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Annual Market Review 2022-2023

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ABSTRACT

The *Forest Products Annual Market Review 2022-2023* provides a comprehensive analysis of markets in the UNECE region and reports on the main market influences beyond the region. It covers products from the forest to the end user and from roundwood and primary processed products to value-added, housing and wood energy. Statistics-based chapters analyse the markets, sawn hardwood and wood-based panels. The publication is complemented by Data Briefs, a new format of analytical publication of market trends in the UNECE region. Underlying this analysis is a comprehensive data collection. The *Review* highlights the role of sustainable forest products in international markets, discusses policies concerning forests and forest products, assesses the main trends and drivers, and analyses the effects of the current economic situation on forest product markets.

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FOREWORD

Forests in the UNECE region cover one third of the land surface and are fundamental for providing us with oxygen, clean air and water. These treasure chests of biodiversity continuously increase the amount of carbon stocked in their biomass. The forests in the UNECE region have been sustainably managed for hundreds of years to become a rich source of wood, a raw material with an extremely low carbon footprint.

Wood is today considered one of the crucial materials for a low carbon future helping us to pursue a low carbon trajectory and mitigate climate change. An increasingly prominent future-proof characteristic of wood products will be the greatest possible storage of contained carbon. This can be achieved through more wood-based products with a longer shelf life and non-destructive reuse, repurposing and recycling for as long as possible before they are used for energy generation at the end of their life.

For that to happen, knowing the markets, the current trends and future trends of these products is quintessential. This publication offers the necessary insights into the market trends and drivers for wood products, particularly sawn hardwood and wood-based panels. Both market segments lend themselves well to produce more and longer-lived products that can be easily recovered, repurposed, reused or recycled.

Understanding emerging policy requirements, many of which are currently seeing the light, helps better asses their potential and impact on the currently existing functions and uses of forest resources. Understanding the national, regional and subregional dimension of these developments is equally important to project the future of countries' highly variable forest and wood resources and ensure the sustainable production, trade and consumption of wood products.

The present publication is complemented by topical and highly focused Data Briefs. These electronic supplements provide supplementary analyses of additional wood products such as softwood, pulp and paper as well as wood energy markets.

We express our gratitude to all contributing experts, drafters, partner organizations, public and private sector contributors and the staff in our two organizations who prepared this joint publication. Our future and our fight against the effects of climate change depends on well-managed and sustainable forests and forest products.

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Food and Agriculture Organization of the United Nations

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The UNECE/FAO Forestry and Timber Section expresses its deep gratitude to everyone who contributed to this edition of the *Forest Products Annual Market Review*.

The *Forest Products Annual Market Review* is the result of a cooperative effort involving a network of official country correspondents, authors, reviewers, editors, the UNECE/FAO Team of Specialists on Sustainable Forest Products, and teams at the Forestry and Timber Section in Geneva and at FAO in Rome. In combination, this network provides an unrivalled source of expertise and knowledge, which is the hallmark of the *Review*.

The Review benefited greatly from the in-kind contribution by the Forest Service staff of the United States of America Department of Agriculture who were allowed to volunteer their time and expertise as well as the following industry associations: the European Panel Federation (EPF) and the European Organisation of the Sawmill Industry (EOS). We also express our deep gratitude to the University of British Columbia (UBC), Vancouver, Canada and the University for Continuing Education Krems, Austria and its European Erasmus+ program to allow Mr Haowei Wang and Mr. Boris Stamenov to intern with the team to prepare the data for the publication.

Without this collective and collaborative effort, it would not be possible to produce this annual publication.

We acknowledge the authors who wrote the chapters and, in so doing, shared their expertise and knowledge. You can find contact details and affiliations of all authors in the Annex.

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The publication was managed by Florian Steierer of the UNECE/FAO Forestry and Timber Section. It was peer-reviewed by members of the UNECE/FAO Forestry and Timber Section. The chapters were reviewed at FAO Forestry Division by Thais Juvenal and Arvydas Lebedys.

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EXPLANATORY NOTES

The Food and Agriculture Organization of the United Nations and the United Nations Economic Commission for Europe agreed to use the term "war in Ukraine".

"Apparent consumption" is calculated by adding imports to a country's production and subtracting exports. Apparent consumption volumes are not adjusted for levels of stock. "Apparent consumption" is synonymous with "demand" and "use" and is often referred to as "consumption". Consumption is the sum of a country's (or subregion's) production, imports and exports.

For ease of reading, the publication mostly provides value data in United States dollars (indicated by the sign "$" or as "dollars"). Unless specific for a given period, the applied exchange rate for the euro in 2021 is €0.9509 = $1 and for the Russian rouble is RUB 68.48 = $1. Both these exchange rates are based on the annual average rate provided by the UNECE (http://w3.unece.org/PXWeb/en).

Trade data for the 27 European Union (EU) countries include intra-EU trade, which is often estimated by the countries themselves. Export data usually include re-exports. Subregional trade aggregates in tables include trade occurring between countries in the subregion. Declared unit values shown in tables and graphs are included as an indicator of price trends and are derived by dividing the declared monetary value of imported and exported products by the volume of these products.

See the list of countries in the annex for a breakdown of the region into its subregions. References to EU27 refer collectively to the 27 country members of the European Union. The term Eastern Europe, Caucasus and Central Asia (EECCA) is used for reasons of geographic proximity and similarities in economic structure and refers collectively to 12 countries: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan. It is used solely for the reader's convenience.

The term industrial roundwood is used interchangeably with logs. The term softwood is used synonymously with coniferous. Hardwood is used synonymously with non-coniferous and broadleaved. Lumber is used synonymously with sawnwood.

All references to tons or tonnes in this text represent the metric unit of 1,000 kilograms unless otherwise indicated.

A billion refers to a thousand million (10^9). One trillion refers to one million million, or 10^{12}.

Please note that all volumes of United States and Canadian sawn softwood production and trade are given in actual m^3, converted from nominal m^3.

All data and statistics in this publication are derived from the UNECE/FAO timber database unless otherwise noted. Tables based on the database are available in the statistical annex at https://unece.org/forests/fpamr-2022-2023.

ACRONYMS, ABBREVIATIONS AND SYMBOLS

(Infrequently used abbreviations spelled out in the text may not be listed here)

…	unavailable
$	United States dollar(s) unless otherwise specified
€	euro(s)
BPS	basis points
BIS	Bank of International Settlements
C&F	cost and freight (Incoterm)
CEPI	Confederation of European Paper Industries
CLT	cross-laminated timber
COVID-19	coronavirus disease of 2019
EECCA	Eastern Europe, Caucasus and Central Asia[1]
EIA	Energy Information Administration
EPF	European Panel Federation
EU	European Union
EWP	engineered wood product
FOB	free on board (Incoterm)
FSC	Forest Stewardship Council
GDP	gross domestic product
ha	hectare(s)
HDF	high-density fibreboard
IMF	International Monetary Fund
ITTO	International Tropical Timber Organization
LIRA	Leading Indicator of Remodelling Activity
LVL	laminated veneer lumber
m^2	square metre(s)
m^3	cubic metre(s)
MBF	million board feet
MDF	medium-density fibreboard
MENA	Middle East North Africa
MW	megawatt(s)
NAICS	North American Industry Classification System
PEFC	Programme for the Endorsement of Forest Certification
SDG	Sustainable Development Goal
SFI	Sustainable Forestry Initiative
SPF	spruce-pine-fir assortment
UK	United Kingdom of Great Britain and Northern Ireland
USDA	United States Department of Agriculture
USFS	United States Forest Service
USITC	United States International Trade Commission
WTO	World Trade Organization

1 The acronym EECCA comprises the following countries: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

Chapter 1

ECONOMIC OVERVIEW AND POLICIES

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Contributing authors: Delton Alderman, José Palacín, Jeremy Wall

Highlights

Economic growth decelerated markedly in 2022, as the post-pandemic recovery ran out of steam under the impact of multiple negative factors.

Construction activity slightly increased in Europe in 2022 while it decreased slightly in North America in 2022. It is estimated that permitting and spending are likely to decrease in the second half of 2023.

The pace of economic expansion in the region is expected to decelerate further in 2023, with growth rates in 2024 remaining well below average pre-pandemic levels. The shift to higher interest rates may lead to financial stress and expose existing vulnerabilities. Geopolitical tensions continue to cloud economic prospects in the region.

Housing construction and sales in the UNECE region were subdued in 2022. Investor interest in the European residential sector continues to be muted; yet, a considerable percentage of office and retail buildings could be repurposed in the next five-years. Views about economic prospects and the real estate sector have become increasingly negative.

Climate risk represents the biggest challenge facing real estate investment in Europe. Addressing this component is undeniably vital for investment success.

The housing markets in Eastern Europe, Caucasus and Central Asia are indeterminate due to the war in Ukraine.

United States residential housing appears to have found a bottom; yet, "a full-fledged recovery is far off". In Canada, total housing starts decreased 21.1% in 2022 but are forecast to improve in 2023 and beyond.

The European Union's Regulation on Deforestation-free products (EUDR) entered into force. It covers wood, cattle, cocoa, coffee, palm oil, rubber and soya and their derived products.

Due diligence declarations for all remaining plant product Harmonized Tariff Schedule (HTS) codes that are not 100 per cent composite materials are now required in the United States.

The area of certified forests in the UNECE region dropped by 18.5% in 2022 to the lowest levels in over a decade. The suspension of forest certification in the Russian Federation and Belarus were the main but not the only drivers of loss in certified forest area in the UNECE region.

Introduction and overview

The 2023 edition of the UNECE/FAO Forest Products Annual Market Review (the "Review") provides a statistical review of market developments in the UNECE region in 2022 and the first half of 2023 and the policies driving those developments. The Review also includes forecasts for 2023 and 2024. The UNECE region has three subregions: Europe; Eastern Europe, Caucasus and Central Asia (EECCA); and North America. It encompasses about 1.7 billion ha of forest, which is more than 40 per cent of the world's total forest area.

This year, the Review's former chapters on sawn softwood, pulp and paper and wood energy are published as separate "data briefs" and complement the present publication.

The analysis of the various wood commodity markets now also contains additional information on how these market trends contribute to the achievement of the various United Nations Sustainable Development Goals (SDGs), namely SDG 7 ("Ensure access to affordable, reliable, sustainable and modern energy for all"), 11 ("Make cities and human settlements inclusive, safe, resilient and sustainable"), 12 ("Ensure sustainable consumption and production patterns"), 13 ("Take urgent action to combat climate change and its impacts") and 15 ("Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss").

A statistical supplement that covers all commodities and additional graphs and tables will be published on the INForest website: https://forest-data.unece.org.

The Review and the data briefs present the most up to date annual statistics for 2022-2023 collected by the Joint UNECE/FAO Forestry and Timber Section from official national statistical correspondents, expert estimates and published information.

The trends discussed in this publication and the data briefs comprise a mix of data from the UNECE/FAO timber database (presented for the UNECE region as a whole and for each of the three subregions) and information from other cited sources. The Review also includes information on other markets which impact the UNECE region.

References to "Europe", "EECCA" and "North America" in this publication always pertain to the standard subregions listed in "Countries in the UNECE region, and its subregions" in the annex of this publication. The electronic annexes provide additional statistical information. The full UNECE/FAO database is available on the website: https://unece.org/forests/fpamr-2022-2023.

The following subchapters on economic developments, construction and housing, describe the broad macroeconomic situation affecting demand in the UNECE region. The subchapters on policy, regulatory developments and forest certification addresses other factors affecting forests and forest product markets in the region in 2023 and beyond.

Economic developments in the UNECE region

Economic growth decelerated markedly in 2022, as the post-pandemic recovery ran out of steam under the impact of multiple negative factors. The war in Ukraine added to the price pressures which had already been building up earlier. For energy-importing economies, worsening terms of trade resulted in a massive income transfer. Despite the fiscal support provided in some countries, inflation eroded the purchasing power of households, which was only mitigated by the savings accumulated during the COVID-19 period. Investment suffered in this deteriorating economic environment, which has been accompanied by rising financing costs. In the European Union (EU); countries that were more dependent on imported Russian gas faced stronger negative effects. Tourism-oriented economies, on the other hand, performed comparatively better than those relying more on manufacturing. While output contracted in the Russian Federation, under the impact of economic sanctions and the political and economic uncertainty brought by the war in Ukraine, other economies in Central Asia and, in particular, the Caucasus grew rapidly.

The pace of economic expansion in the region is expected to decelerate further in 2023, despite some signs of improvement early in the year, amid falling energy prices – in particular the price of gas in Europe, which had soared in 2022. The impact of tightening of monetary policy will be more strongly felt, dampening the growth of demand. The slowdown will be more marked in the euro area, with the aggregate GDP stagnating, than in the United States, amid the lingering effects of high energy costs. By contrast, after output fell by almost one third in 2022, Ukraine's economy is likely to return to growth, despite persistent uncertainty. In the Russian Federation and other neighbouring countries where the economy shrank in 2022, a moderate recovery is expected.

Despite the economic slowdown, the impact on labour markets has been generally limited. Services continued to experience strong demand, while skill shortages have persisted in some areas. In the European Union, after recovering to pre-pandemic levels in 2021, employment continued to increase in most countries through 2022, in particular in the euro area, with the unemployment rate falling to record levels in early 2023. Broad measures of labour market slack point to increased tighter markets in many economies, with the euro area reducing the traditional unfavourable gap with the rest of the EU. Wage growth accelerated through 2022, in particular in the EU countries outside the euro area, but remained insufficient to fully compensate price increases.

In the United States, the unemployment rate, which had soared in 2020, returned at the beginning of 2022 to pre-pandemic levels and continued to decline further, albeit some softening of the labour market has emerged after the unemployment rate hit a 53-year low in April at 3.4%. Hourly earnings growth lost steam in 2022 but, in a context of declining inflation, the annual increase of median weekly real earnings became positive in early 2023. In the Russian Federation, the contraction of the economy in 2022 did not derail the declining trend of the unemployment rate, while the war in Ukraine had negative impacts on labour supply.

Inflation, which had started to pick up in 2021, accelerated markedly in 2022. In the United States, headline inflation peaked earlier and at a lower level than in the euro area, reaching 9.1% in June 2022 against 11.5% in October 2022, respectively. Inflation has been particularly elevated in the Baltic countries and EU economies outside the euro area with high energy import dependencies. In other countries in the region, in particular Türkiye, where large exchange rate depreciation took place, price pressures have also been significant. Headline inflation has been falling rapidly since late 2022, driven by lower energy and food prices, but core inflation has proved more persistent, amid rising cost pressures and, in some sectors, higher profit margins. In the euro area, core inflation only started to fall in the second quarter of 2023.

Mounting inflation prompted monetary authorities to tighten policies across the region. After leaving the interest rate at near zero for two years to encourage the post-COVID-19 recovery, the United States Federal Open Market Committee approved the first-rate hike in March 2022, with a total 500 basis points (bps)[2] increase that put the federal funds rate at 5-5.25% by mid-2023. The European Central Bank (ECB) started the tightening cycle by moving the deposit rate into positive territory in July 2022, with the rate increasing by a total 400 bps by mid-2023, with further hikes to come. Outside the euro area, other European economies also tightened policies rapidly and, in some cases earlier. In the Russian Federation, the sharp increase in the policy rate at the beginning of the war in Ukraine was gradually reversed.

The impact of more restrictive policies on demand growth became increasingly apparent and contributed to moderate price growth. The effect has been more marked in interest-sensitive components of expenditure. Tighter monetary policies have negatively affected both housing investment and housing prices, in particular in countries with higher household debt and higher share of variable rate mortgages.

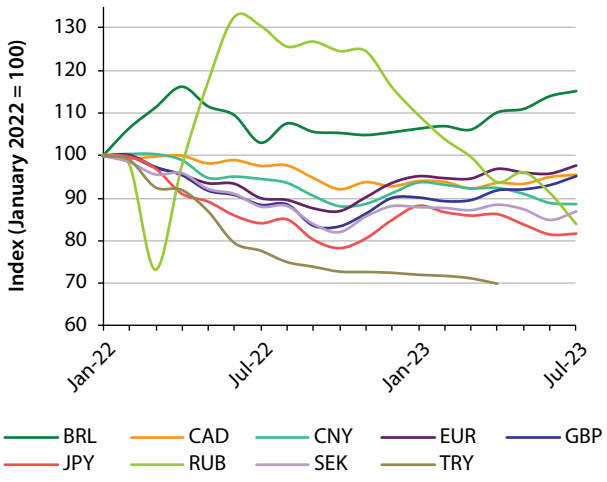
The shift in monetary policies has led to the deterioration of credit conditions and, in some countries, increased stress in parts of the financial system, amid a rising cost of funding for banks. In many countries, loans for house purchases have been falling quickly. In both the United States and the euro area, interest rates on housing loans started to climb rapidly in early 2022. In the euro zone, this has put an end to more than a decade of declines. Higher financing costs are increasing the burden of servicing government debt. This would add to the pressures for fiscal consolidation, after the increase in expenditures resulting from the COVID-19 pandemic and the support provided to offset the impact of high energy prices.

The appreciation of the dollar against the euro, which had been ongoing since the beginning of 2021, started to reverse in the last quarter of 2022, after the value of the euro fell below parity with the dollar (Graph 1.1).

Improved perceptions of the economic performance of the euro area and expectations regarding monetary policy tightening have driven the relative weakening of the dollar. Against a broader set of currencies, as gauged by the nominal trade weighted dollar index, the sustained appreciation of the dollar came to an end in October 2022, followed by a rapid reversal that has left the index by mid-2023 at roughly the level seen one year earlier. Recent progress in reducing inflation is influencing expectations on future interest rate movements and sapping away the strength of the dollar.

GRAPH 1.1

Major currencies used to trade forest products, indexed against the dollar, January 2022-June 2023

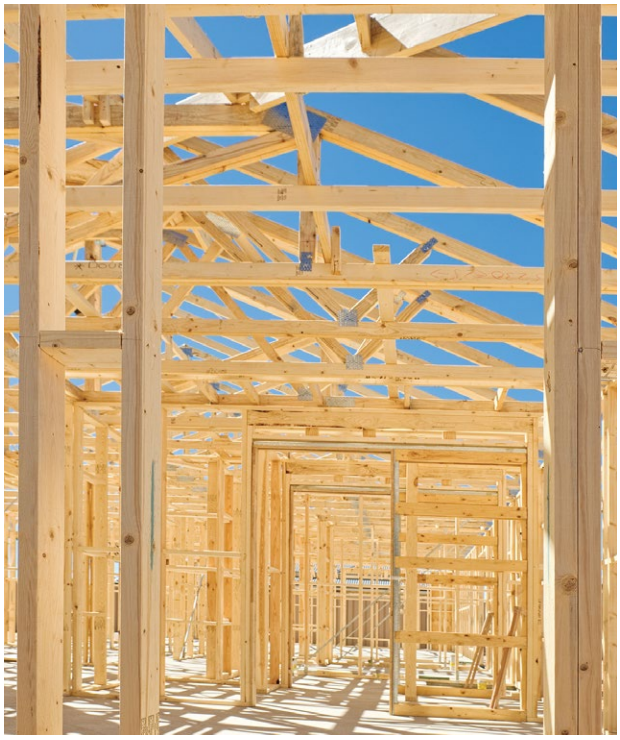


Notes: BRL: Brazilian Real, CAD: Canadian Dollar; CNY: Yuan Renminbi; EUR: Euro; GBP: Pound Sterling; JPY: Yen; RUB: Russian Rouble; SEK: Swedish Krona; TRY: Turkish Lira; A diminishing index value indicates a weakening of the currency value against the dollar; an increasing index value indicates a strengthening of the currency value against the dollar. Data for Türkiye only available until April 2023.

Source: IMF, 2023.

2 A basis point is a standard measure for interest rates and other percentages in finance. One basis point equals 1/100th of 1%, or 0.01% (and .0001 in decimal form). The word basis comes from the base move between two percentages, or the spread between two interest rates (Investopedia, 2023).

Some factors that depressed economic performance earlier started to ease in mid-2023. The fall of headline inflation, driven by declining energy prices, easing supply bottlenecks and the reopening of China, defines a more auspicious outlook. However, the pickup is likely to be rather modest, with growth rates in 2024 remaining well below average pre-pandemic levels. While tightening of monetary policies are anticipated to come to an end, their lagged effects will persist. Overall, risks are tilted to the downside. The shift to higher interest rates may lead to financial stress and expose existing vulnerabilities. Geopolitical tensions continue to cloud economic prospects in the region.



Construction in the UNECE region, with a focus on housing

Housing construction and sales in the UNECE region were modest in 2022. Eurostat analysis discerned "that the number of housing transactions, when compared with 2021, decreased in the majority of the 16 EU countries for which data are available" (Eurostat, 2023a). In the Euroconstruct region[3] construction activity increased slightly in 2022 (Euroconstruct, 2023). In the United States, residential construction decreased in 2022 and permitting and spending will likely decrease in the second half of 2023 (Census, 2023a, b). The real house price index indicates prices decreased by 6.4%; Germany declined by 12.0%, 18.0% in Italy, and 1% in France and the United Kingdom (BIS, 2023). United States prices indicated no change and Canadian prices decreased by 10.0%.

EUROPE

In 2022, residential output and remodelling construction levelled off in the Euroconstruct region after a strong recovery in 2021. Residential output increased 2.2% and remodelling improved 6.2% in 2022 (Euroconstruct, 2023). However, housing construction in the EU appears to be languishing in the first half of 2023. Year-on-year building permits declined by nearly 5.0% (Eurostat, 2023b). Total construction investment in Euroconstruct countries is projected to decrease 1.1% in 2023 (table 1.1).

TABLE 1.1

Construction spending forecast, Euroconstruct region, 2023-2025

	2023e	*2024f*	*2025o*	*2022-2023*	*2023-2024*	*2024-2025*
	$ BILLION			**CHANGE (%)**		
New residential construction	383.7	373.1	373.9	-6.1	-2.7	0.2
Residential remodelling	563.5	543.4	549.4	-1.8	-3.6	1.1
Non-residential – new	305.1	308.0	314.5	0.2	0.9	2.1
Non-residential – remodelling	277.7	281.4	284.9	1.2	1.4	1.2
Civil engineering – new	241.5	248.7	255.5	3.1	2.9	2.8
Civil engineering – remodelling	189.9	193.4	196.8	1.4	1.9	1.8
Total	**1961.7**	**1948.4**	**1975.0**	**-1.1**	**-0.7**	**1.4**

Note: In 2022 prices; e = estimate; f=forecast; o = outlook.

Source: Euroconstruct, 2023.

New residential building and remodelling are value drivers in the Euroconstruct region, as new residential building accounted for nearly 20.6% ($408.7 billion) of the construction market by value in 2022, with residential remodelling comprising 28.9% ($573.8 billion) (Euroconstruct, 2023).

3 The Euroconstruct region comprises 19 countries: Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

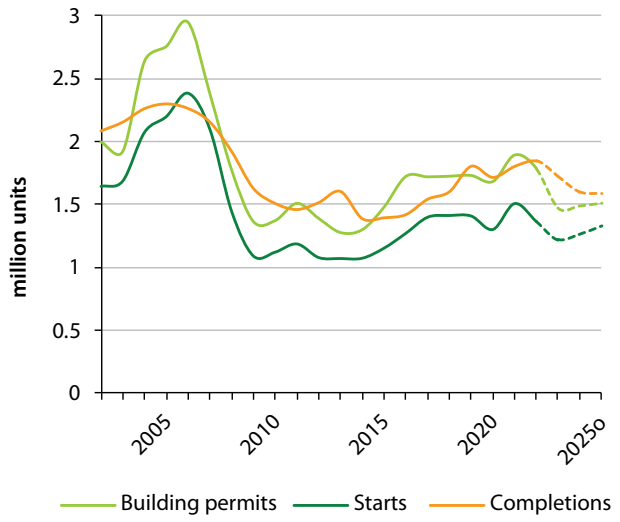
Euro area housing investment is expected to "remain weak in the first half of 2023, amid some short-term volatility. Housing investment might have picked up in the first quarter of 2023, as suggested by the increase in building construction output in January and February by 3.7%, on average, compared with the fourth quarter of 2022" (ECB, 2023a). Quarterly business survey sentiment data noted that "households' intentions to renovate, buy or build a house improved slightly from January to April, but it is still depressed. The decline in demand is due to the rise in mortgage rates, which, together with lower real income and high house prices, affects affordability. This is also reflected in the significant decline in demand for housing loans" (ECB, 2023b).

Building-permit forecasts for 2023-2025 indicate minimal improvement – although not near the low levels reported in 2009-2014 (when the annual average was slightly below 1.4 million). Total housing permit and start forecasts indicate a slight improvement through 2025, with completions declining (graph 1.2) (Euroconstruct, 2023).

The 2023 survey–based report by PwC on "emerging trends in real estate" in Europe indicates that real estate development activity slackened in 2022 and is expected to decrease intensely in 2023. The gap between residential supply and demand in European markets has not changed in the past year and is unlikely to change any time soon. Respondents' greatest reported fear concerns real estate values, as discounts to net asset values continue to expand (PwC, 2023).

GRAPH 1.2

Building permits, starts and completions, Euroconstruct region, 2002-2025



Note: 2023 and 2024 forecast; 2025 outlook.

Sources: Euroconstruct, 2004, 2023.

Climate risk represents the biggest challenge facing real estate investment as ESG (environmental, social and governance), with the environmental component having become vital for investment success. Also, views about economic prospects and the real estate sector have become increasingly negative. Real estate leaders think that "liquidity will decrease farther in a market of lower investment volumes, rents, and occupancies" (PwC, 2023).

Repurposing, also known as refurbishing, retrofitting, or redeveloping existing stock can involve reconfiguration to meet changing needs. The intent is not just about managing the threat of obsolescence: nearly two thirds of respondents believe repurposing an existing building is the most attractive way to acquire prime assets. Repurposing existing stock from one use to another is on an upward trend, with 54% of respondents repurposing more assets in their portfolio compared to the previous year (52% in the last survey). More than three quarters expect to be repurposing even more assets in five years' time (PwC, 2023).

EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA

The housing markets outlook is extremely uncertain given the war in Ukraine. In 2022 Armenia, Georgia, and Uzbekistan reported increases in the quantity of dwellings put-in-place, year-on-year. In 2022, Armenia, Azerbaijan, Moldova, Tajikistan and Uzbekistan also registered increases in the floor space put-in-place, year-on-year. In summary, it appears this region's dwelling units and put-in-place were mixed in 2021 and 2022. Floor space put-in-place were positive year-on-year in 2021 and 2022 (table 1.2).

TABLE 1.2

Construction of new floor area, EECCA other than the Russian Federation, 2021-2022

	2021	*2022*	*2021-2022*
	New floor space ($1,000\ m^2$)		Change (%)
Armenia	98.6	100.3	1.6
Azerbaijan	103.7	124.6	20.1
Kazakhstan	14,507	15,466	-7.4
Kyrgyzstan	13.0	12.8	-1.6
Republic of Moldova	84.4	87.4	3.5
Tajikistan*	101.3	104.8	3.5
Uzbekistan	13,643	14,189	4.0

Notes:. *2019 and 2020 TAJSTAT data.

Sources: Ministry of the National Economy of the Republic of Kazakhstan Committee on Statistics, 2023; National Bureau of Statistics of the Republic of Moldova, 2023; National Statistical Committee of the Kyrgyz Republic, 2023; State Committee of the Republic of Uzbekistan on Statistics, 2023 a and b; State Statistical Committee of the Republic of Azerbaijan, 2023; Statistical Committee of the Republic of Armenia, 2023.

NORTH AMERICA

Housing construction in Canada and the United States is undersupplied, indicating pent-up demand. Both countries face similar problems in the construction of houses: lingering pandemic effects and discrete product availability. House sales and new house construction are interest-rate sensitive and potential house buyers delay purchases due to employment and income being uncertain. Currently the deceleration in construction and sales appears to be primarily driven by increased interest rates. Additionally, the same difficulties from the past few years continue to hinder housing construction: affordability, labourers – particularly finish carpenters, land/lot availability and creditors employing strict lending guidelines. On the positive side, forest products such as framing lumber, structural panels and appearance-based hardwood species prices have reverted to near long term price averages (nominal dollar basis).

Total housing starts decreased 21.1% in Canada, declining from 258 thousand units in 2021 to 213 thousand in 2022 (CMHC, 2023a and 2023b). Canadian housing starts are projected at 238 thousand units in 2023 and 228 thousand units in 2024 (averaged from BMO, 2023; Scotia Bank, 2023; TD Bank, 2023 projections). The outlook for 2025 is 221 thousand starts (Scotia Bank, 2023). Canada's home sales are forecast to recover by 11.2% to 516 thousand units in 2024 (CREA, 2023).

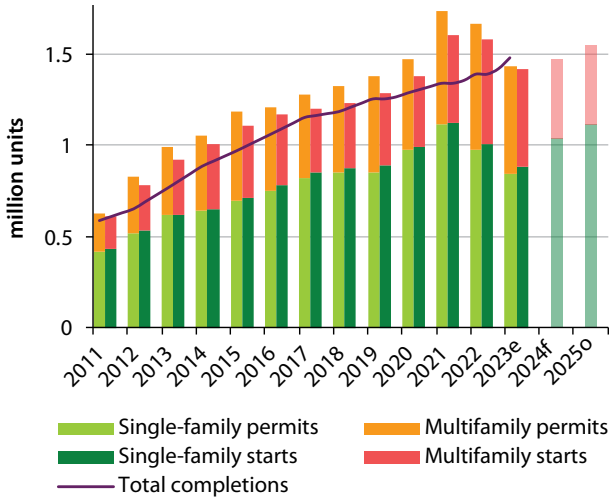
The United States housing construction and sales markets levelled off in 2022 and this continued in the first half of 2023 (US Census Bureau, 2023a and b). Dougherty and Barley (2023) stated that residential housing appears to have found a bottom; yet, "a full-fledged recovery is far off."

Total housing starts in the United States were estimated at 1.55 million units in 2022, a decline of 3.1% from 2021 (US Census Bureau, 2023a); nonetheless, starts were greater than the long term average of 1.43 million units. This decrease arose from single-family starts (1.01 million units) declining by 12.1%, two to four multifamily unit starts (16.4 thousand units) increased by 40.2%, and five and more multifamily unit starts improving by 14.9% (531 thousand units) (US Census Bureau, 2023a). The Mortgage Bankers Association (MBA, 2023) projected total starts at 1.47 million units in 2024 (1.04 million single family) and 1.54 million units (1.12 million single family) in 2025 (graph 1.3).

In the United States, the total value of private residential construction put in place increased by 14.9% in 2022 ($918 million (nominal dollar basis)), driven by a 6.9% improvement in single-family housing ($453 million), increasing 3.5% in multifamily ($110 million), and a 4.6% advance in residential improvements ($355 million) (US Census Bureau, 2023c).

GRAPH 1.3

United States housing permits, starts and completions, 2011-2025



Note: e = estimate; f = forecast; January-June 2021 data; seasonally annualized adjusted rate; o = outlook; no forecast or outlook for completions available.

Sources: United States Census Bureau, 2023 a-d; MBA, 2023.

Policy and regulatory developments

The policy and regulatory developments impacting forest products in the UNECE region are increasingly related to the need to mitigate climate change and effectively reduce emissions to and enhance removal of carbon dioxide (CO_2) from the atmosphere. Efforts have emphasized the roles that forests play in absorbing and storing carbon.

Additional strategies are emerging that quantify the role of forest products in continuing the tree's carbon absorption capacity through wood's carbon storage potential in the built environment. Choosing wood can also result in avoiding greenhouse gas (GHG) emissions associated with non-biobased products (more fossil-energy dependent and higher carbon dioxide-emitting materials, such as fossil-plastics, steel, and concrete) and thus contribute namely to the achievements of SDG 11, SDG 12, SDG 13 and SDG 15.

The diversification of carbon markets to recognize the climate benefits of forest products is essential to ensure that investment occurs throughout the supply chain by forest owners, manufacturers and end consumers managing for carbon capture and opting for wood products for their environmental and social benefits. Without recognition of the captured carbon benefits of wood products, there is the risk of a negative impact on future forest product markets. If the carbon capture value of unharvested wood is much greater than the value of harvesting and supporting carbon storage in products, the transition to a sustainable and circular bioeconomy will be slower. In terms of climate benefit, recently published research found that the estimated total carbon impact of the evaluated mass timber projects, including avoided emissions and carbon storage in wood, averaged 0.38 tCO_2e/m^2 of floor space, representing carbon values ranging into the millions of dollars (Taylor et. al, 2023).

This carbon benefit is comparable to avoiding the emissions of a barrel of oil for every square meter of mass timber construction.[4]

EUROPE

The last year has seen a flurry of legislation and legal proposals from the EU, continuing the European Green Deal (European Commission, 2019) and a long-term growth strategy to become climate-neutral by 2050. The most important among these has been the adoption of the Regulation on Deforestation-free Products (EUDR), which entered into force on 29 June 2023 (European Union, 2023). The EUDR's objectives are to minimize the EU's contribution to global deforestation and forest degradation, and to reduce the EU's contribution to greenhouse gas emissions and bio-diversity loss, by subjecting a detailed schedule of products to scrutiny for their placement onto or being made available in the EU market or for export from it. It builds on the experience with the EU Timber Regulation (EUTR), (European Union, 2010), which it supersedes. The following commodities and their derived products are added to those of wood: cattle, cocoa, coffee, palm oil, rubber and soya. Notably, neither bamboo nor rattan is included, though a subsequent impact assessment due by July 2025 will consider inter alia other commodities and products.

For any of these commodities or products to be cleared for placing on the EU market or for export, its production has to be: "deforestation-free"; in compliance with the relevant laws of the producer country and covered by a due diligence statement from the operator (first placer on the EU market) or trader (who subsequently makes them available on the EU market) concerned. These obligations will exist from 30 December 2024, with a derogation until 30 June 2025 for small and micro-enterprises (European Union, 2013), who also get other concessions.

Even if they engage an Authorised Representative for their due diligence statement, operators and traders retain responsibility for these and for overall legal compliance. A due diligence

4 One barrel of oil is equivalent to an estimated 0.43 metric tonnes of CO_2 emissions (EPA, 2003).

statements must describe the commodity/product, its country of origin and the geolocations of all production areas concerned. Assessment of the level of risk (low, standard or high) of deforestation/degradation in a given producer country or a subdivision will be according to an EU implementing act, due by 30 December 2024. The level of risk will therefore determine the intensity with which imports to and exports from the EU be controlled and how operators' and traders' due diligence statements and annual reports to member states' authorities are assessed. The EU intends to inform a priori third countries of the level of risk to be assigned to them.

Customs information would be shared between EU Member States, the European Commission and operators and traders via a new electronic interface to be set up under the existing Single Window Environment for customs (European Union, 2022). Certain information would be public. Identified non-compliance with the EUDR will render operators and traders liable to penalties set by the respective EU Member States concerned.

A further impact assessment due by 30 June 2024, shall consider extending the scope to other wooded land. Other natural ecosystems, including other land with high carbon stocks and with a high biodiversity value, such as grasslands, peatlands and wetlands, and other commodities, e.g. maize, and products, e.g. biofuels, shall be covered in an impact assessment due by 30 June 2025. By 30 June 2028 and for each five years thereafter, a review of the EUDR is to be carried out, with a report to the European Parliament and Council.

The EUDR is certainly ambitious and will require significant resources and cooperation among all involved stakeholders and authorities. It will likely have cost impacts for operators, traders and consumers. Canada has already signalled its dissatisfaction (see below) while Indonesia and Malaysia have formed a joint task force to implement the EUDR (European Commission, 2023a).

The EU provisionally agreed on a revised Renewable Energy Directive (RED III) in March 2023 (European Council, 2023a). In response to the war in Ukraine, RED III raises the EU's (RED II) 2030 target for the share of renewable energy consumption by an additional 2.5% to at least 42.5%, and aspirationally to 45%. RED III also aims to further reduce greenhouse gas emissions (GHG), notably by 55% vis-à-vis 1990, the so-called "Fit for 55" goal. Annual targets for heating, cooling and district heating would be strengthened, and a 49% renewable target would be set for energy consumed in buildings. Bioenergy criteria are planned to apply to power plants of 7.5 MW or above (down from 20MW in RED II). Forest-based biomass should not be used from certain areas having high carbon-stock and biodiversity levels. Moreover, woody biomass shall ideally be used according to the cascading principle, i.e. prioritising the highest environmental and economic added values, to which end the use of stumps and roots, industrial roundwood, and veneer and saw logs may not be subsidized. While most EU forest-based industries welcome the agreement, not all forest owners and energy suppliers do so.

The EU also prepared some more proposals for regulations with potentially significant impacts on forests and the forest-based economy.

- The proposed EU Regulation on Nature Restoration (European Council, 2023b) under the EU's Biodiversity Strategy (European Commission, 2022a) aims to help restore land and sea ecosystems, habitats and species, thus enabling the sustainable recovery of biodiverse and resilient nature, as well as contributing to climate mitigation and adaptation goals. The EU Council position on the proposal was adopted on 23/06/2023 and on 12/07/2023 the European Parliament adopted its position. Twenty percent of all EU land and sea areas would be included by 2030 and all areas needing restoration by 2050. EU Member States would be given two years after the law's entry into force to adopt National Restoration Plans to 2050.
- Specifically for forest ecosystems, the proposal requires an increasing trend in six indicators until the satisfactory levels be reached, i.e.: standing deadwood; lying deadwood; share of forests with uneven-aged structure; forest connectivity; common forest bird index, and stock of organic carbon. The proposed Regulation further foresees: no net loss of urban green space or tree cover by 2030 (base 2021); at least a 3 % increase of the national area of urban green space by 2040 and 5 % by 2050; a minimum of 10 % urban tree canopy cover in all urban areas by 2050; and a net gain of urban green space integrated into existing and new buildings and infrastructure developments in all urban areas.
- The proposed EU Regulation on Certification of Carbon Removals (European Commission, 2022b) seeks to establish monitoring, reporting and verification of high-quality carbon removals and provide certification methodology, to create trust and harmonized market conditions and fight "greenwashing". Carbon removals may be done through storage (e.g. BECCS: bioenergy with carbon capture and storage), carbon farming (e.g. improved forest management and agroforestry) and long-lasting products (e.g. wood in construction). Standardized baselines for economic sectors will be set by the EC together with an expert group (European Commission, 2023b). The EC will approve certification schemes while EU Member States will accredit independent certification bodies for audit and certification. Carbon removals will be assessed for: removal type; quantity of carbon removed and over what period, with certificates issued and recorded in registries. Certificates may be used for voluntary financing of carbon removals (e.g. green

claims, corporate sustainability reporting; EU funding and state aid) and later under the revised: Emissions Trading System; Climate Law, and Land Use, Land-Use Change and Forestry (LULUCF).

- The Proposal for a revision of EU legislation on Packaging and Packaging Waste (European Commission, 2022c) aims to replace the existing Directive 94/62/EC with a regulation to enable a harmonized application across EU Member States by being directly and uniformly enforceable on market operators. Minimisation of packaging would become a market access criterion, with set performance criteria, e.g. thresholds for void space (max. 40%) and some formats banned. Several major paperboard grades would be affected. Sectoral re-use targets would apply to operators and reviewed according to performance. Criteria, including for systems, refilling and hygiene would be set to maximise re-uses. However, the targets for avoiding, minimising, collecting, reusing and recycling waste from packaging materials remain unchanged. By 2030, pallets, crates, foldable boxes, pails and drums for the conveyance or packaging of goods must be 30% re-usable or refillable (90% by 2040). With exceptions for micro-enterprises, all packaging must be recyclable by 2030 and be recyclable on a large scale by 2035. Deposit and return systems (DRS) will not be mandatory for beverage cartons, (e.g. liquid packaging board), though encouraged, but stricter requirements will be placed on Member States for separate collection of different materials. The EU targets for recycling packaging waste remain unchanged but would be reviewed after eight years. Meanwhile, member states can exceed them.
- The **EU's Transition Pathway for Construction** aims for a coherent, non-binding policy framework to encourage building stakeholders to transition to sustainability and net zero emissions. For this, relevant EU policies are to be tested and validated, via a "living working document", overseen by the EU High-level Construction Forum, with wood as a prominent, sustainable building material (European Commission, 2023c).
- 2023 marks the 40th anniversary of the first EU forest-based industries dialogue group, now continued as the EU Expert Group on Forest-based Industries and Sectorally Related Issues (European Commission 2014).

EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA

The wood processing sector has been heavily impacted by the sanctions imposed by the EU on raw materials and goods from the Russian Federation. The government of the Russian Federation took several measures to ease their economic impact for national producers and exporters, including in the wood processing sector.

Wood processing companies in the Russian Federation are considering increasing the export of their products via rail and shipping routes notably to Iran and potentially to India (National forest association, 2023a).

The rail companies of the Russian Federation, Kazakhstan, Turkmenistan and Iran introduced reduced container freight rates for the International North–South Transport Corridor (INSTC). The measure is valid for the year 2023 (Silkroadbriefing, 2022).

The Ministry of Economic Development of the Russian Federation prepared a draft resolution on simplifying the export of timber products through the countries of the Eurasian Economic Union (EAEU). A recalculation of payment rates for forest concessions based on the actual harvest (National Forest Association, 2022b) is also planned.

The Ministry of Economic Development, the Ministry of Finance, the Ministry of Industry and Trade, industry departments and regions of the Russian Federation increased the financial support to forest-based companies to compensate for the increased cost of transportation (National Forest Association, 2023b).

NORTH AMERICA

In November 2022, a letter from the Ambassador of Canada to the EU expressed the country's concerns about the EUDR related to the geolocation coordinate requirements in the regulation, the definitions used for deforestation-free and degradation, and the potential risk of negatively impacting trade (Ambassador of Canada, 2022).

In the United States, the Women's Forest Congress was held in October 2022 with approximately 500 participants. (WFC, 2022) The event resulted in the endorsement of the 2022 Women's Forest Congress Declaration. The Declaration addresses priorities for improved workforce opportunities and workplace systems to address equity and inclusion needs in the forest and wood products sector (WFC, 2022).

In 2022, the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) announced Phase VII, the final phase of the Lacey Act declarations. In this phase, declarations will be required for all remaining plant product Harmonized Tariff Schedule (HTS) codes that are not 100 per cent composite materials (APHIS, 2023). This will impact a range of imported products—such as furniture, additional essential oils and cork—that have not previously required Lacey Act declarations. In 2023, APHIS plans to publish a list of affected HTS codes which will require declarations effective 6 months after publication in the list. First enacted in 1900, the Lacey Act combats trafficking in illegal wildlife, fish and plants. The Food, Conservation, and Energy Act of 2008 amended the Lacey Act to require importers to submit declarations for certain products at the time of importation. After being delayed due to the COVID-19 pandemic, Phase VI of the Lacey Act went into effect in October 2021 and included enforcement of declarations for wood cases and trunks, oriented strandboard (OSB), boxes, crates, pallets, and other products (APHIS, 2021).

The air quality in the United States has been significantly impacted in 2023 by a severe wildfire season in Canada. The air quality in major cities, including New York and Washington, D.C., exceeded hazardous levels that have not been documented since the 1960s, a time prior to the passage of the Clean Air Act. The United States and Canada have announced major initiatives to respond to the threat of wildfires and the recognized impacts on human health and public safety.

Building on a strategy announced in 2022, the United States Forest Service announced in January 2023 additional priority landscapes for wildfire prevention strategies, including extensive partnerships for management actions in the western states of California, Oregon and Nevada (USDA, 2022; USDA 2023). Congress originally provided $1.4 billion to invest in the strategy and support actions in 10 landscapes across 8 Western states. Wildfire risk mitigation was accomplished on 1.29 million hectares (3.2 million acres) located in 118 of the 250 high-risk locations identified in the Wildfire Crisis Strategy (USDA, 2023). With more funding provided in 2023, 11 additional landscapes in 69 high-risk locations are planned for treatments (USDA, 2023). Activities are implemented through the Good Neighbor Authority, which was first stablished by Congress in 2014 and provides the Forest Service a mechanism for entering into management agreements with states, Tribes, and counties (USFS, 2023). This all is part of broader federal initiatives to invest in climate resilience and adaptation, including addressing the risk of wildfires, as well as protecting communities from extreme heat and promoting climate-smart buildings and infrastructure (The White House, 2023).

There is renewed interest in biomass energy in the United States, including investment in biomass energy with carbon capture and storage (BECCS) as a strategy to achieve negative carbon dioxide emissions in alignment with scenarios evaluated by the Intergovernmental Panel on Climate Change (IPCC). All 1.5°C pathways include bioenergy and BECCS as a substantial mitigation option (Smith *et al.*, 2019). Recent federal legislation in the United States, including energy policy, infrastructure investments and the Inflation Reduction Act (IRA), provide incentives and assistance for clean energy and BECCS development. There are six operational BECCS facilities in the United States as of the end of 2022 capturing a total of about 2 million metric tonnes of CO_2 annually (Mt CO_2/yr); 44 projects are in development, which could result in a total capacity to capture more than 21 Mt CO_2/yr (EFI, 2023). The capacity for BECCS may need to be as much as 2.2 Gt CO_2/yr (2,200 Mt CO_2/yr) for the United States to achieve modelled net-zero pathways this century (EFI, 2023). Existing BECCS facilities in the United States are most closely associated with corn ethanol production sites.

Carbon markets also continue to be of interest for forest owners in the United States with the availability of programmes that offer contracts to private owners, including Timber Investment Management Organizations (TIMOs). Research shows that the potential financial benefits for landowners contracting for carbon payments is sensitive to the discount rate as well as the timber and carbon prices (Mei and Clutter, 2022). Carbon markets can provide financial support for forest conservation and restoration as well as contribute to climate change mitigation targets. In 2020, an agreement was established between environmental groups and the CEOs of the 43 members of the National Alliance of Forest Owners (NAFO). The agreed principles promote policies that create and expand market-based approaches for supporting private working forests and forest products as natural climate solutions (NAFO, 2022). NAFO members own and manage more than 18.6 million hectares (46 million acres) of forest area across 34 of the 50 states, including some of the nation's largest private forest owners and investors. The United States have a total of about 145.7 million hectares (360 million acres) of private forests, which accounts for nearly half (47%) of its total forest land area. The nation's private forests provide 90% of all timber harvests in the United States while also providing 80% of the nation's annual net forest-carbon sequestration and nearly 50% of the long-term forest-carbon storage (NAFO, 2022).

The National Adaptation Strategy for Canada includes a recent CAD $164 million investment to address flood risks. The overall strategy addresses the effects of climate-related disasters,

health and well-being, nature and biodiversity, infrastructure, and the economy and workers. Since 2015, the Government of Canada has invested more than CAD $6.5 billion in adaptation measures (Government of Canada, 2023).

Certified forests and products

United Nations SDG 15 aims to "Protect, restore and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss". Forest area under an independently verified forest management certification scheme (thousands of hectares) is one of the key components of indicator 15.2.1 that reports on "progress towards sustainable forest management" (United Nations, 2017, 2023).

Between 2010 and 2020, the share of forests under certification schemes, the proportion of forest within a protected area and the proportion of forests under a long-term management plan increased globally (United Nations, 2022). This positive trend was broken for the first time in 2022. The total area of forests managed under third-party certification schemes recorded the lowest area in over a decade. This downward trend with global impact was mainly driven by developments in the ECE region.

The two major schemes, the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC), reported a combined total of 450.6 million ha of certified forest as of mid-2023; this amounts to 384.7 million ha of actual forest after accounting for double-certification (i.e. forest areas certified by both certification schemes) (graph 1.4) (FSC, 2023a; PEFC, 2023a, 2023b). About 41.6% of forests certified by FSC and 22.6% of forests certified by PEFC are double-certified.

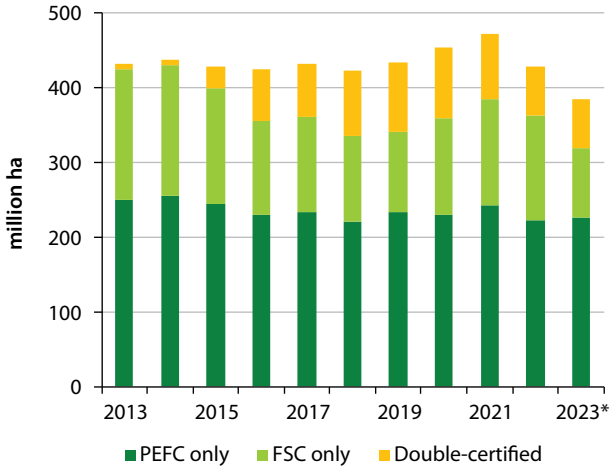
The forest area certified by FSC peaked in March 2022 with 237 million ha certified worldwide and decreased to 158 million ha in May 2023 – the lowest level since July 2012. The main decrease in certified area took place in the UNECE region, resulting in only 77% of FSC certified forests still being located in the UNECE region – the lowest level since 1999.

The area certified by FSC in the UNECE region mainly dropped owing to the suspension of all certificates in the Russian Federation (59.5 million ha) and Belarus (9.2 million ha). Three other UNECE member States saw significant reductions in the forest area certified by FSC by June 2023 (y-o-y). The area in in Canada contracted by 7% (3.5 million ha), in Poland by 24.5% (1.6 million ha) and in the United States by 1.5% (0.2 million ha).

Six Regional Directorates of the Polish State Forests Service opted to discontinue FSC certification in their respective regions which led to the second lowest level in forest area certified by FSC in Poland in over 20 years (after 4.62 million ha in 2018). Two countries in the UNECE region registered significant increases (FSC, 2023a, 2023b). The area under

GRAPH 1.4

FSC- and PEFC-certified forest area, 2013-2023



Note: Double-certified area as of mid-2022; area certified by certification scheme as of June 2023. The total actual area of certified forest is the sum of the area certified solely by the FSC, the area certified solely by the PEFC, and the area of double-certified forest. FSC = Forest Stewardship Council; PEFC = Programme for the Endorsement of Forest Certification.

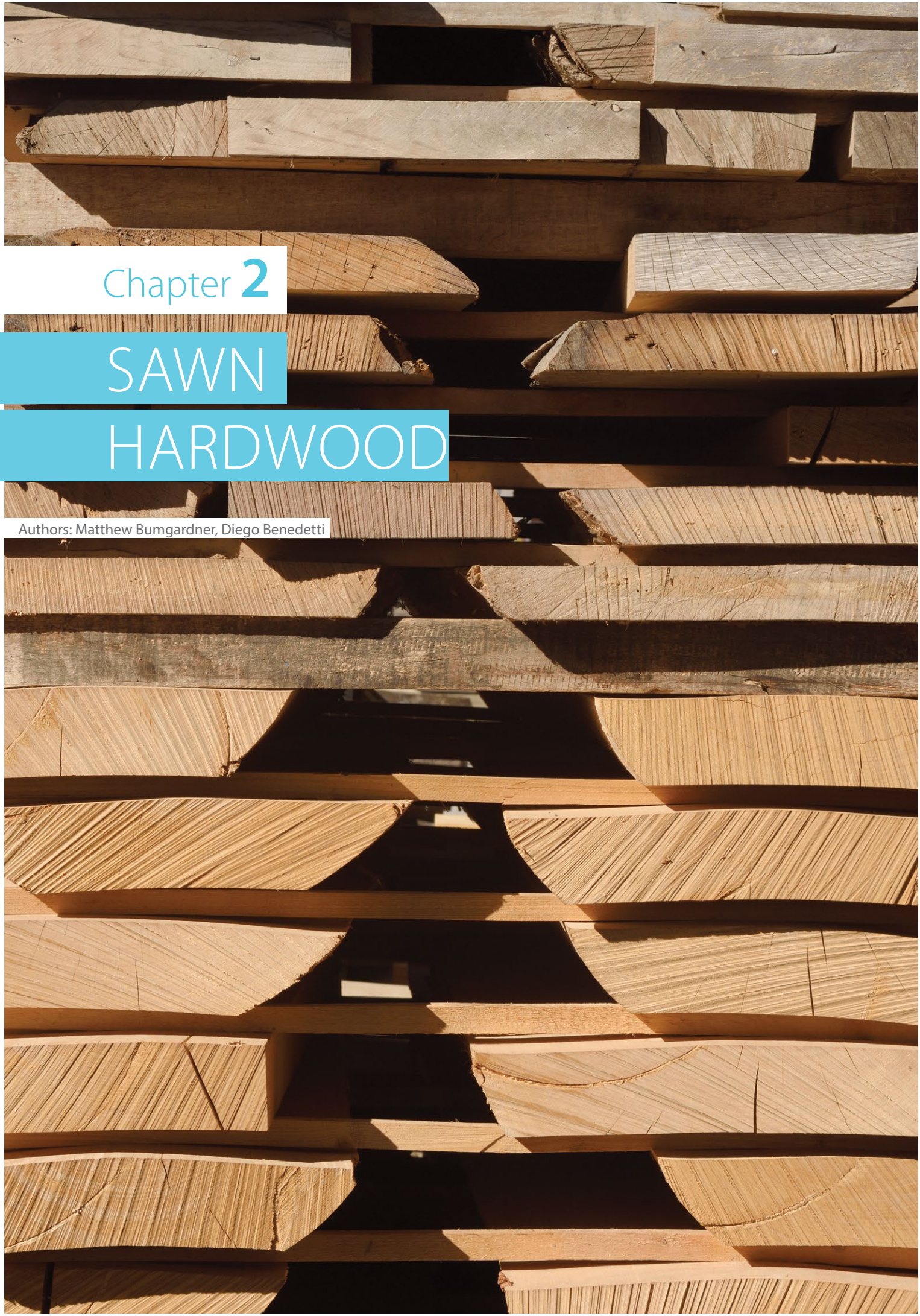
Sources: FSC, 2023a; PEFC, 2023a, 2023b; UNECE/FAO, 2022.

FSC certification increased in Türkiye and Ukraine by 15.4% (1.0 million ha) and 13.4% (0.5 million ha) respectively.

The forest area certified by PEFC peaked in March 2021 at 331 million ha before it dropped to 286 million ha in September 2022 - the lowest area of forest certified by PEFC since 2016. The drop was driven by developments in the UNECE region, which accounted for only 82.6% in September 2023. Again, the biggest drops recorded were caused by the suspension of any certifications in the Russian Federation and Belarus which reduced the forest area under PEFC certification by 32 million ha and 7 million ha respectively.

Further to the suspensions of certificates in the Russian Federation and Belarus, the following annual changes in forest area certified in the UNECE region by PEFC were recorded by March: In Canada and Sweden the area certified by PEFC decreased by 0.5% (0.7 million ha) and 1.9% (0.3 million ha) while it increased in Estonia by 22% (0.4 million ha).

The suspension of forest certification in the Russian Federation and Belarus were the main but not the only drivers of loss in certified forest area in the UNECE region. Deforestation-free policies in North America and Europe as outlined above have a strong focus on companies' due diligence instead of third-party forest certification as outlined in the EUDR (European Union, 2023) and the Lacey Act. It remains to be seen when and how forest certification will be able to resume its positive trend of the past two decades and thus contribute to the achievement of SDG target 15.2.



Chapter 2

SAWN HARDWOOD

Authors: Matthew Bumgardner, Diego Benedetti

Highlights

The UNECE region's market trend for sawn hardwood consumption was positive in 2021 and early 2022 before it significantly deteriorated in the second half of 2022 and the first half of 2023. Sawn hardwood consumption in the UNECE region contracted by 3.3% to 30.3 million m^3 in 2022.

Sawn hardwood production in the UNECE region dropped by 2.7% to 35.5 million m^3 in 2022.

In North America consumption (2.2%) and production (1.8%) of sawn hardwood increased in 2022 but preliminary observations for 2023 suggest that both will decline in 2023.

Although exports of sawn hardwood from the United States increased slightly in 2022, Mexico was their only major export market with an increase (+8%).

European sawn hardwood production decreased by 8.8% to 13.4 million m^3 in 2022 and is expected to further contract by 3-5% in 2023.

European sawmills faced strong competition for oak sawlogs from overseas buyers resulting in high prices in 2022. Demand from overseas eased slightly in early 2023.

European producers managed to significantly increase unit prices for overseas sawn hardwood export in 2022.

Production of sawn hardwood in Eastern Europe, Caucasus and Central Asia decreased by 3.8% in 2022 with exports from Belarus dropping by over 60% in 2022.

The sawn hardwood industry is facing stiff competition from non-solid wood and non-wood substitute materials in recent years.

Sawn hardwood production and consumption in the UNECE region is likely to close 2023 below the record low results of 2020 when the pandemic had strongly impacted both production and consumption.

Introduction and overview

The year 2021 witnessed the strong recovery of the sawn hardwood market. This positive trend lasted until mid-2022, when it flipped in the entire UNECE region. Consumption of sawn hardwood dropped in the second half of 2022 resulting in the contraction of annual consumption by 3.3% to 30.3 million m^3. Consequently, sawn hardwood markets in the UNECE dropped back almost to the low levels of 2020 which was heavily impacted by the pandemic. Sawn hardwood production in the UNECE region dropped by 2.7% to 35.5 million m^3.

Sawn hardwood and the United Nations Sustainable Development Goals

Member States of the UNECE contribute roughly 19% of the global sawn hardwood production and account for about 55% of globally exported sawn hardwood. About 38% of the sawn hardwood production of the UNECE is exported.

Strong competition increased prices of hardwood sawlogs – namely white oak - in the past decade, providing forest owners with significant revenues - a very strong incentive to manage their forests sustainably and thus contribute to SDG 15[5].

Prices for hardwood sawlogs are usually well above prices for fuelwood. Under rare conditions (see further below) the sawmill sector may be facing competition over lower quality grade sawlogs (namely beech) from the energy sector and thus interfere with SDG7[6]. Co-products of sawn hardwood production, such as bark, slabs, cut offs, trimmings, etc. are often used for energy generation and thus contribute to SDG7.

Using more hardwood from sustainably managed forests instead of fossil-based product can makes a positive contribution to SDG13[7]. One m^3 of sawn hardwood stores one tonne of CO_2. Using sawn hardwood for long-lived products such as furniture, doors, windows, flooring, pallets, crates and boxes can lock away carbon for decades and thus substitute products with a less favourable carbon balance and contributes to SDG13.

5 SDG15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

6 SDG7: Ensure access to affordable, reliable, sustainable and modern energy for all.

7 SDG13: Take urgent action to combat climate change and its impacts.

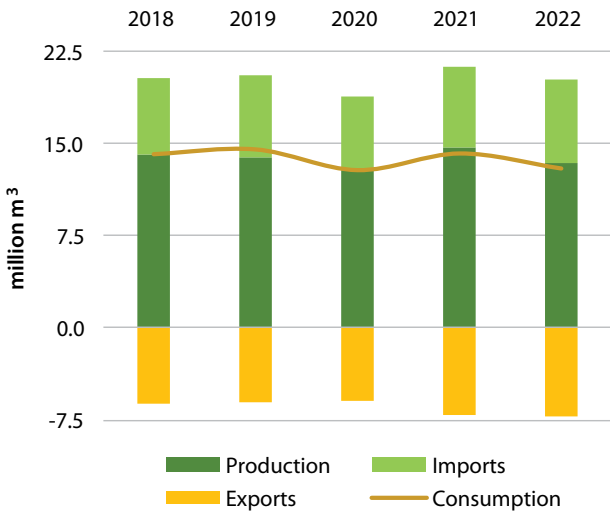
Europe

PRODUCTION

Following very positive market developments in 2021, European sawn hardwood production decreased by 8.8% to 13.4 million m^3 in 2022 (Graph 2.1). All large producing countries such as France, Germany, Romania and Türkiye reported significant declines in production. Croatia, the only exception among the main producing countries, increased production by 9.4%.

GRAPH 2.1

Europe: Sawn hardwood production, trade and consumption, 2018-2022



Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2023.

After an exceptionally good result in 2021, Türkiye, the largest producer of sawn hardwood in Europe, saw its output drop by almost 22.3% to 3.3 million m^3 in 2022, still the second highest volume on record. The European Sawmill Association[8] (EOS) estimates that France, the second biggest producer of sawn hardwood in Europe, decreased its production by 8%. The EOS expects production in Europe to further contract by 3-5% in 2023.

Hardwood log exports are a structural issue for the European sawn hardwood industry which caused the closure of some sawmills. EOS reports that oak processors in Europe were facing particularly stiff competition for raw material, notably by buyers from China, resulting in high prices for sawlogs in 2022. The problem remained particularly severe in France and in Belgium. In France 30% of oak logs harvested in 2022 were exported to China, which in the end significantly constrained the domestic production of oak sawnwood. With 550 thousand m^3 of oak logs exported to China in 2022, France is by far the largest supplier at global level before the United States with about 300 thousand m^3, while Belgium is the third largest supplier with 75 thousand m^3 (China customs bureau, 2023). The EOS observed a drop in oak log exports at the beginning of 2023.

Hardwood sawmills in central Europe specialized in beech sawnwood production faced competition for raw material with the fuelwood producers for a short period at the end of 2022 driving up prices for beech sawlogs.

In addition, since 2018, sawn hardwood producers have seen their resource base being further constrained owing to quality issues with beech sawlogs which are likely caused by the very dry and hot summers.

CONSUMPTION

The renovation boom observed during the pandemic, when many people who could not spend their money on travel and leisure decided to renovate their homes (see UNECE, 2022), was an important contributor to the lively demand in the hardwood sector, especially in 2021. With the easing of COVID-19 sanitary measures, this trend ended abruptly in 2022.

Consumption of sawn hardwood dropped by 8.7% in Europe to 12.9 million m^3 with varying trends among the large consumer countries. Consumption in France was stable, while it dropped by double-digits in Germany and in Romania. The EOS Hardwood Working Group reported a challenging environment particularly for lower grades, while higher quality grades fared comparatively better at the beginning of 2023.

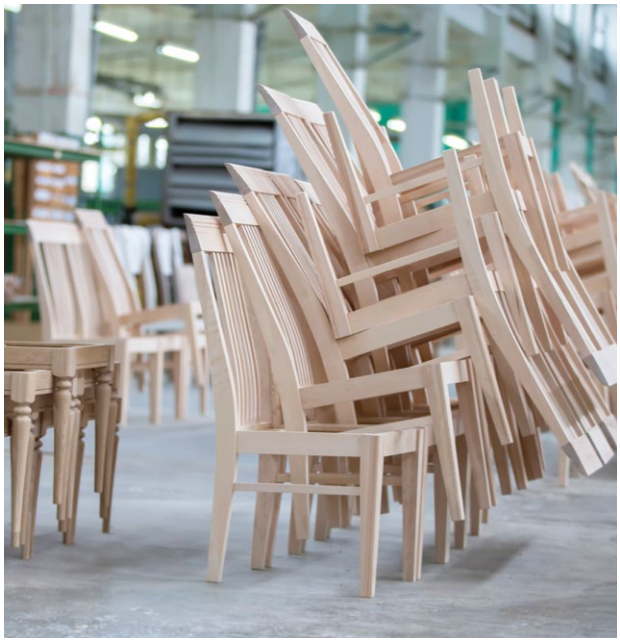
The parquet (wooden flooring) industry in Europe remains an important consumer of European hardwoods. According to the European Parquet Federation (FEP), production in the parquet sector declined by almost 5%. With the market share of 82.1%, oak remains the main species for the sector. Ash and beech are still the two other most commonly chosen species with 5.3% and 2.5% respectively. Tropical wood species represent just 2.0% of wood used (FEP, 2023).

The parquet industry is also faced with ported limited wood and wood product availability mainly caused by disruptions in supply chains and an overall high demand for wood products in 2021. The war in Ukraine further deteriorated the raw material availability since a significant part of the raw material and semi-finished products used by European parquet producers came from Belarus, the Russian Federation and Ukraine (FEP, 2023).

The furniture market is another important consumer of sawn hardwood and showed strong demand in 2022. Europe is the second largest region for furniture production worldwide after Asia and is a major hub of world trade in furniture.

European furniture production in 2022 increased reaching nearly $558 billion in output (€530 billion), the highest level since 2017. The Italian Centre for Industrial Studies (CSIL) estimates that demand for furniture in Europe will weaken in 2023, owing to high inflation and soaring furniture prices before it might resume in 2024 (CSIL, 2023).

Overall, EOS expects sawn hardwood consumption in Europe to slightly decrease in 2023.



8 EOS represents some 35 thousand sawmills in 11 countries across Europe (Austria, Belgium, Denmark, Finland, France, Germany, Latvia, Norway, Romania, Sweden, Switzerland) representing around 77% of the total European sawn wood.

TRADE

European sawn hardwood export and import volumes increased by 2.4% and 3.5% respectively in 2022. This was mainly driven by positive developments in intra-regional trade. Overseas exports of oak, beech, maple, cherry and ash sawnwood declined by 6% to 1.41 million m^3 in 2022. China remained the main market despite a contraction of exports by 23% to 452 thousand m^3. Exports to Egypt decreased by 8% to about 407 thousand m^3, while exports to Viet Nam remained stable at 100 thousand m^3 (Eurostat, 2023c).

European sawn hardwood exporters were able to significantly increase export prices which reduced the economic effect of the decrease in volume. The value of sawn hardwood export to China declined by 9.5% to $263 million. Export unit prices to other main markets were also on the rise. The value of shipments to Egypt rose by 26% to $135 million, to Viet Nam by 26% to $64 million and to the United States by 16% to $60 million (Eurostat, 2023c).

Eastern Europe, Caucasus and Central Asia

The Russian Federation is by far the leading producer of sawn hardwood among countries in the EECCA region, accounting for over 75% of the production. The remaining 15% of the EECCA's production is located in Belarus and Ukraine.

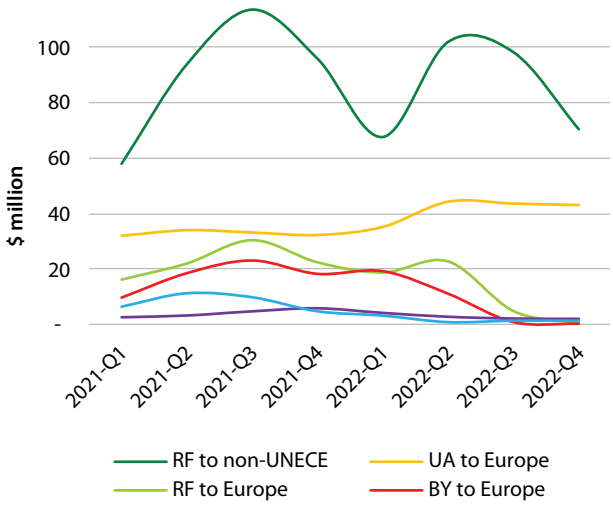
Each of the three main producer countries relies heavily on the export of their sawn hardwood production with shares ranging from 50% in the Russian Federation to 70% and 85% in Belarus and Ukraine. China is the main trading partner of the Russian Federation and increased its market share from 77% in 2021 to 85% in 2022. Ukraine and Belarus historically mainly traded sawn hardwood with countries in Europe (see Graph 2.2).

Overall the value of sawn hardwood exported by the Russian Federation and Belarus contracted by 16% and 61% to $397 million and $33 million respectively. The value of sawn hardwood exports from Ukraine increased by 4% to $174 million (UN Comtrade, 2023).

Production of sawn hardwood in the Russian Federation is estimated to have contracted by about 8% in 2022. Belarus with its high dependency on exporting sawn hardwood to Europe may have decreased its production by over 30% in 2023, due to the imposed restrictions in the trade of any wood product[9] from the country imposed by the EU in March 2022 (EU, 2022a).

GRAPH 2.2

Main sawn hardwood trade flows from Belarus, the Russian Federation and Ukraine 2021 and 2022 ($ million)



Notes: BY=Belarus; RF=Russian Federation; UA: Ukraine.

Source: UN Comtrade, 2023.

North America

PRODUCTION

North American sawn hardwood production increased by 328 thousand m^3 or 1.8% from 2021 to 2022 (Graph 2.3). Individually, the United States production increased by 2.0% and Canadian production declined by 2.4%. Overall, the United States accounted for 95.4% of North American sawn hardwood production in 2022. The increase in production was accompanied by a 3.0% increase in hardwood sawmill employment in the United States[10] (US Bureau of Labor Statistics, 2023).

Apparent consumption of sawn hardwood in North America increased by 343 thousand m^3 or 2.2% in 2022, driven mostly by the increase in production. There was a slight increase in net imports as well, which also added to consumption.

The cooling of the housing market in the United States in 2022 (see chapter 1) is having potential negative implications for the hardwood industry, as single-family housing typically generates greater demand for higher value hardwood

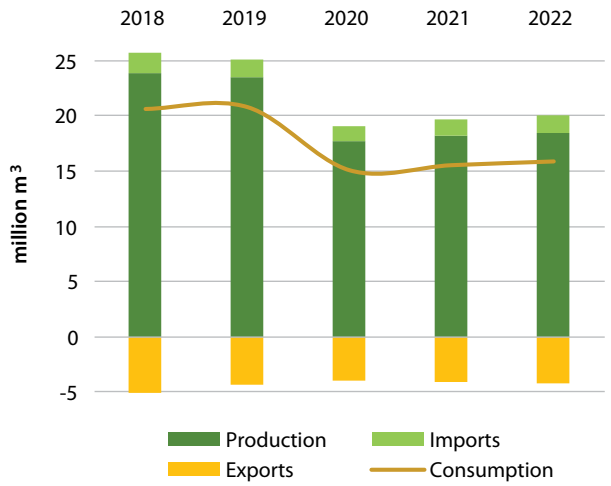
9 Comtrade Harmonized System code 44: Wood and articles of wood.

10 The United States Bureau of Labor Statistics does not separate sawmill employment by hardwood and softwood mills. Therefore, this figure is based on sawmill employment in 16 states that are primarily hardwood, as described in Bumgardner *et al.* (2016).

products than multifamily starts. Furthermore, with building costs rising sharply, some builders find themselves over budget toward the end of projects, which might cause them to choose alternatives to hardwood to trim homes (Bodenhamer *et al.* 2022).

GRAPH 2.3

North America: Sawn hardwood production, trade and consumption, 2018-2022

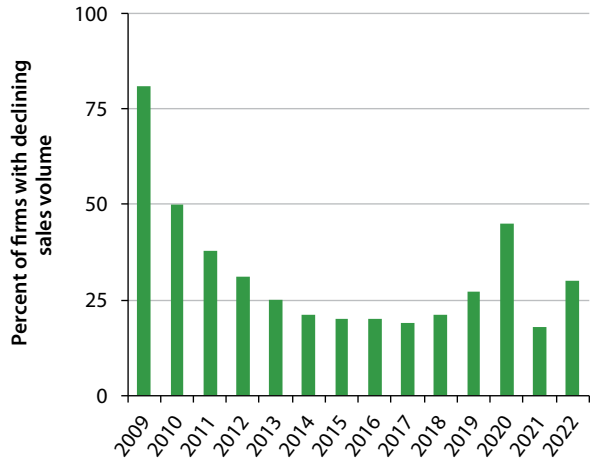


Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2023.

GRAPH 2.4

Percentage of North American secondary woodworking firms reporting sales volume declines by year in an annual survey, 2009-2022



Source: Bumgardner, Buehlmann, and Koenig, 2023.

In terms of United States private construction spending, single family housing, multifamily housing, and remodeling increased by 4.4%, 4.4%, and 31.4%, respectively, in 2022 (US Census Bureau, 2023e). While these figures in part reflect inflationary prices in 2022, they show the recent importance of the remodeling markets to the hardwood industry, particularly for higher value products like hardwood flooring, millwork, and cabinets.

Although overall hardwood consumption increased in 2022, the second half of 2022 saw a decline in demand for higher value sawn hardwood. The corresponding peak production month for the United States in 2022 was August (Hardwood Market Report, 2023). Although representing lower overall volume, the peak production month for Canada was November (Statistics Canada, 2023). The decline in grade markets (high quality sawn hardwood) was evidenced, in part, by an increase in the percentage of North American secondary woodworking manufacturers reporting declining sales volume in 2022 compared to 2021 (Graph 2.4). Conversely, demand in industrial markets – mainly pallets and railway sleepers – remained stronger throughout 2022, especially for sleepers.

CONSUMPTION

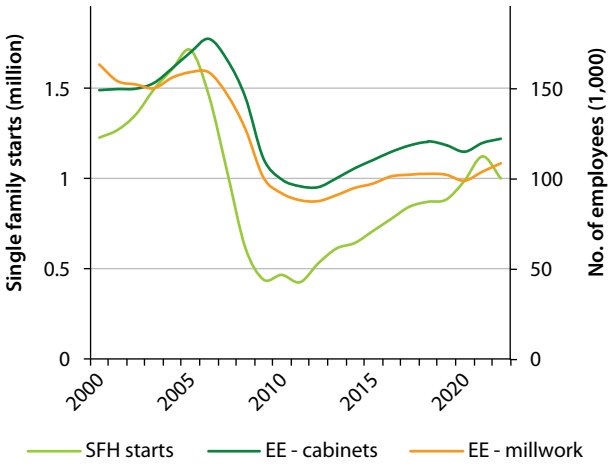
Increased sawn hardwood consumption for 2022 was accompanied by a 2.5% increase in United States industrial production from January through September 2022 (US Federal Reserve Bank of St. Louis, 2023). After September, however, United States industrial production started to decline. Similarly, employment in the wood kitchen cabinet sector (NAICS[11] 337110) was up 1.9% from 2021 to 2022, even though the monthly employment figures for November and December were below 2021 levels (US Bureau of Labor Statistics 2023). Likewise, employment in the millwork sector (NAICS 32191) was up 4.5% in 2021 but slowed toward the end of 2022 (i.e., December 2021 employment was higher than December 2022). Thus, as noted above, there likely was less hardwood consumption toward the latter part of 2022.

As in past years, the hardwood industry is facing stiff competition from non-solid wood and non-wood substitute materials, given current style trends that are geared towards painted finishes (Hardwood Market Report 2023). Therefore, demand for solid hardwood might not be keeping pace with the overall demand for secondary products in the present interior design environment. A positive trend could be developing in hardwood flooring markets, however, as an industry report found that companies expected natural wood colors and finishes to increase in popularity in 2023 (Bodenhamer *et al.*, 2022).

11 North American Industry Classification System (NAICS)

GRAPH 2.5

Single family housing starts and employment in the wood kitchen cabinet and millwork sectors in the United States, 2000 to 2022



Notes: SFH: single family housing; EE: Employees; wood kitchen cabinet (NAICS 337110), millwork (NAICS 32191).

Sources: US Census Bureau, 2023f; US Bureau of Labor Statistics, 2023.

As shown in Graph 2.5, employment in higher value secondary sectors traditionally has been well-correlated with single family housing starts. Higher secondary employment, in turn, suggests greater hardwood consumption.

However, this trend was disrupted in 2022 as employment increased and single-family housing starts decreased. One reason why employment might have increased in the cabinet and millwork sectors, despite sluggish demand as suggested by lower starts, was that companies were increasing hiring to catch up with labor gaps created by COVID-19 disruptions.

TRADE

The total sawn hardwood import in North America was divided somewhat evenly between the United States and Canada in 2022 (UNECE/FAO, 2023). Imports of sawn hardwood in the United States could be broken down by the following shares: 65.3% temperate and 34.7% tropical (USDA FAS, 2023). Temperate species imported by the United States were mainly driven by poplar (*Populus* spp.) imports (mostly from Canada), maple (mostly from Canada), beech (mostly from Germany), and birch (mostly from Canada). The greatest import growth in the United States for a major species from 2021 to 2022, however, occurred for white oak (+26.9%), with France accounting for much of the increase. Tropical imports by the United States increased by nearly 170% from 2021 to 2022, partially a function of 2021 being the lowest year for imports in the United States since 2009 (USDA FAS, 2023).

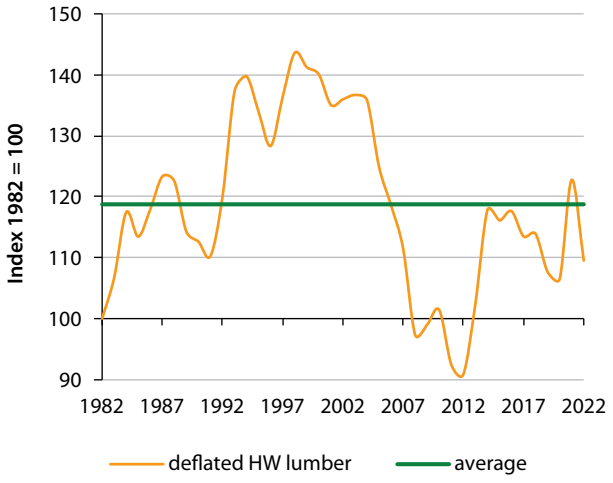
Most North American exports of sawn hardwood (89.5%) originated from the United States in 2022 (UNECE/FAO, 2023). China remained the largest market for sawn hardwood exports from the United States in 2022, accounting for a third of the total volume exported (USDA FAS, 2023). China accounted for 54% by volume of the exports from the United States in 2017 but has since held a smaller market share given trade frictions and generally lower demand (Luppold and Bumgardner, 2021). The four largest export markets for the United States (China, Canada, Viet nam, and Mexico) accounted for a combined 73.7% of exports in 2022. However, Mexico was the only major market that recorded an increase (+8%). Important export species of the United States were red oak (mostly to China), white oak, yellow-poplar ***(****Liriodendron tulipifera****)*** (mostly to Viet nam), walnut, ash, maple (mostly to Canada), red alder and cherry (mostly to China). Overall, net trade of sawn hardwood for North America represented a 2.65 million m^3 surplus in 2022, a slight decrease (-0.7%) from 2021.

PRICES

The inflation-adjusted aggregate price index (1982=100) for the United States sawn hardwood is shown in Graph 2.6. The index is derived from the United States Bureau of Labor Statistics (2023) "hardwood lumber" series, adjusted for inflation using the producer price index. The index depicts well the impacts of the loss of domestic furniture manufacturing, the Great Recession and associated housing crisis, and shifts to industrial markets on sawn hardwood market prices since the early part of the 21st century (Luppold and Bumgardner, 2023).

GRAPH 2.6

Annual inflation-adjusted United States sawn hardwood price index and average, 1982 to 2022



Note: Index 1982 = 100; HW: Hardwood.

Source: US Bureau of Labor Statistics 2023.

The price index was sharply higher in 2021, however, as the relative strength of the amount of sawn hardwood demanded by secondary manufacturers exceeded the quantity supplied by sawmills given lingering issues in the supply chain. This led to an aggregate price above the long-term average for 2021.

In 2022, the aggregate price was lower as demand was moderate and sawmills had increased production in response to the strong prices in 2021. For 2022, the price index dropped by 10.8% and ended below the long-term average. For perspective, in the Appalachian region of the United States, the price of green 4/4 grade 1 Common Red Oak sawnwood declined by 52% from January to December of 2022, the price of green pallet cants declined by 16%, and the price of green southern Appalachian railway ties (i.e., sleepers) increased by 3% (Hardwood Market Report 2022).

TRENDS IN 2023

Preliminary observations for 2023 suggest a declining production and consumption as both domestic and international demand for sawn hardwood slowed in North America. Sluggish housing markets in both Canada and the United States were creating a strain on hardwood demand. Internationally, export volumes of sawn hardwood from the United States decreased by 20% from January to May of 2023 compared to the same period in 2022, with all major trading partners reflecting declines. Relative bright spots in the United States market included flooring and railway sleepers.

Chapter 3

WOOD-BASED PANELS

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Highlights

Wood-based panel production in the UNECE region dropped by 3.3% in 2022 to 147.1 million m^3 with 52.6% produced in Europe, 30.6% in North America and 16.8% in Eastern Europe, Caucasus and Central Asia.

Total wood-based panel production in Europe contracted by 5.1% compared to 2021 and returned to pre-pandemic levels owing to low activity in the construction and furniture sectors.

Countries in Eastern Europe, Caucasus and Central Asia boosted imports of wood-based panels from Belarus and the Russian Federation in the second half of 2022.

With mortgage rates in the United States rising above 7%, new housing starts and demand for wood-based panels were adversely affected.

Prices for structural wood-based panels in the United States plummeted by more than 50% from their highs in early 2021.

Consumption of wood-based panels was generally down or flat across all the major end-use segments in the United States and Canada.

Consumption of structural panels is expected to fall by 12% in 2023 (-10.4% for plywood and -12.3% for OSB) due to reduced building activities.

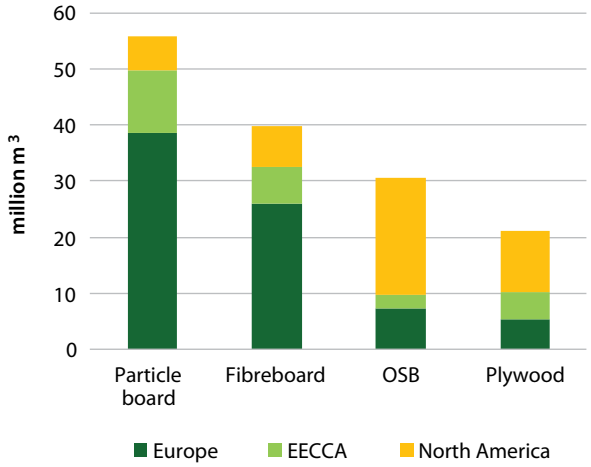
Long-term outlook for the European wood-based panels remains favourable thanks to political support for programs such as the European Green Deal, the European Renovation Wave and the New European Bauhaus.

Introduction and overview

Wood-based panel production in the UNECE region dropped by 3.3% to 147.1 million m³ in 2022 with 52.6% produced in Europe, 30.6% in North America and 16.8% in Eastern Europe, Caucasus and Central Asia. Each of the three regions has its own composition of the panel portfolio (Graph 3.1).

GRAPH 3.1

Structural and non-structural panel production by UNECE regions in 2022



Note: Structural panels: Oriented Strand Board (OSB) + Plywood; Non-structural panels: Particle board + fibreboard.

Source: UNECE, 2023.

The drop in housing starts and an uncertain economic outlook led to a decreased consumption of wood-based panels across most major end-use sectors. Reduced demand also led to substantial falls in panel prices, particularly for structural panels in the North American market. While the European Panel Federation (EPF)[12] forecasts market stability in 2023, the APA-Engineered Wood Association (2023a) is projecting for North America further declines in housing starts (-9%), structural panel production (-9%) and structural panel consumption (-12%) in 2023.

Europe

Total wood-based panels production decreased by 5.1% in 2022 in Europe owing to the energy crunch in the region, mainly triggered by measures in response to the war in Ukraine. Panel producers had to cope with higher energy prices for their production, disrupted and modifies supply chains, as well as strong competition for raw material due to steep increase demand in fuelwood. According to EPF, 90 per cent of the drop in output took place in the second half of 2022 and reflected the declines in furniture output and construction production.

Falling consumer confidence in the second half of 2022 also led to lower demand for furniture, including in the kitchen segment. The furniture industry remained the largest end-user of wood-based panels in Europe. EPF reports that 48% of wood-based panels were consumed by the furniture and kitchen segment in 2022 (49% in 2021). The building industry, including doors and flooring applications, accounted for 38% of the overall consumption of wood-based panels. The remaining volumes went to the packaging sector (3%) and other applications (11%) (EPF, 2023).

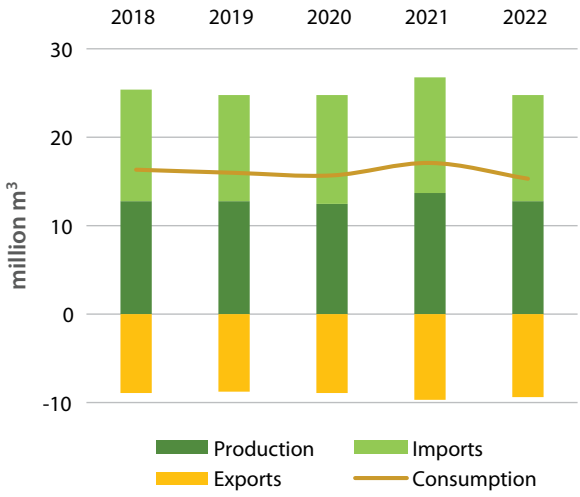
STRUCTURAL PANELS

Graph 3.2 summarizes structural panels production, trade and consumption between 2018 and 2022, while Graph 3.3 presents similar data for non-structural panels. Structural panel production and consumption in Europe were down by 6.5% and 10.1%, respectively in 2022.

European Oriented Strand Board (OSB) production declined by 6.4% in 2022 compared to 2021 (UNECE 2023). In 2022, there were two announced capacity expansion projects in Belgium and the United Kingdom with 175 thousand m³ of additional capacity. Germany and Romania continue to have the largest

GRAPH 3.2

Europe: Structural panels production, trade and consumption, 2018-2022



Note: Exports are shown as negative numbers.

Source: UNECE, 2023.

12 EPF countries includes countries in the EU27+UK+EFTA.

European OSB production capacities with reported production of 1.2 million m³ (-18.6%) and 1.0 million m³ (-9.2%) in 2022. Following an expansion in 2017, Poland now completes the Top 3 of OSB-producing countries, measured by capacity, followed by the United Kingdom, the Czech Republic, Ireland and Latvia. In 2023, EPF members expect the OSB production to rebound by 5.6% thanks to good prospects in terms of renovation activities and market share gains of wood in the construction sector in Europe.

European plywood production decreased by 5.8% in 2022 to 5.48 million m³ compared to 2021. All countries contributed to this decline except for the Baltics States, where plywood production increased by 2.2% (EPF, 2023). According to members of the EPF, plywood production in Europe is expected to increase by 1.7% in 2023 partly because of market share gains of wood in construction as well as the substitution of birch plywood. The latter can no longer be imported from Belarus or the Russian Federation owing to trade restrictions of wood products[13] imposed by the EU in March and April 2022 (EU, 2022a, 2022b).

NON-STRUCTURAL PANELS

Non-structural panel production, trade and consumption were down by 4.8% and 0.3%, respectively in 2022 (Graph 3.3).

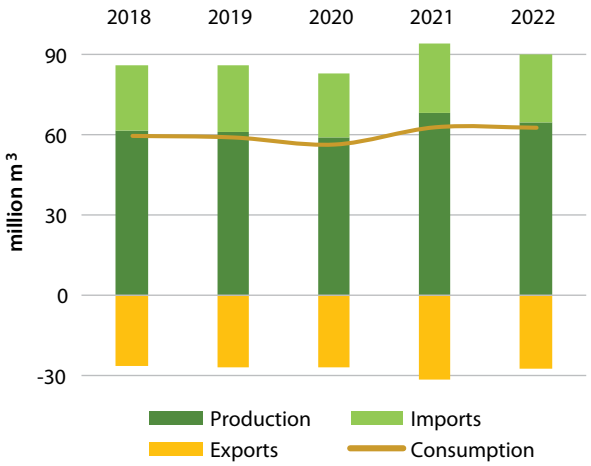
Particle board production decreased by 7.1% and returned to pre-pandemic levels in 2022. Türkiye, Germany and Poland remained the largest particle board producing countries in Europe with 5.6 million m³ (- 0.9%), 5.5 million m³ (-8.4%) and 5.0 million m³ (- 21.2%) in 2022. These three countries represented about 42% of the total European particle board production in 2022.

The European production of MDF and HDF decreased slightly by 0.8% to 21 million m³. Market trends, however, were quite heterogenous between Türkiye, the main producer of MDF panels in Europe, and all other countries in the region. Turkish production increased by 28.9% to 6.25 million m³ accounting for 29.8% of the total regional production. With further significant expansions of MDF production capacities planned in Türkiye (Wbponline, 2023), the country is likely to further strengthen its leading position in the region.

MDF production in all other European countries contracted by 9.7% in 2022 to 14.7 million m³. Germany remained the second largest European MDF producer despite a strong contraction in production by 19.2% to 3.8 million m³, followed by Poland in third place, with 3.4 million m³ (-4%) in 2022.

GRAPH 3.3

Europe: Non-Structural panels production, trade and consumption, 2018-2022



Note: Exports are shown as negative numbers.

Source: UNECE, 2023.

The EPF reports that European softboard production, reached a record production of more than 5.6 million m³ in 2021. However, the energy crisis, with shortages in natural gas supply and high energy prices, led softboard production to contract by nearly 9% in 2022 amid rising construction costs. Rigid softboard accounted for 60% (57% in 2021) of the output and flex softboard for the remaining part. The installed production capacity for rigid softboard remained stable at 3.42 million m³ in 2021, while that of flex softboards continued to increase by another 450 thousand m³ to 3.32 million m³ thanks to an expansion project in France. In 2022, another expansion project in Poland in the rigid softboard segment led to a capacity addition of 135 thousand m³. Flexboard production capacities remained stable in 2022.

The outlook for 2023 is cautious owing to sustained low consumer confidence and geopolitical and inflationary challenges. The EPF forecasts production of wood-based panels in Europe to remain stable in 2023. Although there is a downward risk to this forecast, the long-term outlook for the European wood-based panel consumption remains favourable because of political support for programmes such as the European Green Deal, the European Renovation Wave and the New European Bauhaus.

13 Comtrade Harmonized System code 44: Wood and articles of wood; wood charcoal.

Eastern Europe, Caucasus and Central Asia

Market trends in the production and consumption of wood-based panels in EECCA can only be estimated for 2022, owing to an incomplete dataset for this region in the latest Joint Forest Sector Questionnaire. Belarus, the Russian Federation, and Ukraine continue to lead the production of wood-based panels in the EECCA region with a total production of 15.9, 4.7 and 3.4 million m^3 respectively in 2020[14]. The following segment assesses the current market trends of the main wood-based panels in the region based on trade information and other publicly available sources.

STRUCTURAL PANELS

The Russian Federation leads the production of structural panels in the EECCA region with 5.6 million m^3 of the region's total production of 7.1 million m^3. Belarussian production comes in second with almost 1 million m^3 produced in 2020.

OSB production started in 2013 and 2015 in the Russian Federation and Belarus respectively, and evolved quickly to about 1.6 million m^3 in the Russian Federation and 0.6 million m^3 in Belarus in 2020. Export shares of their national production vary significantly between Belarus (93%), the Russian Federation (22%) and Ukraine (34%). Trade data (see Graph 3.4) indicate that exports of OSB panels had a good start into the first quarter of 2022.

The first effects of the European trade restrictions on Russian and Belarussian goods were reflected by a slight contraction of trade volumes in the second quarter of 2022. OSB exports to Europe and North America came to a halt in the second half of 2022. Ukraine increased OSB exports by about 20% in 2022.

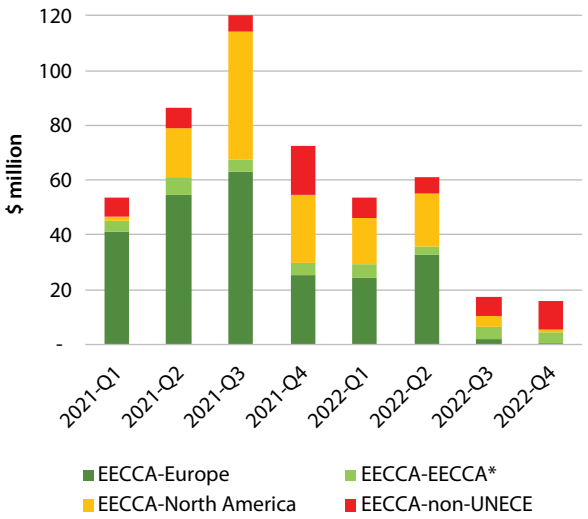
Significant investments in new OSB capacities were planned in the region for 2022 (wbponline, 2021) but have not yet been implemented.

The Russian Federation's Association of Furniture and Woodworking Industries indicates that the production of OSB in the Russian Federation decreased by 10.5% in 2022 (Globalwood, 2023).

Plywood, the second structural panel with a higher unit value, was almost entirely exported to countries outside the EECCA region. The Russian Federation and Belarus exported almost their entire production of plywood. Trade data indicate that the value of plywood exported from the Russian Federation contracted from $1.6 billion in 2021 to $1.3 billion in 2022 (Graph 3.5). The data provided by the Russian Association of Furniture and Woodworking Industries indicates that plywood

GRAPH 3.4

Eastern Europe, Caucasus and Central Asia quarterly exports of OSB, 2021-2022 ($ million)

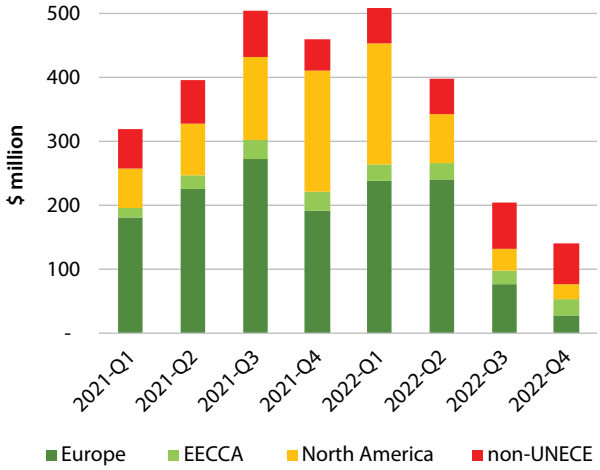


Note: *Excluding exports from Belarus to the Russian Federation.

Source: UN Comtrade, 2023.

GRAPH 3.5

Russian Federation quarterly export of plywood, 2021-2022 ($ million)



Source: UN Comtrade, 2023.

14 2020 data.

output in the Russian Federation fell by 28.8% to 3.24 million m^3 in 2022, the lowest level of annual plywood production in the Russian Federation since 2012 (Globalwood, 2023).

Trade data indicates that exports of plywood in the fourth quarter of 2022 declined by over 70% to $140 million ($460 million during the same period in 2021). In the fourth quarter of 2022 the Russian Federation exported plywood to Egypt, the United States, Türkiye, China, Uzbekistan, Azerbaijan, Georgia and India (in decreasing order of trade value) (UN Comtrade, 2023).

NON-STRUCTURAL PANELS

Non-structural panels, such as particle board and fibreboard, are the main panels by volume produced in the EECCA region. The Russian Federation produced 10 million m^3 of non-structural panels while Belarus and Ukraine produced 6 and 3 million m^3 respectively, in 2020. Particle board production accounted for 6.7, 1.4 and 2.6 million m^3 in each of the three countries.

In 2021, more than three quarters of the production of particle board in the Russian Federation and Ukraine were produced for their domestic markets. During the same year, 72% of Belarusian particle board production was destined for export – most of it to Europe (mainly Poland and Lithuania) and the EECCA (mainly the Russian Federation and Ukraine).

Belarussian particle board exports to Europe increased strongly in the first half of 2022 before their exports stopped in the second half of the year owing to EU-imposed trade restrictions. At the same time, Azerbaijan, Georgia, and Uzbekistan reported 500% and higher (year-over-year) increases of particle board imports from Belarus. Overall, the export value of particle board from Belarus contracted by over 57% from $189.4 million in 2021 to $81.1 million in 2022. In the fourth quarter of 2022, exports decelerated and revenues from particle board export dropped by 82% to $18 million compared to $102.4 million during the same period in 2021. The production of particle board in Belarus may have dropped by 35% or more in 2022 and trade data for the first half of 2023 indicate further declines in 2023.

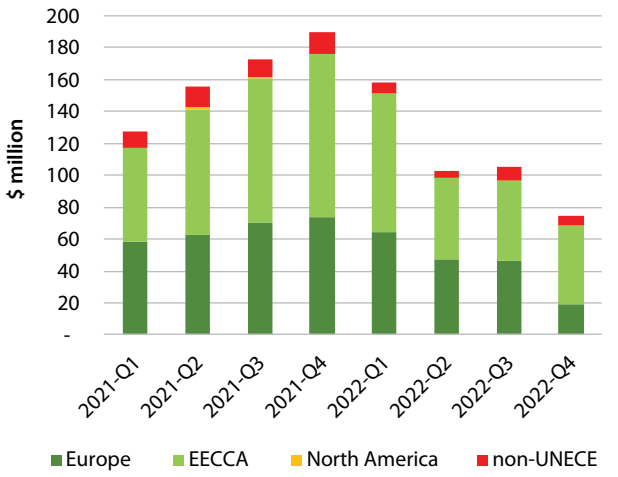
The Russian Federation's export value of particle board decreased by 26.3% from $343 million in 2021 to $253 million in 2022. Exports to the EECCA region accounted for 78% in 2021 and 81% in 2022. Trade continuously slowed down over the course of 2022. The export value for the fourth quarter of 2022 reached $60 million (down from $100 million year over year (y-o-y). Particle board production in the Russian Federation is less export dependent. According to the Russian Association of Furniture and Woodworking Industries (Globalwood, 2023), it contracted by 10.5% in 2022.

Around 90% of the fibreboard production in EECCA is located in the Russian Federation and Belarus. These panels have a higher value added and a higher share of exports than particle boards. The Russian Federation exported roughly 1/3 and Belarus 2/3 of its production in 2020. The exports from the Russian Federation were destined to countries in the EECCA and Europe.

The export value of fibreboard from the Russian Federation contracted by 31% from $644 million in 2021 to $440 million in 2022 (Graph 3.6). Export revenues from trade dropped by 60% towards the end of 2022 to $75 million in the fourth quarter of 2022, down from $190 million compared to the fourth quarter of 2021. This confirms the information from the Russian Association of Furniture and Woodworking Industries that production of fibreboard contracted by 12% in 2022.

GRAPH 3.6

Russian Federation value of fibreboard exports, 2021-2022



Source: UN Comtrade, 2023.

Belarus exported more than half of its fibreboards to the Russian Federation and Ukraine ($191.4 million of $350 million) in 2021. Poland, Lithuania, and Romania were then the country's three top trading partners in the European region. Ukraine stopped importing fibreboard with the beginning of the war in Ukraine and all European countries halted their imports in the second half of 2022. The value of exports from Belarus[15] declined from $241.5 million in 2021 to $96.5 million in 2022. Trade data indicate that Uzbekistan, Kyrgyzstan and Georgia (in descending order of trade increase) more than doubled their imports of fibreboard from Belarus, i.e., from $11.7 million in the second half of 2021 to $28 million during the same period of 2022. Demand for fibreboard in Belarus contracted by over 40% in 2022 and trade data for the first half of 2023 indicates a further decrease in 2023.

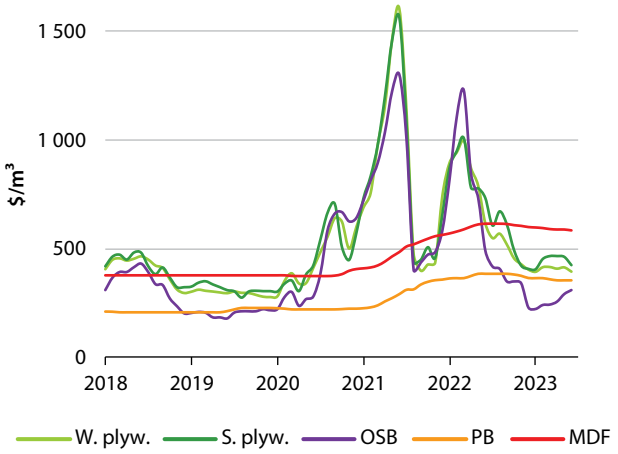
15 Excluding the Russian Federation owing to lack of trade data.

North America

The apparent consumption of wood-based panels decreased by 5.1% in North America in 2022, driven largely by increases in interest rates and the resultant higher mortgage rates. Mortgage rates in the United States increased from 3.5% in January 2022 to just over 7% at the end of the year. As a result, housing starts in North America fell by 3% in 2022 and are projected to decline by another 16% in 2023. Given this rapid decline, prices for all types of structural panels fell suddenly in 2022, with OSB leading the way (-72%), followed by western plywood (-55%) and southern plywood (-53%) (Graph 3.7).

GRAPH 3.7

North America: Wood-based panel prices, 2018-2023



Note: m³ per 1,000 square feet: western plywood: 1.180; southern plywood: 1.106; OSB: 1.032; particle board and MDF: 1.475.

Source: Random Lengths, 2023.

In contrast, prices for non-structural panels were partially shielded from the housing start decline owing to the relatively stable demand for furniture and other household products. In 2022, particle board prices were relatively stable (+0.6%) while MDF prices rose by 5.2%.

Total wood-based panel production in North America fell by 1.3% in 2022, to 45.1 million m³ (see Graphs 3.8 and 3.9.) Production capacity in the North American structural panel industry increased by 1.0% with the capacity utilization rate decreasing from 78.0% in 2021 to 75.8% in 2022 (APA, 2023b).

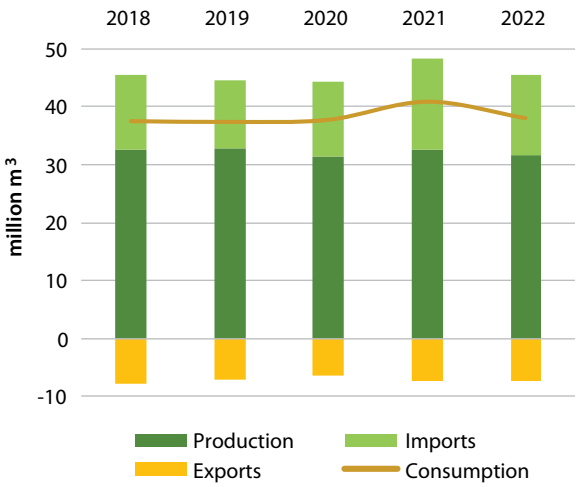
STRUCTURAL PANELS

The consumption of structural wood-based panels decreased by 5.3% in North America in 2022, driven largely by the drop in housing starts as outlined in chapter 1, with demand falling for OSB by 1.1% and plywood by 13.3% (graph 3.8).

Trends in the consumption of wood-based structural panels in North America were negative across almost all the major end-use markets. Modest increases were seen for OSB panels in the remodeling and industrial markets. Overall, aggregate wood-based panel consumption decreased by 7.6% in the residential construction market, by 1.2% in the industrial market, by 5.3% in the non-residential market and was unchanged in the remodeling market (APA, 2023b).

GRAPH 3.8

North America: Structural panels production, trade and consumption, 2018-2022



Note: Exports are shown as negative numbers.

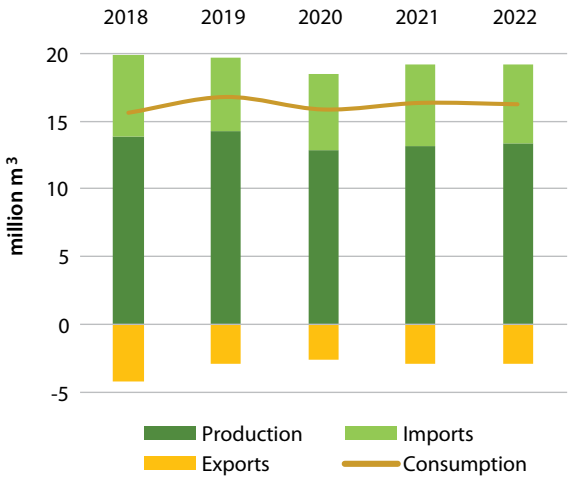
Source: UNECE/FAO, 2023.

NON-STRUCTURAL PANELS

North American consumption of non-structural panels decreased 0.3% in 2022, with MDF consumption increasing by 1.0% and particle board decreasing by 0.5% compared to 2021 (Graph 3.9). With North American housing starts projected to be down substantially in 2023, owing to rising interest and mortgage rates (APA, 2023a), the production of non-structural wood-based panels is also expected to decrease significantly in 2023, more so for MDF than particle board (CPA, 2023a). North American production capacity for non-structural panels went up slightly by 0.8% in 2022, to approximately 13.3 million m³, despite several particle board plants closing in the United States. The capacity utilization rate in 2022 increased slightly in the particle board subsector (from 71.7% in 2021 to 72.3% in

GRAPH 3.9

North America: Non-structural panels production, trade and consumption, 2018-2022



Note: Exports are shown as negative numbers.

Source: UNECE/FAO, 2023.

2022) and decreased substantially in the MDF subsector (from 80.4% in 2021 to 74.1% in 2022) (CPA, 2023b).

The value of North American imports of wood-based panels increased slightly in 2022 (+1.0%), to $11.2 billion. The total value of wood-based panel imports by the United States rose by 1.3%, including for plywood (+6.2%), fibreboard (+48.7%) and particle board (+14.2%). In contrast, OSB imports fell by 20.7%. In Canada, the total value of wood-based panel imports fell by 1.6% in 2022, led by OSB (-13.4%), plywood (-5.4%) and fibreboard (1.6%). In contrast, particle board imports increased by 15.5%.

The value of wood-based panel exports from North America fell by 8.6% in 2022, to $5.4 billion, with Canada accounting for 83.3% of the total. The value of exports from North America (including trade between Canada and the United States) increased by 14.4% for particle board and 2.2% for plywood. In contrast, the value of OSB exports dropped by 19.5%.

In 2022 weak demand for structural wood-based panels in the new home construction and the repair and remodel sector resulted in rapid price declines for structural wood-based panels. Between January 2022 and December 2022, prices fell by approximately half for western plywood (-54.7%) and southern plywood (53.1%) while OSB prices dropped by almost three quarters (-72.0%) (Random Lengths, 2023). As the Federal Reserve moderated interest rate increases in the first half of 2023, prices for panel products began to stabilize. OSB prices not only stabilized but experienced a modest rally in the first half of 2023 (graph 3.7).

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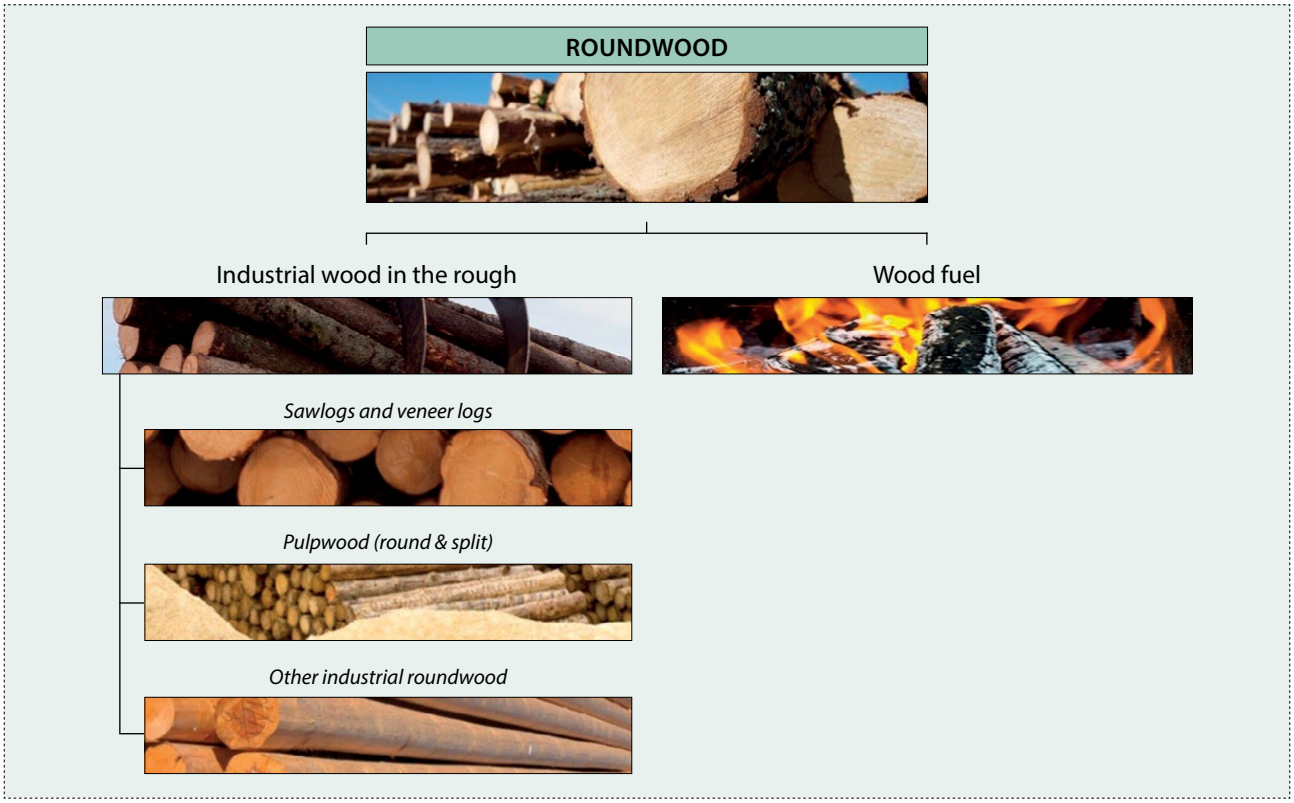
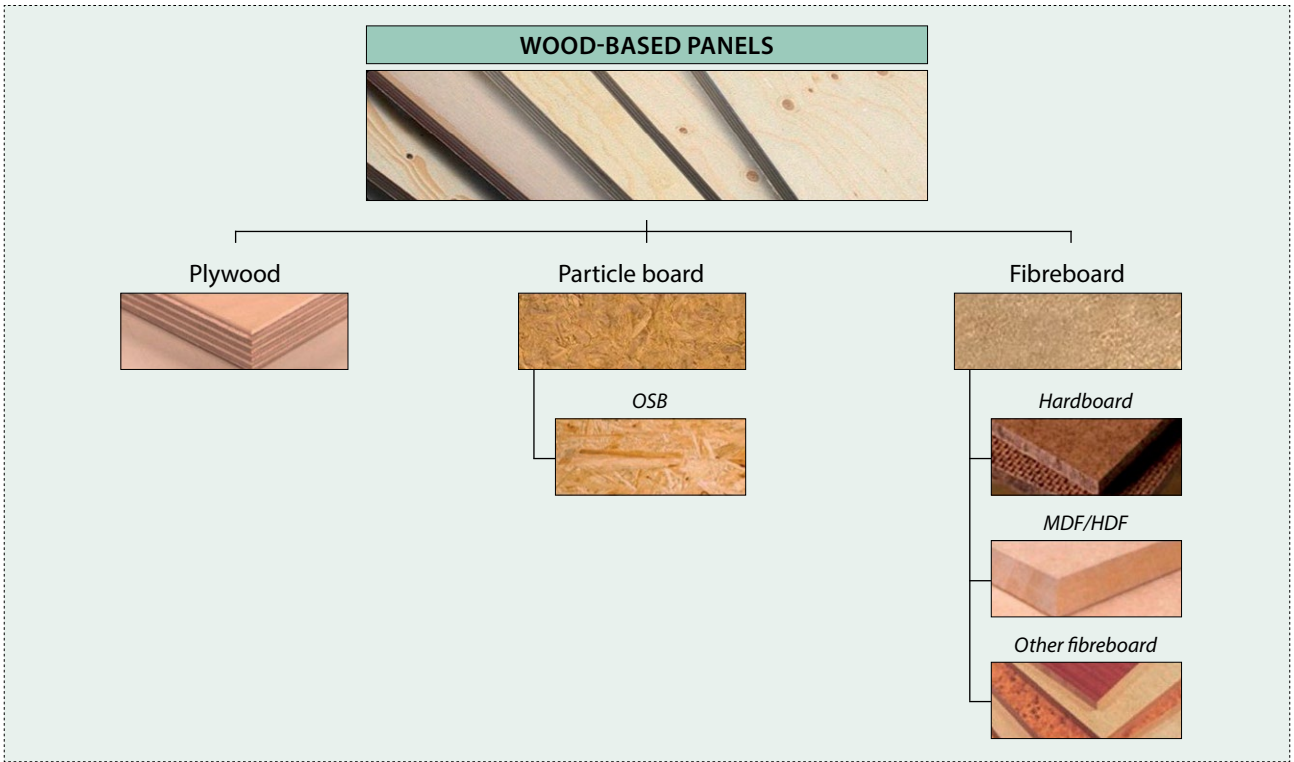
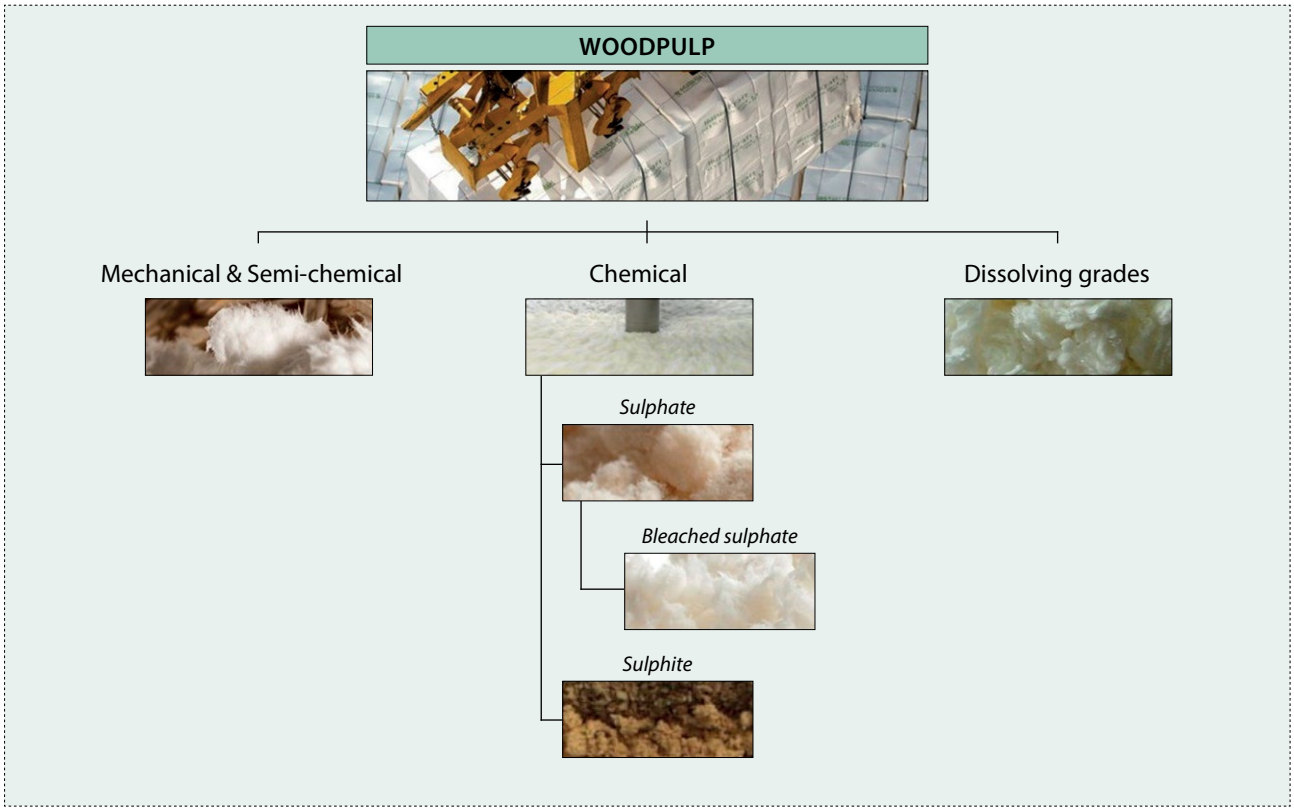
COMPONENTS OF WOOD PRODUCTS GROUPS

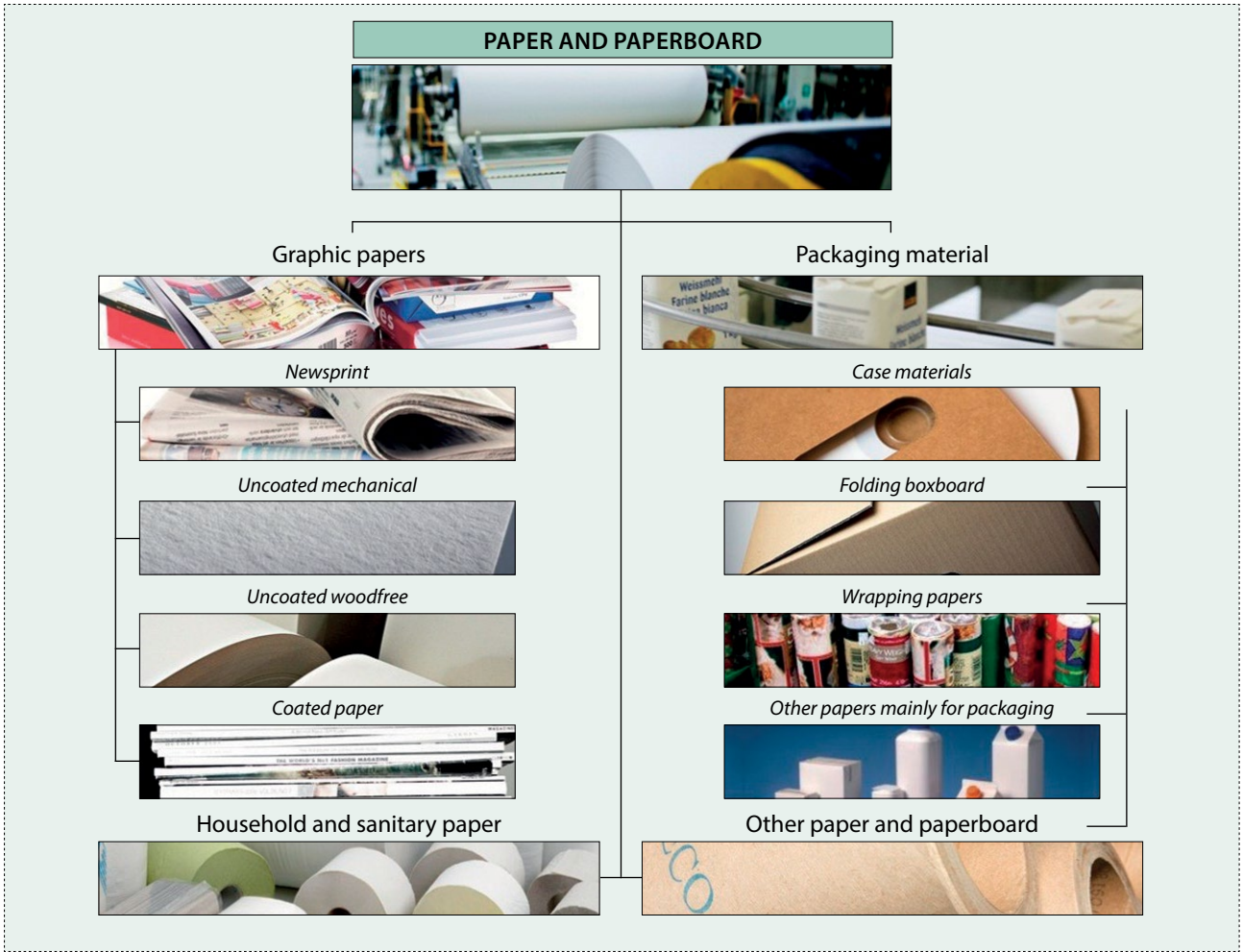
(Based on Joint Forest Sector Questionnaire nomenclature)

The diagrams below show the important breakdowns of the major groups of primary forest products. In addition, some sub-items (all roundwood products; sawnwood; and veneer and plywood) are further divided into softwood and hardwood. Items that do not fit into listed aggregates are not shown. These are wood charcoal; wood chips and particles; wood residues; recovered wood; pellets and agglomerates; sawnwood; veneer; other pulp; and recovered paper.









Sources for images in these diagrams are databanks of Metsä Group (2012), Raunion Saha (2012), Stora Enso (2012) and UPM (2012).

COUNTRIES IN THE UNECE REGION AND ITS SUBREGIONS

Eastern Europe, Caucasus and Central Asia
Armenia
Azerbaijan
Belarus
Georgia
Kazakhstan
Kyrgyzstan
Republic of Moldova
Russian Federation
Tajikistan
Turkmenistan
Ukraine
Uzbekistan

North America
Canada
United States of America

European Union	
Austria	Italy
Belgium	Latvia
Bulgaria	Lithuania
Croatia	Luxembourg
Cyprus	Malta
Czech Republic	Netherlands
Denmark	Poland
Estonia	Portugal
Finland	Romania
France	Slovakia
Germany	Slovenia
Greece	Spain
Hungary	Sweden
Ireland	

Europe (other countries)
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Andorra
Bosnia and Herzegovina
Iceland
Israel
Liechtenstein
Monaco
Montenegro
North Macedonia
Norway
San Marino
Serbia
Switzerland
Türkiye
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SOME FACTS ABOUT THE COMMITTEE ON FORESTS AND THE FOREST INDUSTRY

The UNECE Committee on Forests and the Forest Industry (COFFI) is a principal subsidiary body of the UNECE based in Geneva. It constitutes a forum for cooperation and consultation between member countries on forestry, the forest industry and forest product matters. All countries of Europe and the EECCA, as well as the United States, Canada and Israel, are members of the UNECE and participate in its work.

The UNECE Committee on Forests and the Forest Industry shall, within the context of sustainable development, provide member countries with the information and services needed for policymaking and decision-making with regard to their forest and forest industry sectors, including the trade and use of forest products and, where appropriate, it will formulate recommendations addressed to member governments and interested organizations. To this end, it shall:

1. with the active participation of member countries, undertake short-, medium- and long-term analyses of developments in, and having an impact on, the sector, including those developments offering possibilities for facilitating international trade and for enhancing the protection of the environment;
2. in support of these analyses, collect, store and disseminate statistics relating to the sector, and carry out activities to improve their quality and comparability;
3. provide a framework for cooperation, for example by organizing seminars, workshops and ad hoc meetings and setting up time-limited ad hoc groups, for the exchange of economic, environmental and technical information between governments and other institutions of member countries required for the development and implementation of policies leading to the sustainable development of the sector and the protection of the environment in their respective countries;
4. carry out tasks identified by the UNECE or the Committee on Forests and the Forest Industry as being of priority, including the facilitation of subregional cooperation and activities in support of the economies in transition of central and eastern Europe and of the countries of the region that are developing from an economic perspective; and
5. keep under review its structure and priorities and cooperate with other international and intergovernmental organizations active in the sector, particularly FAO and its European Forestry Commission and the International Labour Organization, in order to ensure complementarity and avoid duplication, thereby optimizing the use of resources.

SOME FACTS ABOUT THE EUROPEAN FORESTRY COMMISSION

The European Forestry Commission (EFC), which was created in 1947, is one of six regional forestry commissions established by FAO to provide a policy and technical forum for countries to discuss and address forest issues on a regional basis.

The purpose of the EFC is to advise on the formulation of forest policies and to review and coordinate their implementation at the regional level; exchange information; advise on suitable practices and actions to address technical and economic problems (generally through special subsidiary bodies); and make appropriate recommendations in relation to the foregoing. The EFC meets every two years and its official languages are English, French and Spanish.

The EFC has a number of associated subsidiary bodies, including the Working Party on the Management of Mountain Watersheds; the UNECE/FAO Working Party on Forest Statistics, Economics and Management; and seven UNECE/FAO Teams of Specialists. The Committee on Mediterranean Forestry Issues (Silva Mediterranea) informs the EFC.

FAO encourages the wide participation of government officials from forestry and other sectors as well as representatives of international, regional and subregional organizations that deal with forest-related issues in the region, including non-governmental organizations and the private sector. Accordingly, the EFC is open to all members and associate members whose territories are situated wholly or in part in the European Region or who are responsible for the international relations of any non-self-governing territory in that region. Membership comprises such eligible member nations as have notified the Director-General of their desire to be considered as members.

The EFC is one of the technical commissions serving the FAO Regional Office for Europe and Central Asia (REU), and the EFC Secretary is based in Geneva. EFC work is regulated by its Rules of Procedures, which were adopted by the FAO Conference in 1961 and amended at the Eighteenth Session of the EFC in 1977.

More information about the work of the EFC and COFFI may be obtained by contacting:

UNECE/FAO Forestry and Timber Section
Forests, Land and Housing Division
United Nations Economic Commission for Europe/
Food and Agriculture Organization of the United Nations
Palais des Nations
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The Review forms the basis of the Market Discussions held at annual sessions of the UNECE Committee on Forests and the Forest Industry, and it provides valuable objective information for other policymakers, researchers and investors.

Further information on forest product markets, as well as on the UNECE Committee on Forests and the Forest Industry and the FAO European Forestry Commission, is available at: **www.unece.org/forests**.

The Review has an extensive statistical annex, which is available at: **https://unece.org/forests/fpamr-2022-2023**.

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