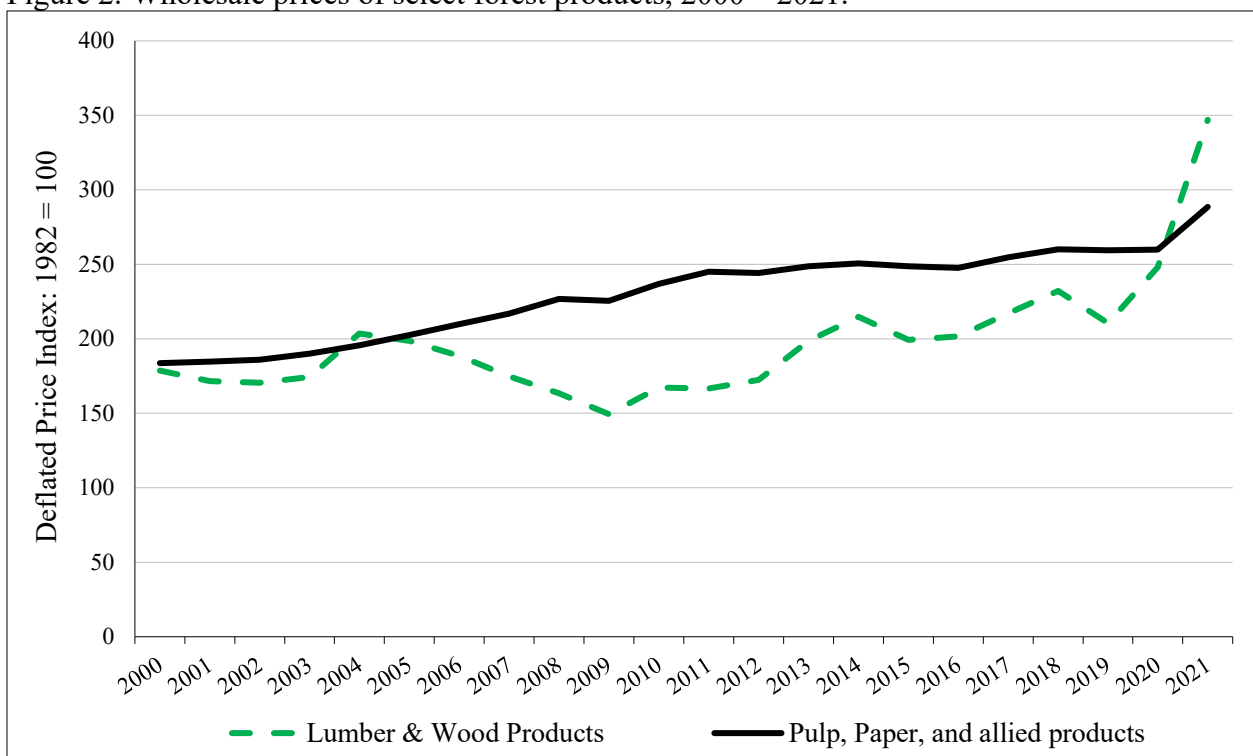
Fuelwood was the primary source of nearly all of the United States of America's energy needs up to the 1870's, and wood products were used for heating (U.S. Energy Information Administration (EIA) (2022a)). Households are the second largest consumer of wood for energy, with most consumption aimed for heating and some use for aesthetic enjoyment of a fire. The 2021 EIA (2022b) data indicates 464 trillion British Thermal Units (TBtu) of fuelwood was used by the residential sector, representing 4 percent of the residential end-use energy consumption. Although the 2021 residential fuelwood consumption represents a 5.3 percent increase from 2020 levels (441 TBtu), consumption was still less than the 546 TBtu reported for 2019 (EIA 2022, monthly energy Review, Table 10.2a). Residential fuelwood consumption in the first half of 2022 was 4.3 percent more than the same period in 2021 (240 and 230 TBtu, respectively). Long-term projections by EIA (2022-Annual Energy Outlook) indicate a steady decline in fuelwood use by the residential market, with an approximate 32 percent drop to 310 TBtu by 2050.

Numerous forest products manufacturing facilities use mill residues rather than roundwood for fuel and a small percentage of roundwood (i.e., fuelwood) is used for electric power production. Fuelwood consumption for industrial heat and/or electricity production currently is limited by the low-cost of natural gas and coal (although coal is a declining source of energy). Renewable fuel standards, and other biomass-related energy policies, may not increase the growth rate for fuelwood production and consumption; yet the consumption of other forms of wood energy may increase – such as wood pellets.

Forest Products Prices

Forest products wholesale prices vary across all wood producing sectors, including lumber and wood products (e.g., lumber and wood-based panels) and pulp and paper products. Between 1993 and 2000, the producer price index (PPI) of lumber and wood products (LWP) was relatively stable, averaging 183.3 per year. Between 2000 and 2021 the LWP PPI displayed higher volatility, reaching a high of 347 in 2021 (not seasonally adjusted) (U.S. Bureau of Labor Statistics (BLS) 2022).

Figure 2. Wholesale prices of select forest products, 2000 – 2021.



Source: BLS 2022.

The PPI for LWP had an overall decrease of 16.6 percent between 2000 and 2009 with the lowest point observed in 2009 at 149.4. The Great Recession's effect on new building construction, furniture manufacture, and remodeling were major factors for the decline in 2009. From 2010 to 2021 the LWP index has fluctuated, with an overall upward trend, reaching a record reading index of 347.0 by end of 2021 (Fig. 2). The LWP PPI reading in 2021 was primarily due to COVID-19 after-effects. Many mills shuttered due to the pandemic and not foreseeing future demand. It took time to ramp up operations,

transportation issues (lack of rail cars and trucking), and unexpected rise in demand resulted in soaring lumber and forest product prices.

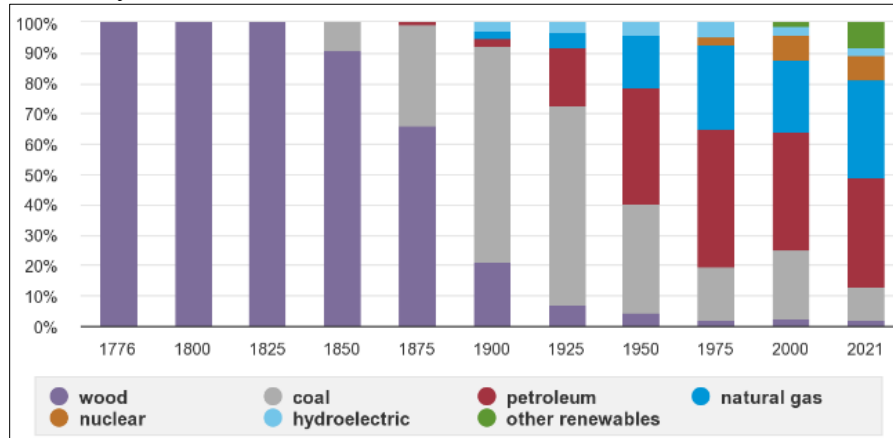
The PPI for pulp, paper, and allied products (PPA) also has fluctuated since 2000, however, with less variability than the LWP index. The PPA index was 183.7 in 2000 and finished 2021 with a 288.6 reading (BLS 2022; Fig. 2). Many paper and paper products are essential for daily living and therefore production prices remained relatively steady. This is one reason for less variability in the PPI PPA.

Energy Policy Initiatives

Wood Energy

Until the 1870's, woody materials were the source of nearly all of the United States of America's energy needs, and wood products were utilized for cooking and lighting, and home and industrial heating needs. In 2021, 2.1 percent of total energy consumption was derived from wood (Fig. 3) and 2,207.3 trillion BTUs of wood energy were produced (EIA 2022a). Beginning with the Public Utility Regulatory Policies Act (PURPA) of 1978, woody materials for energy production received renewed interest. Since then, public policy has been focused on promoting biomass for electricity production; in recent years there has been a shift to greater support for the production of liquid fuels for transport (i.e., biodiesel and jet fuel). The wood energy market in the United States of America is composed of four major sectors: industrial (64.0 percent), residential (22.0 percent), electricity (10.0 percent), and commercial (4.0 percent) (EIA 2022b). The industrial sector represents the wood products, pulp and paper industry; and the quantity of wood energy it consumes has been mainly linked to wood product output rather than to public policies. The other three-sectors are where public policy at the state and federal level is focused.

Figure 3. Total United States of America energy consumption shares by major sources in selected years, 1776 – 2021.



Note: Wood includes wood and wood waste; other renewables include biofuels, geothermal, solar, and wind. Source: EIA (2022a).

The federal incentives introduced since 2004 include: a) the Renewable Energy Production Tax Credits, b) Clean Renewable Energy Bonds, c) Qualified Energy Conservation Bonds, and d) Investment Tax Credits (Aguilar 2011, Page-Dumroese *et al.* 2022). These incentives are tailored to the electricity generation sector. Recent publications suggest that open-loop biomass plants also are eligible (i.e., not relying on bio-energy dedicated crops, but rather on material harvested from working forests and industry co-products) (Howard and Liang 2019). The Biomass Crop Assistance Program (BCAP) policy was established to aid in meeting United States of America Federal Renewable Fuel Standards. BCAP mandates increased national blended biofuel production (excluding ethanol from corn starch) at 36 billion gallons by 2022, with 21 billion gallons in the form of advanced biofuels (Spaeth 2008).

The United States of America wood pellet manufacturing sector’s expansion continues owing in part to steady domestic and increasing foreign demand. As such, industrial pellet production capacity for exports to the European Union (EU) and other countries has risen. EU bioenergy supply and demand are influenced by policies that seek a reduction of greenhouse gas emissions (GHG) and do not threaten existing bioenergy feedstock production. United States of America industrial pellet production capacity for exports (utility grade quality) accounted for 84 percent of total capacity in 2021 (Forisk 2022). Major export markets are the United Kingdom and the European Union with 72 and 22 percent of 2021 total exports by volume, respectively. Wood pellet demand from Europe is influenced by

policies that seek a reduction of greenhouse gas emissions (GHG) and do not threaten existing bioenergy feedstock production.

As of June 2022, EIA (2022c) reported 80 active densified biomass manufacturing facilities with capacity ≥ 9.07 thousand MT in the United States of America: 31 in the East (capacity: 1,728 thousand MT per year); 33 in the South (9,299 thousand MT per year); and 16 in the West (735 thousand MT per year). Total production of wood pellets was 8,447 thousand MT in 2021, a 0.4 percent increase from 2020 (8,411 thousand MT). Production by the first half of 2022 was 15.4 percent higher than that observed during first half of 2021.

The United States of America International Trade Commission (USITC 2022) reports 7,447 MT of wood pellet exports in 2021, a 2.6 percent increase from 2020. In the first-half of 2022, exports reached 4,318 thousand MT, a 20.7 percent increase from first half of 2021. Major markets as of end of June of 2022 remained the United Kingdom with 63.8 percent of total exports, followed by Netherlands and Denmark with 16.1 and 7.2 percent of total exports, respectively (USITC 2022). Rising prices for oil, gas, and electricity could result in higher domestic residential demand for wood energy and Europe's ban on wood pellets from the Russian Federation could likely increase demand for United States of America pellet exports (Voegele 2022).

Biomass Energy

Biomass energy includes wood and wood processing residues (e.g., firewood, wood pellets, wood chips, lumber and furniture mill sawdust and waste, and black liquor from pulp and paper mills); agricultural crops and residue materials (e.g., corn, soybeans, sugar cane, switchgrass, woody plants, algae, and crop and food processing residues); biogenic materials in municipal solid waste (e.g., paper, cotton, and wool products; food; and yard and wood residues); and animal manure and human sewage. In 2021, biomass provided nearly five-quadrillion (quads) of British thermal units (Btu) of energy and 5.1 percent of the total primary energy consumed in the United States of America. This percentage is comprised of 44.0 percent wood and wood-derived biomass, 47.4 percent from biofuels (mainly ethanol), and 8.6 percent derived from municipal waste biomass (EIA 2022a).

The electricity producing sector is a major beneficiary of federal public policy support, and is undergoing analysis due to GHG emissions. Power generation using woody feedstock is

considered GHG carbon-neutral; however, this postulation is still being debated. Though, the Biomass Power Association (2020) stated that 30 million tons of carbon dioxide are removed annually by the use of biomass energy.

In 2018, the United States of America Environmental Protection Agency ((EPA) 2020a) issued the following policy statement, “EPA’s policy in forthcoming regulatory actions will be to treat biogenic CO₂ emissions resulting from the combustion of biomass from managed forests at stationary sources for energy production as carbon neutral.” The potential implementation of this carbon neutral policy is viewed as a positive development by several in the forest products industry. The EPA (2020b) “finalized volume requirements under the Renewable Fuel Standard (RFS) program for 2020 for cellulosic biofuel, biomass-based diesel, advanced biofuel, and total renewable fuel, and biomass-based diesel for 2021.” Cellulosic biofuel targets require 0.59 billion gallons of production (BGD) in 2020, increasing from 0.42 billion gallons in 2019. Biomass-based diesel is 2.43 BGDs in 2020 and 2021; advanced biofuel is 5.09 BGDs in 2020; and renewable fuel is 20.09 BGDs in 2020.

The United States of America EIA projects biomass production of 4.86 quads in 2022, a 3.4 percent increase from 2021. From 2022 onward, production is forecasted to increase, peaking at 5.56 quads in 2050. The residential sector consumed 0.46 quads in 2021 and the forecast indicates consumption at 0.31 quads in 2050. The commercial sector consumed 0.12 quads in 2021 and is projected to consume 0.12 quads in 2050 (EIA 2022c).

Softwood Lumber Agreement

The Canada–United States of America softwood lumber disagreement had its beginnings in 1982. United States of America softwood lumber producers claim/claimed that the Canadian softwood lumber industry’s access to Crown timber is subsidized (i.e., through reduced stumpage fees) by their respective federal and provincial governments. Between 1982 and 1996, United States of America producers sought relief through the United States of America Department of Commerce, United States of America International Trade Commission, and the World Trade Organization (WTO). Canadian producers have appealed to NAFTA’s Chapter 19 dispute-settlement mechanism and the WTO. In 1986, a Memorandum of Understanding (MOU) between Canada and the United States of America created phased in tariffs. Canada withdrew from the MOU in 1991; however, the United States of America applied countervailing duties

from 1992 to 1996. The Softwood Lumber Agreement (SLA) was enacted in 1996 and there were several iterations to the initial SLA before 2015.

The most recent SLA was in effect from 2006-2015 and was terminated in October 2015, resulting in Canadian producers having access to United States of America markets without the imposition of tariffs. In this SLA, taxes and/or quotas were implemented on a sliding scale. In this SLA, British Columbia and Alberta chose higher taxes with no quotas and Quebec, Ontario, Manitoba, and Saskatchewan chose lower taxes with volume quotas (Random Lengths 2021). On August 4th, 2022, the United States of America Department of Commerce announced the results of the third administrative reviews for sawn softwood products imported from Canada. The countervailing duty was reduced from an average of 17.9 percent to 8.6 percent (Federal Register 2022). On August 29, 2022 Canada filed notice that it will challenge the results of the third administrative reviews of the anti-dumping and countervailing duty orders on Canadian sawn softwood (Ellson 2022).

Summary

The United States of America began 2021 on an improving economic foundation. However, the Russia-Ukraine war, inflation, and the FOMC's directive to curb inflation is influencing overall markets. The FOMC revised their 2022 United States of America GDP forecast to 0.2 percent and the FRBP-SPF projected it at 1.6 percent. The United States of America economy is uncertain at present, with the United States of America housing market tenuous at present.

U.S housing markets continued their steady recovery in 2021 and into the first-half of 2022. A lingering pandemic, economic policy, and global tensions have constrained new housing construction and sales, and existing sales. In 2021, new construction and R&R were influenced by record forest products prices, labor shortages in several industries, and the unavailability of products necessary to complete houses (e.g., appliances, heating and plumbing products, and windows and doors). Total starts were 16.0 percent and single-family starts were 13.7 percent greater than reported in 2020. New house sales were 6.2 percent less in 2021 than reported for 2020. Total residential construction spending increased 25.0 percent year-over-year; single family expenditures increased 37.0 percent, multi-family spending increased 9.7 percent, and residential repair and remodeling's volume increased by 15.2 percent in 2021.

Aggregate housing construction and sales improvement is projected to have a positive effect on many wood products markets. In 2021, several wood product categories production and consumption volumes were negligibly less than reported for 2020 – other categories reported moderate declines. Softwood lumber production and consumption both increased year-over-year in 2021. Structural and non-structural panel products and hardwood plywood consumption increased in 2021 primarily due to plants reopening, increased logistics, and demand. Wood pellet production and sales continue to increase.

Sawn hardwood production and consumption increased in 2021 and in the first-half of 2022; paper and paperboard production remain in a long decline; pulpwood consumption and furniture production increased in 2021. Softwood lumber imports and exports increased in 2021 as well.

In summary, the lingering effects of the COVID-19 pandemic remain as a factor affecting United States of America economic and wood products activity in 2021 and 2022. For 2022 and 2023, the Russia-Ukraine war and the Federal Reserve Board of Governors decision to control inflation are affecting forest products markets, production, and consumption. This also holds true for world economies. Thus, global forest products demand is in flux as result of the Russia-Ukraine war, pandemic after-effects, trade tensions, events in nature, and geopolitical issues.

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Figure Captions

Figure 1. Solidwood timber products consumption market shares, 2000 – 2020.

Figure 2. Wholesale prices of forest products, 1999 – 2020.

Figure 3. Shares of total United States of America energy consumption by major sources in selected years, 1776-2020.

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