Food and Agriculture Organization of the United Nations

UNECE

Forest Products
Annual Market Review 2019-2020

UNITED NATIONS
Geneva, 2020

COPYRIGHT AND DISCLAIMER

The designations employed in publications of the United Nations Economic Commission for Europe (UNECE) and the Food and Agriculture Organization of the United Nations (FAO), which are in conformity with United Nations practice, and the presentation of material therein do not imply the expression of any opinion whatsoever on the part of the UNECE or FAO concerning the legal status of any country, area or territory or of its authorities, or concerning the delimitation of its frontiers. The responsibility for opinions expressed in studies and other contributions rests solely with their authors, and publication does not constitute an endorsement by the UNECE or FAO of the opinions expressed. Reference to names of firms and commercial products and processes, whether or not these have been patented, does not imply their endorsement by UNECE or FAO, and any failure to mention a particular firm, commercial product or process is not a sign of disapproval.

This work is copublished by the United Nations (UNECE) and FAO.

ABSTRACT

The *Forest Products Annual Market Review 2019-2020* provides a comprehensive analysis of markets in the UNECE region and reports on the main market influences outside the UNECE region. It covers the range of products from the forest to the end user - from roundwood and primary processed products to value-added, housing and wood energy. Statistics-based chapters analyse the markets for wood raw materials, sawnwood, wood-based panels, paper, paperboard and woodpulp. Underlying the analysis is a comprehensive collection of data. The *Review* highlights the role of sustainable forest products in international markets. Policies concerning forests and forest products are discussed, as well as the main drivers and trends. The Review also analyses the effects of the current economic situation on forest products markets.

ECE/TIM/SP/50

UNITED NATIONS PUBLICATION

Sales No. E.20.II.E.41

ISBN 978-92-1-117257-7

ISSN 1020-2269

eISSN 2518-6450

FOREWORD

The forest sector is unaccustomed to rapid change. Tending a forest from seed to harvest can span decades in some places and more than a century in others. Most forest products today remain unchanged from 50 years ago; manufacturing processes have evolved and been mechanized, but the process and products change little from year to year and, when they do, always in a measured, incremental way. What we think of as "new" forest products, such as wood pellets for energy and cross-laminated timber, are not so new at all; wood pellets were first produced in the 1970s, and they were preceded by a similar product called "presto logs" as far back as the 1930s. Cross-laminated timber has been manufactured and used for almost 20 years now, although only recently has its versatility been fully recognized. In fact, one of the hallmarks of forest product markets is their consistency and predictability, which fits well with the "rear-view mirror" vantage of the *Forest Products Annual Market Review* because trends in one year have a good track record as an indicator of what to expect in the next.

By all measures, 2019 was a "normal and predictable" year for the forest products sector. A bark-beetle epidemic in central Europe created an overabundance of raw materials, which lowered prices and led to an increase in exports; it also has ramifications for future wood supply. But this type of event has happened before and will happen again, and the forest products industry knows what it must do to cope with such situations. This year, 2020, started as 2019 left off – but then COVID-19 hit. Initially, the forest sector in most of the UNECE region was less affected by the pandemic than many other industries. Most governments deemed forestry and forest products as essential industries and both continued to operate during lockdowns; surprisingly, too, there has been better-than-expected continuity in demand for most forest products. Nevertheless, the potential remains for far-reaching, longer-term effects.

COVID-19 has had short-term health and economic impacts on the forest sector related to worker well-being and availability; the impact of reduced incomes and economic activity on the purchase of forest products; and the effect of increased working from home on household purchases of certain forest products, such as office furniture and wood for do-it-yourself projects. The longer-term effects are unclear, but many questions arise: Will there be a glut of empty buildings in urban centres, dampening new construction, as a result of the success of working from home? Will there be an exodus from high-cost, long-commute urban centres such as Paris, New York and London, with people now able to work from home in areas with a lower cost of living? Will COVID-19 reduce demand for open-space buildings for those who stay in the office? Will the trend away from bricks-and-mortar retail buildings towards online shopping intensify? An answer of "yes" to any of these questions would have a strong impact on future demand for forest products.

This year's *Forest Products Annual Market Review* sets out developments in the pre-COVID-19 forest sector in 2019, provides a first glimpse into the sector during the pandemic, and offers food for thought on what the future holds. As always, the publication benefited from the inputs of a group of leading experts as authors, who have combined their market intelligence and knowledge with the data gathered by the UNECE/FAO team.

Vladimir RAKHMANIN

Assistant Director-General,

Regional Representative for Europe and Central Asia of the Food and Agriculture Organization of the United Nations

Olga ALGAYEROVA

Under-Secretary-General of the United Nations,

Executive Secretary of the United Nations Economic Commission for Europe

CONTENTS

ACKNOWLEDGEMENTS viii
CONTRIBUTORS TO THE PUBLICATION ix
STATISTICAL CORRESPONDENTS x
DATA SOURCES xi
EXPLANATORY NOTES xi
ACRONYMS, ABBREVIATIONS AND SYMBOLS xii

1 Economic overview and policies 1

Economic developments in the UNECE region 2
Construction in the UNECE region, with a focus on housing 3
Bark-beetle outbreak in Europe 5
Policy and regulatory developments 7
Certified forests and products 10
Summary of regional and subregional markets 10

2 Wood raw materials 12

Europe 14
Eastern Europe, Caucasus and Central Asia 15
North America 16
Extraregional influences on the UNECE 18
UNECE subregional data summary and forecast 19

3 Sawnwood 22

Europe 24
Eastern Europe, Caucasus and Central Asia 25
North America 26
Extraregional influences on the UNECE 28
UNECE subregional data summary and forecast 29

4 Wood-based panels 32

Europe 34
Eastern Europe, Caucasus and Central Asia 35
North America 36
Extraregional influences on the UNECE 37
UNECE subregional data summary and forecast 38

5 Pulp and paper 40

Europe 42
Eastern Europe, Caucasus and Central Asia 43
North America 44
Extraregional influences on the UNECE 45
UNECE subregional data summary and forecast 46

6 Wood energy 48

Europe 50
Eastern Europe, Caucasus and Central Asia 51
North America 52
Extraregional influences on the UNECE 53
UNECE subregional data summary and forecast 54

7 Value-added wood products 56

Furniture 58
Builders' joinery and carpentry, and profiled-wood trade 59
Engineered wood products 60

References 64

Annexes 70

LIST OF **TABLES**

1.1 Construction spending forecast, Euroconstruct region, 2019-2021 4
1.2 Central European bark-beetle infestation: summary by country, and annual removals 6
1.3 Apparent consumption of industrial roundwood, sawnwood, wood-based panels and paper and paperboard, UNECE region, 2015-2019 11
2.1 Top five intra-European trade flows of coniferous industrial roundwood, 2019 15
2.2 Top ten industrial roundwood exporters worldwide, 2019 18
2.3 Top ten extraregional industrial roundwood importers, 2019 18
2.4 Softwood log exports to China, 2017 and 2019 18
2.5 Industrial roundwood production, imports, exports, net apparent consumption and traded unit value, UNECE subregions, 2015-2019 20
3.1 Top ten extraregional sawnwood importers, 2019 28
3.2 Top ten sawnwood exporters globally, 2019 28
3.3 Major importers and exporters of tropical hardwood sawnwood outside the UNECE region, 2017-2019 28
3.4 Sawnwood production, imports, exports, net apparent consumption and traded unit value, UNECE subregion, 2015-2019 30
4.1 Top ten extraregional wood-based panels importers, 2019 37
4.2 Top ten wood-based panels exporters globally, 2019 37
4.3 Major importers and exporters of tropical plywood outside the UNECE region, by volume, 2017-2019 38
4.4 Wood-based panel production, imports, exports, net apparent consumption and traded unit value, UNECE subregions, 2015-2019 39
5.1 Top ten extraregional woodpulp and paper importers, 2019 45
5.2 Top ten woodpulp and paper exporters worldwide, 2019 46
5.3 Woodpulp and paper production, imports, exports, net apparent consumption and traded unit values, UNECE subregions, 2015-2019 47
6.1 Global top ten wood fuel and wood pellet exporters, 2019 53
6.2 Top wood fuels and wood pellet importers outside the UNECE region, 2019 54
6.3 Wood fuel and wood pellets production, imports, exports, net apparent consumption and traded unit values, UNECE subregions, 2015-2019 55
7.1 Value of wooden furniture imports, and market share of supplying regions, top five importing countries, 2018-2019 58
7.2 Value of builders' joinery and carpentry imports, and market share of supplying regions, top five importing countries, 2018-2019 60
7.3 Profiled-wood imports, top five importing countries, 2018-2019 60
7.4 Glulam production and consumption, North America, 2018-2020 61
7.5 Wooden I-beam consumption and production, North America, 2018-2020 61
7.6 LVL consumption and production in North America, 2018-2020 62

LIST OF **GRAPHS**

1.1 Major currencies used to trade forest products, indexed against the US dollar, January 2019-June 2020 ... 3
1.2 Building permits, starts and completions, Euroconstruct region, 2002-2022 ... 4
1.3 US housing permits, starts and completions, 2011-2020 ... 4
1.4 FSC and PEFC certified forest area, 2013-2019 ... 10
2.1 Europe: Coniferous industrial roundwood production, trade and consumption, 2015-2019 ... 14
2.2 Europe: Industrial non-coniferous roundwood production, trade and consumption, 2015-2019 ... 14
2.3 Europe: Traded industrial roundwood unit value, 2015-2019 ... 15
2.4 EECCA: Coniferous industrial roundwood production, trade and consumption, 2015-2019 ... 15
2.5 EECCA: Industrial non-coniferous roundwood production, trade and consumption, 2015-2019 ... 16
2.6 EECCA: Traded industrial roundwood unit value, 2015-2019 ... 16
2.7 North America: Coniferous industrial roundwood production, trade and consumption, 2015-2019 ... 17
2.8 North America: Non-coniferous industrial roundwood production, trade and consumption, 2015-2019 ... 17
2.9 North America: Traded industrial roundwood unit value, 2015-2019 ... 17
3.1 Europe: Sawn softwood production, trade and consumption, 2015-2019 ... 24
3.2 Europe: Traded sawnwood unit value, 2015-2019 ... 24
3.3 Europe: Sawn hardwood production, trade and consumption, 2015-2019 ... 25
3.4 EECCA: Sawn softwood production, trade and consumption, 2015-2019 ... 25
3.5 EECCA: Traded sawnwood unit value, 2015-2019 ... 25
3.6 EECCA: Sawn hardwood production, trade and consumption, 2015-2019 ... 26
3.7 North America: Sawn softwood production, trade and consumption, 2015-2019 ... 26
3.8 North America: Traded sawnwood unit value, 2015-2019 ... 27
3.9 North America: Sawn hardwood production, trade and consumption, 2015-2019 ... 27
4.1 Europe: Structural panels production, trade and consumption, 2015-2019 ... 34
4.2 Europe: Non-structural panels production, trade and consumption, 2015-2019 ... 34
4.3 Europe: Traded wood-based panels unit value, 2015-2019 ... 34
4.4 EECCA: Structural panels production, trade and consumption, 2015-2019 ... 35
4.5 EECCA: Non-structural panels production, trade and consumption, 2015-2019 ... 35
4.6 EECCA: Traded wood-based panels unit value, 2015-2019 ... 35
4.7 North America: Structural panels production, trade and consumption, 2015-2019 ... 36
4.8 North America: Non-structural panels production, trade and consumption, 2015-2019 ... 36
4.9 North America: Traded wood-based panels unit value, 2015-2019 ... 37
5.1 Europe: Woodpulp production, trade and consumption, 2015-2019 ... 42
5.2 Europe: Paper production, trade and consumption, 2015-2019 ... 42
5.3 Europe: Traded woodpulp and paper unit value, 2015-2019 ... 42
5.4 EECCA: Woodpulp production, trade and consumption, 2015-2019 ... 43
5.5 EECCA: Paper production, trade and consumption, 2015-2019 ... 43
5.6 EECCA: Traded woodpulp and paper unit value, 2015-2019 ... 43
5.7 North America: Woodpulp production, trade and consumption, 2015-2019 ... 44
5.8 North America: Paper production, trade and consumption, 2015-2019 ... 44
5.9 North America: Traded woodpulp and paper unit value, 2015-2019 ... 44
6.1 Europe: Wood fuel production, trade and consumption, 2015-2019 ... 50
6.2 Europe: Wood pellet production, trade and consumption, 2015-2019 ... 50
6.3 Europe: Declared unit value of traded wood fuel and wood pellets, 2015-2019 ... 50
6.4 EECCA: Wood fuel production, trade and consumption, 2015-2019 ... 51
6.5 EECCA: Wood pellets production, trade and consumption, 2015-2019 ... 52
6.6 EECCA: Declared unit value of traded wood fuel and wood pellets, 2015-2019 ... 52
6.7 North America: Wood fuel production, trade and consumption, 2015-2019 ... 52
6.8 North America: Wood pellet production, trade and consumption, 2015-2019 ... 53
6.9 North America: Declared unit value of traded wood fuel and wood pellets, 2015-2019 ... 53
7.1 Wooden furniture imports, top five importing countries, 2015-2019 ... 58
7.2 Builders' joinery and carpentry imports, top five importing countries, 2015-2019 ... 59
7.3 Profiled-wood imports, top five importing countries, 2015-2019 ... 59

ACKNOWLEDGEMENTS

The secretariat wished to express its very deep gratitude to everyone who contributed to this very special edition of the *Forest Products Annual Market Review*. This *Review* was compiled by the secretariat during the very particular working conditions imposed by COVID-19 outbreak. The publication further had to operate with a significantly reduced budget and staff this year.

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 a team of people working in the Forestry and Timber Section in Geneva and in FAO, Rome. In combination, this network provides an unrivalled source of expertise and knowledge, which is the hallmark of the *Review*.

Many of the people involved in producing the *Forest Products Annual Market Review* volunteer their time and expertise; others are supported by companies, universities, industry associations and a variety of other organizations. Without the help of all these people and institutions, 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. They not only provided much of the market intelligence in their own chapters, they also assisted with data and information used elsewhere in the publication. You can find contact details and affiliations of all authors in the annex.

The authors are as follows:

Orifjon Abidov	Kathryn Fernholz	Frances Maplesden
Francisco Aguilar	Christopher Gaston	Igor Novoselov
Eduard Akim	Branko Glavonjić	Tapani Pahkasalo
Delton Alderman	Antti Koskinen	José Palacín
Matthew Bumgardner	Klaus Kottwitz	Russ Taylor
Ivan Eastin	William Luppold	Michel Valois
Håkan Ekström	Warren Mabee	

In the UNECE/FAO Forestry and Timber Section, Alex McCusker analysed the data and trends; and Gianluca Sambucini and Paola Deda proofread the chapters.

The project was managed by Florian Steierer. Matt Fonseca provided guidance on content and proofread the text. The chapters were reviewed at FAO by Pierre Bouillon, Thais Juvenal, Alicja Kacprzak, Arvydas Lebedys, Zuzhang Xia and Ekrem Yazici.

The manuscript was checked by Eoin O'Driscoll, Marketing Consultant, Drima Marketing Research. Alastair Sarre edited the text. The Printing Section of the United Nations Office Geneva provided layout and printed the publication.

In all, about 38 people were directly involved in the preparation of this publication, not including the additional contributors and statistical correspondents listed separately on the following pages.

The manuscript was completed on 4 September 2020.

CONTRIBUTORS TO THE PUBLICATION

The UNECE/FAO Forestry and Timber Section expresses its appreciation for the information and assistance received from the following people in preparing the *Forest Products Annual Market Review 2019-2020*. Authors are acknowledged separately. The base data for the *Review* were supplied by national statistical correspondents, who are acknowledged in a separate listing. We regret any omissions.

Yngve Abrahamsen, Euroconstruct, Swiss Economic Institute, Switzerland

Kathy Abusow, Sustainable Forestry Initiative, Canada

Iana Arkhipova, International Consultant, FAO, Italy

Martin Bader, Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Switzerland

Diego Benedetti, European Sawmilling Organization (EOS), Belgium

Norbert Burkart, German Timber and Sawmill Industry (DeSH), Germany

Cristina Calderón, AEBIOM - European Biomass Association, Belgium

Jean Christophe Claudon, International Tropical Timber Organization (ITTO), Japan

Ariane Crevecoeur, Confederation of European Paper Industries, Belgium

Henric Endoff, AB Global, Sweden

Elliot Freshwater, University of British Columbia (Master of International Forestry, Class of 2020), Canada

Johannes Hangler, Federal Ministry for Agriculture, Regions and Tourism, Austria

Aline Knoblauch, Federal Office for the Environment (FOEN), Forest Division, Switzerland

Jaroslav Kubišta, Forest Management Institute, Czechia

Andrej Kunca, National Forestry Center, Slovak Republic

Rajmund Lackzo, Eurostat, Luxembourg

Bernard Lombard, Confederation of European Paper Industries, Belgium

Lucia Park, University of British Columbia (Master of International Forestry, Class of 2020), Canada

Simon Poljanšek, Slovenian Ministry of Agriculture, Forestry and Food, Slovenia

Friedrich Schmitz, German Federal Ministry of Food and Agriculture, Germany

Andrzej Talarczyk, Polish Bureau for Forest Management and Geodesy, Poland

Anne Toppinen, University of Helsinki, Finland

Jeremy Wall, European Commission, DG Growth, Unit C-2 (Raw Materials & Resource Efficiency), Belgium

STATISTICAL CORRESPONDENTS

The national statistical correspondents listed below are the key suppliers of data for this publication. We are grateful for their essential contributions and significant efforts in collecting and preparing the data.

Natalia Barten, National Statistical Committee, Belarus
Resat Benli, General Directorate of Forestry, Turkey
Consuelo Brandeis, USDA Forest Service, United States
Steve Dubaere, Statistics Belgium
Katarina Ekberg, Policy and Analysis Division, Swedish Forest Agency, Sweden
Thomas Erhart, Office of Statistics, Liechtenstein
Philippe Français-Demay, Statistiques forêt bois, Ministère de l'Agriculture et de l'alimentation, France
Spela Gale, Statistical Office of the Republic of Slovenia
Eleni Giakoumi, Ministry of Environment and Energy, Greece
Branko Glavonjić, Faculty of Forestry, Belgrade State University, Serbia
Sabina Guliyeva, State Statistical Committee, Azerbaijan
Johannes Hangler, Forest Policy and Forest Information, Federal Ministry for Agriculture, Regions and Tourism, Austria
Boro Kovacevic, Agency for Statistics of Bosnia and Herzegovina, Bosnia and Herzegovina
Miroslav Kovalcik, Department of Forest Policy and Economics, National Forest Centre, Slovakia
Ewa Leszczyszyn, Wood Technology Institute, Poland
Graça Louro, Institute of Nature and Forest Conservation, Portugal
Ludmila Lungu, National Bureau of Statistics, Republic of Moldova
Kohut Mickiewicz, Forestry Department, Belarus
Girgina Nikoleva, National Statistical Institute, Bulgaria
Olivian Nutescu, National Institute of Statistics, Romania
Eoin O'Driscoll, The Forest Service, Department of Agriculture, Food and the Marine, Ireland
Jan Oldenburger, Probos Foundation, Netherlands
Thierry Palgen, Nature and Forest Administration, Luxembourg
Inna Petrichenko, State Statistics Service of Ukraine
Ewa Ratajczak, Wood Technology Institute, Poland
Madis Raudsaar, Department of Forestry Statistics, Estonian Environment Information Centre, Estonia
Guy Robertson, USDA Forest Service, United States
Anahit Safyan, International Statistical Cooperation, National Statistical Service, Armenia
Andrea Savvas, Department of Forests, Ministry of Agriculture, Natural Resources and Environment, Cyprus
Judit Sazakalas, National Food Chain Safety Office, Hungary
Giovanni Seri, National Statistical Institute, Italy
Biljana Stefanova, Dissemination, State Statistical Office, North Macedonia
Trond Steinset, Statistics Norway
Tamar Tarashvili, Agricultural and Environment Statistics Department, National Statistics Office of Georgia
Jukka Torvelainen, Statistical Services, Natural Resources Institute Finland
Emmanuel Treeby, National Statistics Office, Malta
Mario Valentić, Animal Production, Forestry and Fisheries Statistics Unit, Croatian Bureau of Statistics, Croatia
Darius Vizlenskas, State Forest Service, Lithuania
Dinko Vusic, Faculty of Forestry, University of Zagreb, Croatia
Sheila Ward, Economics and Statistics, Forestry Commission, United Kingdom of Great Britain and Northern Ireland
Lyn Warner, Natural Resources, Canada
Holger Weimar, Federal Research Institute for Rural Areas, Forestry, and Fisheries, "Thünen Institut (vTI)", Germany
Arthur Zesiger, Federal Statistical Office, Switzerland
Zhanar Zhanuzakova, Statistics Agency, Kazakhstan
Belén Zubieta de Piquer, Directorate-General of Biodiversity, Forests and Desertification, Ministry of Ecological Transition and Demographic Challenge, Spain

DATA SOURCES

The statistical correspondents mentioned on the previous page supplied the data and statistics for this publication, which can be found in the FAOSTAT database and the UNECE website. The secretariat is grateful that correspondents provided data for 2019 or, in the absence of formal statistics, their best estimates. In those cases where there is no official source for information, data were estimated by using: author estimates, information from trade journals and research papers, data from the Committee on Forests and the Forest Industries Timber Forecast Questionnaire, and information from the United Nations trade database (Comtrade).

EXPLANATORY NOTES

"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 often referred to as "consumption". Consumption is a 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 "$"). Unless specific for a given period, the applied exchange rate for the euro in 2019 is €0.8933 = $1 and for the Russian rouble is RUB 64.74 = $1. Both these exchange rates are based on the annual average rate provided by UNECE (http://w3.unece.org/PXWeb/en).

Trade data for the 28 European Union (EU) countries include intra-EU trade, which is often estimated by the countries. Export data usually include re-exports. Subregional trade aggregates in tables include trade occurring between countries of 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.

Forecasts for 2020 and 2021 in the publication are based on the implied rate of change for 2019 to 2020 and 2021 from forecasts submitted by member States before the November 2020 meeting of the Committee on Forest and the Forest Industries.

See the map in the annex for a breakdown of the region into its subregions, please see the map in the annex. References to EU28 refer collectively to the 28 country members of the EU. 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 "ton" or "tonnes" in this text represent the metric unit of 1,000 kilograms (kg) 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 US and Canadian sawn softwood production and trade are given in actual m^3, converted from nominal m^3.

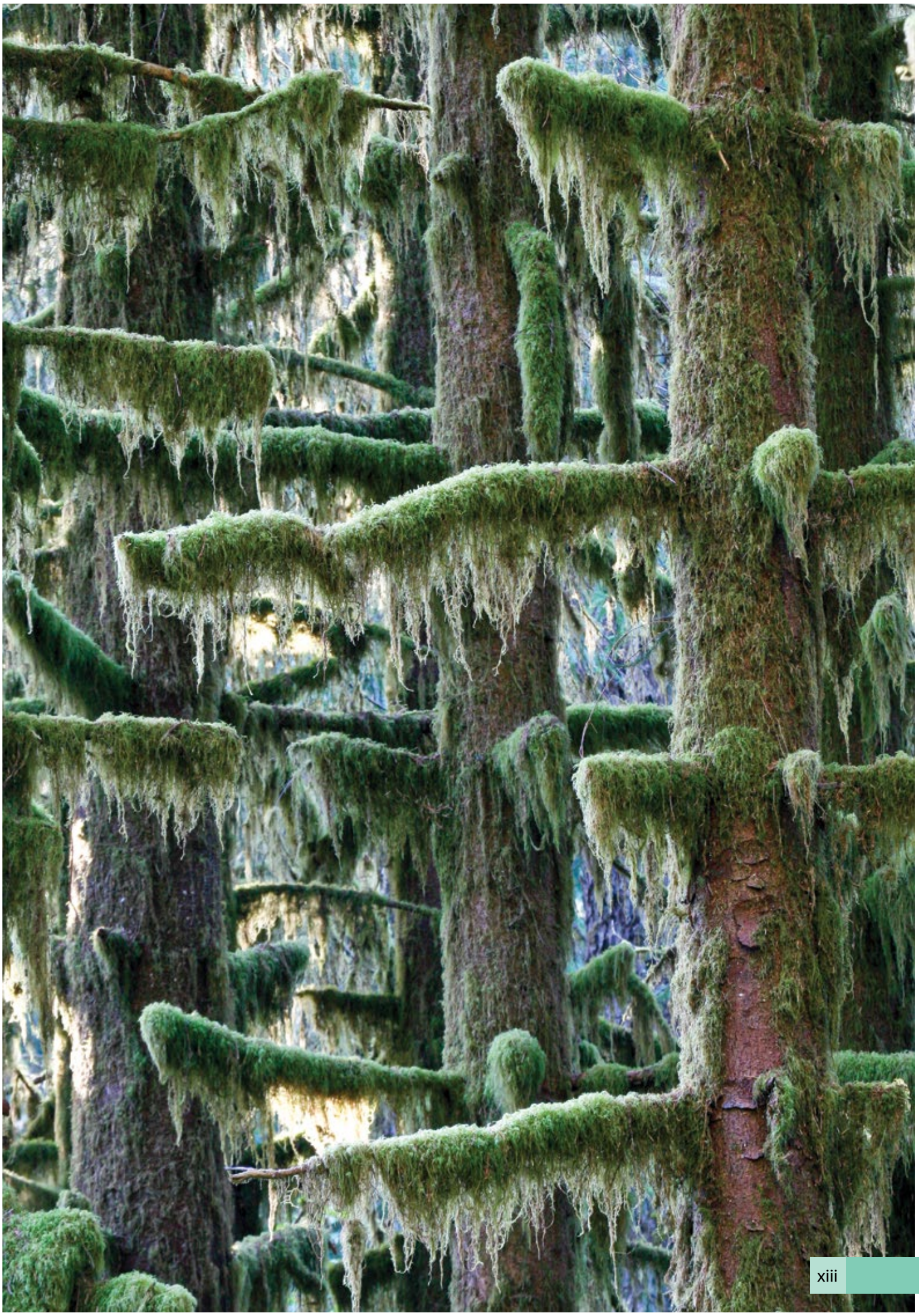
All data and statistics in this publication are derived from the UNECE/FAO TIMBER database unless otherwise noted. Tables based on that database is available in the Statistical Annex **www.unece.org/forests/fpamr2020-annex**.

ACRONYMS, ABBREVIATIONS AND SYMBOLS

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

…	not available
$	US dollar unless otherwise specified
€	euro
APA	The Engineered Wood Association
APHIS	The US Department of Agriculture's Animal and Plant Health Inspection Service
BIS	Bank of International Settlements
BJC	builders' joinery and carpentry
CEPI	Confederation of European Paper Industries
CHMC	Canada Mortgage and Housing Corporation
CLT	cross-laminated timber
COVID-19	Coronavirus disease of 2019
CSIL	Centre for Industrial Studies
DACH	Germany, Austria and Switzerland
EECCA	Eastern Europe, Caucasus and Central Asia[1]
EIA	Energy Information Administration
EPF	European Panel Federation
EU	European Union
EUTR	European Union Timber Regulation
EWP	engineered wood products
FSC	Forest Stewardship Council
GDP	gross domestic product
ha	hectare
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
m^3	cubic metre
MBA	Mortgage Bankers Association
MDF	medium-density fibreboard
MENA	Middle East North Africa
MW	megawatt
NAFTA	North American Free Trade Agreement
NEPA	National Environmental Policy Act
PEFC	Programme for the Endorsement of Forest Certification
SDG	UN Sustainable Development Goals
SFI	Sustainable Forestry Initiative
TDM	Trade Data Monitor
UK	United Kingdom of Great Britain and Northern Ireland
US	United States of America
USDA	United States Department of Agriculture
USFS	United States Forest Service
USITC	United States International Trade Commission
USMCA	The United States–Mexico–Canada Agreement
WRI	Wood Resources International
WTO	World Trade Organization

1 The acronym EECCA replaces the name of the UN subregion formerly know as the CIS (Commonwealth of Independent States) and includes the following countries: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.



Chapter 1

ECONOMIC OVERVIEW AND POLICIES

Lead author: Kathryn Fernholz

Contributing authors: Delton Alderman, Igor Novoselov and Jose Palacin

Introduction and UNECE region overview

Economic activity decelerated markedly in the UNECE region in 2019. The slowdown, which was generalized and affected all subregions, occurred against a background of increasing trade tensions, slower global growth and increasing uncertainty. This adverse external context depressed manufacturing and dampened capital spending, particularly affecting those economies most exposed to global trade.

The economic outlook is highly uncertain in light of the COVID-19 pandemic, with no clarity on its duration, the spread of the virus or the need for further restrictive measures. Nevertheless, there has been a bounce in economic activity (from very depressed levels) with the easing of mobility restrictions, supported by significant policy stimulus.

The consumption of industrial roundwood in the UNECE region contracted by 3.5% in 2019, driven by a 3.4% decrease in paper and paperboard consumption. The consumption of sawnwood and wood-based panels also fell in 2019, but by lesser amounts (0.9% and 1.5%, respectively). The biggest declines in consumption were in North America; in contrast, there was a strong increase in the consumption of all forest products in Eastern Europe, Caucasus and Central Asia (EECCA).

Housing markets continued to grow in 2019. The housing sector recorded a fifth consecutive year of growth in Europe but remained below its 2015 peak in EECCA.

In the Russian Federation, the number of applications for the construction of wooden houses increased by 30% in March 2020 compared with the same period in 2019 (possibly linked to a desire among city dwellers to avoid COVID-19 exposure by relocating to rural homes). There are indications that the construction of these houses could grow in the next six months by 15-20% above historical averages.

Housing prices have generally performed better than economies in most countries in the UNECE region. The Bank of International Settlements reported that residential housing prices increased by 0.9% globally in 2019 and by 3.0% in the euro area, 2.0% in the US and 3.0% in the Russian Federation.

The area of certified forests worldwide was 434.5 million hectares (ha) in mid-2019, up by 1.4% compared with mid-2018 and slightly below the record achieved in mid-2017. The area of double-certified forests increased by 8% in 2019, to 93 million ha. Initial data indicate that the area of certified forests may have reached a new record high in mid-2020, but this can only be confirmed when information on double-certified forest area becomes available.

The forest-sector policy focus in 2019 was on climate change and a circular economy in Europe; the increased use of wood for construction in EECCA; and the trade of forest products in North America.

A sense of urgency about the need to address climate change is still evident in many national policies and private-sector commitments. As of April 2020, 45 national jurisdictions worldwide had implemented carbon-pricing initiatives through either taxes on fossil fuels or cap-and-trade programmes. As of June 2020, 237 companies across 44 countries representing more than $3.6 trillion in market capitalization had committed to ambitious emissions reduction targets.

The 2020 edition of the UNECE/FAO *Forest Products Annual Market Review* provides a statistical review of market developments in the UNECE region in 2019 and the first half of 2020 and the policies driving those developments. This year, the *Review* also includes forecasts for 2020 and 2021. The UNECE region has three subregions: Europe; EECCA; and North America. It encompasses about 1.7 billion ha of forest, which is more than 40% of the world's total forest area. This chapter acts as an executive summary and provides a policy and economic background for the subsequent product-oriented chapters. The subchapters on economic developments, and construction and housing, which follow this section, describe the broad macro-economic situation affecting demand in the UNECE region. Subchapters on the bark-beetle outbreak in Europe, policy and regulatory developments and forest certification address other factors affecting forests and forest product markets in the region in 2019 and beyond.

The *Review* presents the best available annual statistics for 2019-2020 collected by the Joint UNECE/FAO Forestry and Timber Section from official national statistical correspondents and expert estimates.

The trends discussed in this publication 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 publication also includes information on other markets where these influence the UNECE region.

References to "Europe", "EECCA" and "North America" in this publication always pertain to the standard subregions (see the map, "Countries in the UNECE region, and its subregions", in the annex of this publication). Electronic annexes provide additional statistical information, and the full UNECE/FAO database is available on the web.

Economic developments in the UNECE region

Economic activity decelerated markedly in the UNECE region in 2019. The slowdown, which was generalized and affected all subregions, occurred against a background of increasing trade tensions, slower global growth and increased uncertainty. This adverse external context depressed manufacturing and dampened capital spending, particularly affecting those economies most exposed to global trade. In the euro area, the contribution of external demand to growth continued to decline. In the US, the deceleration was due to weaker domestic demand. In EECCA, external factors played a determining role in the slowdown. In early 2020, the COVID-19 pandemic and the confinement measures imposed to arrest its spread dealt a devastating economic blow across the UNECE region and beyond. Countries with sizeable service sectors were hit particularly hard. In EECCA, depressed commodity prices added to the contractionary forces, despite some recovery from previous lows. Efforts to contain the pandemic have had varying levels of success in the region, but the economic outlook remains uncertain.

There were positive developments in the labour market in 2019. The unemployment rate in the euro area attained lows last seen before the global financial crisis, and differences narrowed among countries in the monetary union. After years of tightening labour markets, the recourse to temporary work declined. Nevertheless, a loss of momentum was already evident in late 2019, in line with an economic weakening. In EECCA, unemployment also reached new lows in 2019.

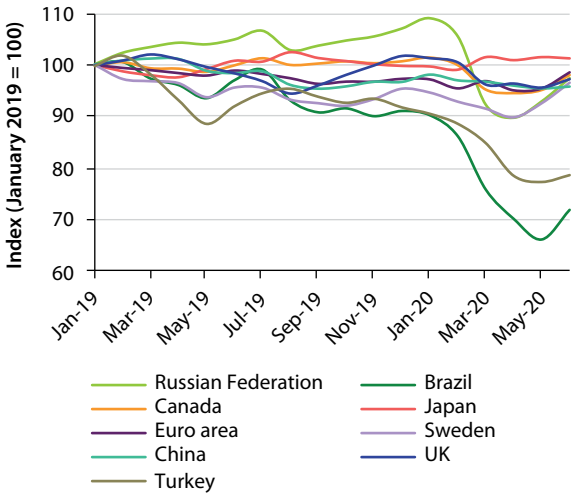
The good employment news ended abruptly with the COVID-19 pandemic. Affected service sectors are particularly employment-intensive. In the EU, the increase in unemployment in early 2020 was limited by government-funded job-retention schemes, in sharp contrast to the US, where the unemployment rate reached 14.7% in April of 2020 (up from 3.5% just two months earlier), putting an end to a decade of employment creation. Although it is still difficult to predict the permanent effects of the pandemic on employment, a wider spread of unemployment rates across the EU seems likely, reflecting the differentiated impacts of the crisis.

The effect of rising wages on inflation was muted in 2019, which helped increase the purchasing power of households. In the EU, the pace of household real income growth accelerated, but this was driven to a larger extent than in the past by increases in wages rather than by employment, thus having a lower impact on consumption. In the euro area, the household savings rate rose steadily in 2019 and soared in early 2020 as countries introduced COVID-19 containment measures. The savings rate was flat in the US in 2019 but skyrocketed in early 2020. Fiscal measures introduced in 2019 raised household income growth in some countries, including a number of economies in central Europe. Overall, the improvement in the labour market in 2019 continued to boost consumption in the EU. In the US, in contrast, the deceleration of consumption explained half the slowdown in output growth in 2019.

In the absence of inflationary pressures and faced with softening economic activity, monetary authorities loosened monetary policy further. In the second half of 2019, the US Federal Reserve lowered the target range for the federal funds rate by 75 basis points and slashed it by 150 basis points in the first months of 2020. In the euro area, interest rates were pushed further into negative territory, and the European Central Bank restarted net asset purchases in November 2019, to be maintained for as long as necessary. Interest rates in the Russian Federation have gradually but steadily been cut since mid-2019. The euro's slide against the dollar, which started in 2018 in a context of growing political risks, trade tensions and

GRAPH 1.1

Major currencies used to trade forest products, indexed against the US dollar, January 2019-June 2020



Note: A diminishing index value indicates a weakening of the currency value against the US dollar; an increasing index value indicates a strengthening of the currency value against the US dollar.

Source: IMF, 2020.

unfavourable interest-rate differentials, continued in 2019. It reversed in 2020, however, as relative economic prospects were reassessed. Lower commodity prices have translated into exchange rate pressures in several EECCA economies in 2020 (graph 1.1).

The economic outlook is highly uncertain given a lack of clarity on the duration of the pandemic, the spread of the virus and the need for further restrictive measures. There has been a bounce in economic activity (from very depressed levels) with the easing of mobility restrictions, supported by significant policy stimuli. Nevertheless, the recovery from this low point is projected to be insufficient to prevent a deep output contraction in the UNECE region in 2020, even if a new wave of infections in the second half of the year is avoided. The COVID-19 pandemic threatens to leave a long-lasting legacy that could include businesses closing and persistently high unemployment. Although the actions of monetary authorities have helped stabilize financial markets, further financial turmoil cannot be discounted, with negative implications for corporate access to finance and funding costs. Net productive investment, which was already weak before the pandemic, is likely to decline further, thus darkening the medium-term outlook. The possibility that the transition period for the UK's exit from the EU ends without agreement on a future trading relationship cannot be ruled out, further clouding economic prospects.

Construction in the UNECE region, with a focus on housing

Housing prices in 2019, on a percentage basis, have risen more than GDP growth in most UNECE region countries. The Bank of International Settlements (BIS) reported that residential housing prices increased by 0.9% globally in 2019 and by 3.0% in the euro area, 2.0% in the US and 3.0% in the Russian Federation. Canadian house prices increased by 0.3% in the last quarter of 2019. Real residential prices (adjusted for inflation) "have reached historically high levels since the aftermath of the 2007-09 Great Financial Crisis" (BIS, 2020).

Housing markets recorded a fifth consecutive year of growth in 2019. New residential building remains a value driver in the Euroconstruct region,[2] accounting for nearly 21% (€305 billion) of the construction market value in 2019; residential remodelling comprised 26% (€398 billion). New residential spending increased by 26% (€57.7 billion) in the Euroconstruct region between 2016 and 2019.

The total value of all construction in the Euroconstruct region (residential, non-residential and civil engineering) is projected to decrease by 11.5% in 2020, to €1.50 trillion (table 1.1).

An estimated 1.7 million new-housing permits were issued in the Euroconstruct region in 2019. Graph 1.2 shows total permits, starts and completions in the Euroconstruct region from 2002 to 2019 (and forecasts to 2022).

The construction of new housing in the Russian Federation grew to 80.3 million m^2 in 2019 (up by 6.1%, year-on-year), still below the peak of 85.3 million m^2 in 2015 (Federal State Statistics Service, 2020). In anticipation of government reforms to real estate finance via mandated escrow accounts, developers have accelerated the pace of construction, so they do not have to transfer ongoing projects to the new financing system (The Federal law, 2018).

On 24 April 2020, the Bank of Russia lowered its key interest rate to 5.5% per annum (Central Bank, 2020), which should stimulate home sales. The Russian Government is now (as of 9 April 2020) subsidizing down-payments (up to 350,000 roubles) for the purchase of wooden houses (Government of the Russian Federation, 2020a). The number of applications for the construction of wooden houses was up by 30% in March, year-on-year (possibly linked to the desire of city dwellers to avoid COVID-19 exposure). The total production, construction and sales of these wooden houses could grow by 15-20% within six months (Wood Housing Association, 2020).

2 The Euroconstruct region comprises 19 countries: Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland and the UK.

TABLE 1.1

Construction spending forecast, Euroconstruct region, 2019-2021

	2019	*2020e*	*2021f*	*2019-2020*	*2020-2021*
	BILLION (€)			**CHANGE (%)**	
New residential construction	356.3	305.5	322.7	-14.3	5.6
Residential remodelling	445.2	397.9	425.1	-10.6	6.8
Non-residential – new	287.5	244.4	250.8	-15.1	2.6
Non-residential – remodelling	249.9	221.8	236.0	-11.2	6.4
Civil engineering – new	201.4	186.3	201.5	-7.5	8.2
Civil engineering – remodelling	156.3	145.6	154.9	-6.8	6.4
Total	**1,697**	**1,501**	**1,591**	**-11.5**	**6.0**

Note: in 2018 prices; e = estimate; f = forecast.

Source: Euroconstruct, 2020.

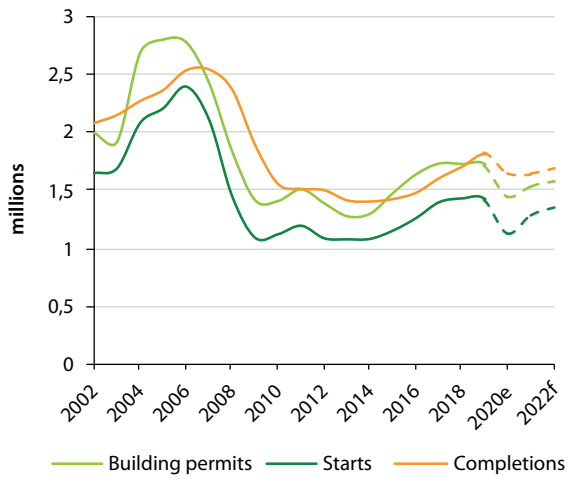
The US housing construction market grew moderately in 2019, but total new housing starts remained below the 1959-to-2007 average of 1.547 million total units and 1.102 million single-family units. Housing starts were estimated at 1.250 million in 2019, a 3.9% increase from 2018 (graph 1.3). The Mortgage Bankers Association has projected US housing starts at 1.18 million units in 2020, 1.28 million units in 2021 and 1.39 million units in 2022 (MBA, 2020).

Initially, new Canadian housing starts were projected at 204,300 units in 2020 and 206,300 units in 2021 (CHMC, 2020a). Due to COVID-19, however, this was amended to 192,671 starts in 2020 (CHMC, 2020b), a decrease of 6.7%. The abrupt decrease in immigration due to the pandemic is projected to have long-term implications for the housing market.

Housing affordability and availability are problems in all three UNECE subregions, with insufficient new buildings to meet population growth. Many observers consider that off-site manufacture could enable the building and sale of less-expensive housing units. Conceptually, modular houses can be built in shorter timeframes, and more houses could potentially be delivered to buyers. Thus, modular construction could reduce project completion times and material costs, provide greater quality control, mitigate labour shortages, improve safety and offer year-round manufacturing.

GRAPH 1.2

Building permits, starts and completions, Euroconstruct region, 2002-2022

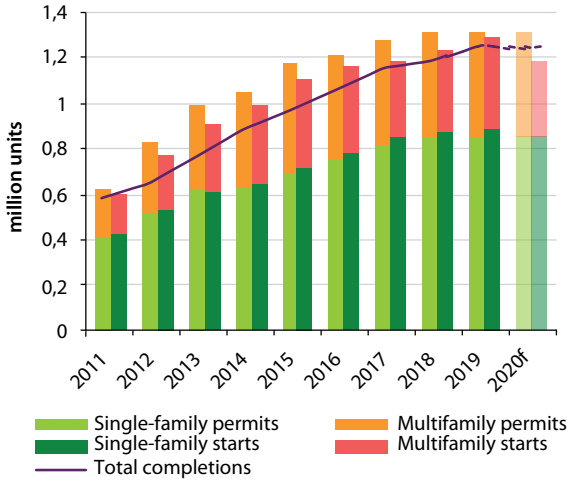


Note: e = estimate; f = forecast.

Sources: Euroconstruct, 2004, 2020.

GRAPH 1.3

US housing permits, starts and completions, 2011-2020



Note: f = forecast; January-June 2020 data; seasonally annualized adjusted rate.

Sources: US Census Bureau, 2020a; MBA, 2020.

Bark-beetle outbreak in Europe

The availability of logs is a core factor for forest product markets. Normally, trees are a commodity with a certain level of resilience in the face of market swings because standing forests require little in the way of tending and related costs; strong swings can often be mitigated or taken advantage of by postponing or hastening harvests. This stabilizing mechanism goes awry, however, when major forest disturbances occur, with potentially catastrophic short- and longer-term consequences.

Coniferous roundwood markets in the UNECE region have been significantly affected by an increase in salvage operations in recent years. Although markets may be oversupplied with wood in the direct aftermath of a major forest disturbance, long-term planned wood supply may be disrupted for decades. Moreover, in the increasingly globalized trade of raw materials, markets and forests far from such a disturbance may be perturbed as a result of spillover effects.

Forest product markets are frequently affected by disturbances, but some years stand out. Here, we focus on the ongoing bark-beetle infestation in central European forests, which is affecting Norway spruce (*Picea abies*), a staple source of industrial roundwood in Europe. Two bark-beetle species are causing significant damage: *Ips typographus* and *Pityogenes chalcographus*.

There have been several mass outbreaks of *Ips typographus* infestations in the European subregion since 1970, affecting as little as about 2 million m^3 in 1971-1980 (Grégoire and Evans, 2004) and as much as 14.5 million m^3 in 2002-2010 (Seidl *et al.*, 2014). Both those infestations are dwarfed by the current outbreak, however, which has affected more than 200 million m^3 of standing timber and appears to be continuing in 2020 (table 1.2).

Much of Europe experienced a record dry and warm summer in 2018. Trees weakened by water and temperature stress were easy targets for the beetles, and beetle populations grew exponentially. Although warmer and drier weather was a contributing factor, high winds also played a role, with windthrown trees acting as a catalyst for the beetle population to increase exponentially (such trees are food sources with no resistance to the beetle). Many of the affected forests are in areas where spruce was planted outside its historical natural range (Jansen *et al.*, 2017). Moreover, the vulnerability of much of the planted spruce forest in central Europe was recognized decades ago (Klimo *et al.*, 2000).

Salvage volume due to the beetle infestation exceeded 50 million m^3 in 2018. The epidemic worsened in 2019, with salvage volume almost double that in 2018. Preliminary estimates for 2020 indicate that beetle salvage volumes will be at similar levels to 2019.

Coniferous industrial roundwood prices in the European subregion dropped as a result, particularly in central Europe (WRI, 2020). Initially this occurred only in beetle-affected areas, but eventually it spilled over into unaffected areas, with many of the countries suffering bark-beetle outbreaks becoming net exporters of roundwood (in some cases reversing traditional trade flows of coniferous industrial roundwood). Germany, for example, became a net exporter of coniferous roundwood after being a significant net importer for many years.

The global trade of softwood logs amounted to about 93 million m^3 in 2019, with just under half destined for China. A significant component of the logs exported to China was salvaged spruce, generally shipped in containers returning to China. China imported 9% more softwood logs in 2019 than in 2018 but paid 2% less (in US dollar terms). Imports of softwood logs to China in 2019 increased 18-fold from Germany (to 3.8 million m^3) and 12-fold from Czechia (to 2.3 million m^3) (ITTO, 2020a).

COVID-19 has affected the industrial production and international trade of many products and therefore the shipping of standard containers. With fewer containers coming from Asia to the UNECE region, fewer empty containers need to be shipped back to Asia. Consequently, freight rates have increased dramatically in 2020 for shipping from Europe to China (as of April 2020) (Freightos, 2020). Higher freight rates will have a detrimental effect on export opportunities.

Most salvage wood (e.g. from trees killed by insects, fire or windthrow) retains its full potential value if harvested immediately. Time lags between tree mortality and end use, however, increase the potential for degrade, starting with stains and shrinkage cracks (affecting appearance but not strength), followed eventually by decay. There is concern that beetle-hit trees could go to waste. Some countries have taken measures to support forest owners in salvaging affected stands (to limit the further spread of the bark-beetle outbreak) and storing harvested logs in a supersaturated state (which significantly slows degrade and decay).

The COVID-19 pandemic has happened at a particularly bad time for the bark-beetle salvage, depressing demand when salvage logs must be used quickly to avoid degradation and decay. It is hoped that the Market Discussion to be held at the 2020 session of the Committee on Forests and Forest Industry will provide more clarity on the effects of the bark-beetle outbreak and COVID-19 on forests and forest-based industries.

TABLE 1.2

Central European bark-beetle infestation: summary by country, and annual removals

Country and summary of infestation situation	Annual removals of coniferous industrial roundwood due to bark-beetle infestation (1,000 m³)					Total annual removals of coniferous industrial roundwood (1,000 m³)		
	2015	*2016*	*2017*	*2018*	*2019*	*Average 2005-2015*	*2018*	*2019*
Austria: Windthrows in late 2019 and early 2020 have further fuelled the beetle epidemic, which is expected to continue in 2020.	2,263[a]	2,940[a]	3,271[a]	4,292[a]	4,213[a]	12,678	12,821	12,343
Czechia: The quantity of harvested wood now exceeds domestic demand, leading to record exports of coniferous roundwood and sawnwood.	2,309	4,420	5,852	13,059	22,779	13,343	20,613	25,363
Germany: The Federal Ministry of Food and Agriculture estimates that 160 million m³ of wood has been damaged in 2018-2020, of which 95% is coniferous.	3,348	4,667	6,003	32,617[b]	63,729[b]	44,317	46,125	46,835
Poland: The 2019 salvage volume of coniferous logs was 6.52 million m³, with windthrow comprising more than one-third of this. Spruce accounted for 2.7 million m³ of salvage logs harvested in 2019 (primarily infested by *Ips typographus*). Salvaged pine volume was 3.5 million m³ (primarily *Ips acuminatus*). This trend appears to be continuing in 2020.	1,793[c]	3,298[c]	2,698[c]	2,797[c]	4,016[c]	24,619	33,206	31,093
Slovakia: Salvage fellings were about 5.1 million m³ in 2019, of which about 3.7 million m³ was the result of the beetle. The quantity of harvested wood now exceeds domestic demand and log storage capacity.	1,500[d]	3,400[d]	3,800[d]	3,400[d]	3,700[d]	5,058	5,527	5,028
Slovenia: The Slovenian forest service reported that 1.34 million m³, mostly spruce, was harvested in 2019 due to the bark-beetle infestation (47% of all salvage harvest). The infestation is expected to continue into 2020.	1,820	2,320	1,840	740	1,340	1,807	3,921	3,413
Switzerland: 2 million m³ of wood was reportedly damaged by bark beetles in 2019: 1.4 million m³ of spruce was affected by *Ips typographus*, and the fir engraver beetle (*Pityokteines curvidens*) damaged about 0.6 million m³ of silver fir. The insect outbreaks will likely continue in 2020, especially in the lowlands of the northern plateau. Windthrow events in early 2020 will help fuel this.	208	180	270	650	1,134	2,998	3,239	2,670
TOTAL	**9,893**	**16,558**	**17,731**	**57,555**	**100,911**	**104,820**	**125,452**	**126,746**

Note: The data presented in this table are based on narratives submitted by country correspondents of the UNECE member States listed in this table and the sources given below. The figures vary in their definition, coverage and scope. Where not stated otherwise, volumes are reported in 1,000 m³ under bark. The following exceptions apply to the reported figures: [a] total by bark-beetle-damaged wood over bark (not only the removed timber); [b] biotic and abiotic disturbances total over bark (not only the removed timber); [c] salvage logging; and [d] biotic disturbances.

Sources: Austria: Steyrer *et al.* (2020); Czechia: Statistical Office of Czechia, personal communication, 2020; Germany: DeStatis (2020) and Federal Ministry of Food and Agriculture (2020); Poland: Jabłoński *et al.* (2020); Slovakia: Kunka *et al.* (2019); Slovenia: Slovenian Environmental Agency (2020); Switzerland: Queloz *et al.* (2020).

Policy and regulatory developments

This section looks at recent developments in policies that directly or indirectly affect forests and forest product markets. The policy focus in 2019 was on climate change and a circular economy in Europe; the legal and sustainable harvesting of forests and the increased use of wood for construction in EECCA; and the trade of forest products in North America.

A sense of urgency on the need to address climate change is still evident in policies and private-sector commitments. As of April 2020, 45 national jurisdictions worldwide had implemented carbon-pricing initiatives through either taxes on fossil fuels or cap-and-trade programmes. As of June 2020, 237 companies across 44 countries representing over $3.6 trillion in market capitalization had committed to ambitious emissions reduction targets.

EUROPE

In December 2019, the European Commission presented the "Green Deal" as an integral part of the its strategy to address climate change by de-carbonizing the EU economy and thus also implementing the 2030 Agenda for Sustainable Development and the Sustainable Development Goals.

As part of the Green Deal, the Commission will refocus the European semester process of macro-economic coordination to put sustainability and the well-being of citizens at the centre of economic policy and the SDGs at the heart of EU policy-making and action.

A road map outlines the actions, key policies and measures needed to achieve the European Green Deal, many of them with potential to significantly involve forests, forest products and the ecosystem services provided by forests.

Climate action is one of the main drivers of the European Green Deal, with 25% of the EU budget dedicated to climate action (EU, 2020a). Some of the following elements of such climate action may be particularly relevant to forests and forest products:

- revision and expansion of the EU emissions trading system, which includes reducing greenhouse-gas emissions from the power sector, industry, and flights within the EU;
- national targets for sectors previously outside of emissions trading, such as transport, buildings and some subsectors of agriculture;
- ensuring that EU forests and lands contribute to the fight against climate change; and
- boosting energy efficiency, renewable energy and the governance of EU countries' energy and climate policies.

A significant proportion of the budget dedicated to climate action will be invested in biodiversity and nature-based solutions. The EU biodiversity strategy (EU, 2020b) highlights the following key commitments on nature protection to be achieved by 2030:

- protect a minimum of 30% of the EU's land area and 30% of the EU's sea area;
- strictly protect at least one-third of the EU's protected areas, including all remaining EU primary and old-growth forests, having defined, mapped and monitored them;
- effectively manage all protected areas, defining clear conservation objectives and measures, and monitoring them appropriately;
- set nature-restoration targets, as well as actions such as integrated ecological corridors, as part of a true Trans-European Nature Network;
- plant at least 3 billion new trees by 2030, many in (peri-) urban areas.

The European Council has called for a new EU forest strategy to further strengthen the consistency and coherence of EU forest-related policies beyond 2020 (EU, 2019). This is now foreseen for early 2021. Key elements of the new strategy will likely be effective afforestation, forest conservation and restoration in the EU to increase the potential of forests to absorb and store carbon, promote the bio-economy and reduce the impact and extent of fires while protecting biodiversity. The strategy will likely cover the entire forest cycle and promote the numerous ecological and socio-economic services provided by forests, including peri-urban trees (European Parliament, 2020). Partly in anticipation of the strategy but also other policy developments, the Forest-based Sector Technology Platform has adopted its "Strategic Research & Innovation Agenda 2030" (Forest-based Sector Technology Platform, 2020a), close on the heels of its "Vision 2040" (Forest-based Sector Technology Platform, 2020b), while an ad hoc grouping of the EU Expert Group on Forest-based Industries and Sectorally Related Issues produced

its forward-looking "Vision 2050" (European Forest-Based Industries , 2019).

On 17 October 2019, the UK and the EU reached an agreement on the conditions for the UK's departure from the EU (known as Brexit) and on a transition period to 31 December 2020. The UK left the EU on 31 January 2020 and the transition period will not be extended. All EU rules and laws will continue to apply to the UK during the transition period. Accordingly, little or nothing has yet changed legally for businesses or the public. However, Brexit stocks built up in 2019 in anticipation of slower customs clearance have been used up during the COVID-19 pandemic and it remains to be seen what will happen in 2021.

EECCA

In 2019, the Russian Federation's Federal Forestry Agency audited lease agreements allocated to businesses in 64 regions that made qualifying investments in forest-sector businesses (harvest allocations without auction and a 50% discount on payments for the use of forests). There were 4,588 of these lease agreements involving 2,650 leaseholders and a harvest of 190 million m^3. The audit found more than 2,000 violations and, as a result, 32 contracts for a total of 2 million m^3 were terminated (Ministry of Natural Resources and Environment of the Russian Federation, 2020). Subsequently, the Russian Government increased the minimum investment from 500 million roubles ($7.98 million) to 2 billion roubles ($31.9 million) for modernization projects and from 750 million roubles ($12.0 million) to 3 billion roubles ($47.9 million) for greenfield projects (Government of the Russian Federation, 2019a).

The Russian Export Center and the Ministry of Industry and Trade have modified the subsidies available for forest industry companies. Manufacturers with long-term commitments to increase exports and implement corporate competitiveness improvement programmes can now qualify (Ministry of Industry and Trade, 2019).

As of April 2020, the Russian Government is restricting the importation of furniture for municipal and public procurement (Government of the Russian Federation, 2020b) with the aim of supporting Russian furniture manufacturers (Association of Furniture and Woodworking Enterprises of Russia, 2020a).

In September 2019, the Russian Government increased log export duties from 6.5% to 13% for species from the Russian Far East (Government of the Russian Federation, 2019b). As of August 2020, exporters applying for tariff quotas to export unprocessed softwood will have to indicate transactions in an automated system. These data will enable the tracking of wood supply chains from harvesting sites to buyers (Government of the Russian Federation, 2019c).

The Russian forest industry was not put on the list of sectors most affected by the spread of COVID-19 (the furniture industry has been partially included) (Government of the Russian Federation, 2020c). However, 35 wood enterprises and 18 furniture companies have been listed for possible State aid, including tax and insurance contribution deferrals, State guarantees for loans, and subsidies (Government of the Russian Federation, 2020d). Companies applying for the aid will have to undergo a stress test, with results to be reviewed and acted on by the interdepartmental and government commissions for economic development and sustainability enhancement.

In mid-May 2020, WhatWood surveyed large timber industry companies in the Russian Federation about the effects of the COVID-19 pandemic on production and sales, with the domestic market falling off by roughly 50%. Furniture factories and enterprises are closed, as are retail outlets. The situation is clearly affecting demand in several key markets, but there are no plans for significant production curtailments. Most Russian companies have been able to maintain production and sales (WhatWood, 2020a).

Of the Russian Federation's forest product sectors, furniture and wood-based panels have been most affected by COVID-19. About 70% of Russian furniture enterprises may go bankrupt due to forced production downtime, coupled with a lack of State support. Just over two-thirds of surveyed companies reported a financial "cushion" of no more than about 1.5 months. Only one-quarter was sure they would survive the crisis, and 3% of plants have already closed (Association of Furniture and Woodworking Enterprises of Russia, 2020b).

NORTH AMERICA

The Softwood Lumber Agreement between Canada and the US expired on 12 October 2015. In place since 2006, this agreement addressed tariffs on lumber traded between the two countries as part of a decades-long trade dispute covered

in earlier editions of the *Review*. In April 2018, at the request of Canada, the World Trade Organization (WTO) established a panel to examine Canada's complaints regarding antidumping and countervailing duties imposed by the US on imports of Canadian softwood lumber (WTO, 2018). On 9 April 2019, the WTO issued the panel report; it agreed with the US Department of Commerce's methodology using zeroing and rejected Canada's claims (WTO, 2019a). Canada announced its intention to appeal the panel decision (Global Affairs Canada, 2019). On 15 November 2019, the panel chair indicated that the panel was expected to issue its final report in 2020 (WTO, 2019b).

The US–Canada softwood trade disputes have also been the subject of a panel under the North American Free Trade Agreement (NAFTA). On 22 May 2020, the binational panel issued its final decision on the matter of "Softwood Lumber Injury from Canada" (US Federal Register, 2020a). The NAFTA panel affirmed the decision by the US International Trade Commission (USITC) that softwood lumber imports from Canada have "materially injured" US producers and workers (The Canadian Press, 2020).

The United States–Mexico–Canada Agreement (USMCA) came into effect on 1 July 2020, replacing NAFTA, which expired on 30 June 2020. An analysis prepared by the USITC estimates that the USMCA would raise US real GDP by $68.2 billion (0.35 percent) and US employment by 176,000 jobs (0.12 percent). The analysis also found that the environment chapter of the agreement references clean technologies as a means for improving environmental and economic performance and the role that forests play in carbon storage but is otherwise minimalistic on greenhouse-gas emissions and climate-change mitigation (USITC, 2019).

The US Department of Agriculture (USDA)'s Animal and Plant Health Inspection Service (APHIS) announced the implementation of phase 6 of the Lacey Act enforcement schedule, which will go into effect on 1 October 2020. 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 at the time of importation for certain products. APHIS ensures compliance with the declaration requirement, and products needing declarations have been phased in since enforcement began in 2009. The additional products covered by the phase-6 enforcement schedule include certain essential oils (e.g. cedarwood and sandalwood), wood cases and trunks, oriented strandboard (OSB), boxes, crates, pallets and musical instruments (e.g. clarinets and drums) (US Federal Register, 2020b).

The US Forest Service is revising the regulations of the National Environmental Policy Act (NEPA) governing environmental analysis and decision-making in the agency, including on forest management and harvesting activities. The US Forest Service last updated its NEPA regulations in 2008, and the proposed rule is intended to enable timelier decisions based on high-quality, science-based analyses and to improve project implementation while meeting environmental responsibilities (USFS, 2020).

Certified forests and products

The area of certified forests worldwide increased by 1.4% (6 million ha) between mid-2018 and mid-2019, to 434.5 million ha, which was slightly below the all-time high achieved in mid-2017 (graph 1.4). The two major schemes, the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC), reported a combined total of 525 million ha of certified forest, as of mid-2019. After accounting for double-certification (i.e. forest areas certified by both certification bodies), however, this dropped to 434.5 million ha (PEFC, 2020a).

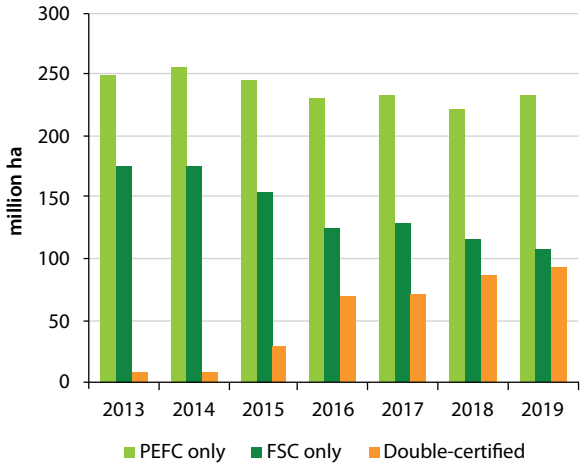
The PEFC's revised Sustainable Forest Management and Group Certification benchmark standard published in November 2018 extended PEFC certification to encompass trees outside forests. The PEFC benchmark can now be applied to agroforestry and urban forestry (PEFC, 2018). The Sustainable Forestry Initiative (SFI), a PEFC-endorsed programme operating in Canada and the US, has included consideration of the development of an urban-forest certification standard in its standards revision process (SFI, 2020).

The latest data on urban forests in the US were used in research to estimate the potential annual value that could be derived from urban tree waste (Nowak, 2019). Assuming a mortality rate of 2%, annual urban woody biomass loss in the US is estimated at about 46 million tonnes of fresh-weight merchantable wood, equivalent to 7.2 billion board feet of lumber or 16 million cords of firewood. Urban-tree wood waste in the US could produce substantial annual revenue if utilized (Nowak, 2019), with the value varying by location and the product produced (e.g. sawlogs versus wood chips). Although some cities already make use of urban waste wood, the potential is largely undeveloped. There are various reasons why revenue potential is limited, but improving markets and systems for the use of these materials could enhance urban-forest economics and provide social and environmental goods and services (Nowak, 2019).

Recent research in Germany examined the suitability of urban wood for the manufacture of solid wood products and concluded that there is potential to manufacture municipal tree residues into high-value products, thereby boosting local economies and creating income for urban-forest management. Constraints on realizing this potential include susceptibility to embedded foreign objects and inconsistent wood supply (Rokita, 2020). The research also examined urban-forest management history in the US and Europe. US research is strongly dominant in the field of urban forestry, but Europe has a much longer history of greenspace planning and management. Urban forestry developed significantly in the US in the 1970s, with interest in more comprehensive tree care and in response to the increasing threat posed by pests and diseases. Inspired by visits to North America and by international conferences, British, Irish and Dutch experts introduced the urban-forestry concept to Europe in the early 1980s, with projects based on US examples implemented in London, Belfast and elsewhere (Rokita, 2020).

GRAPH 1.4

FSC and PEFC certified forest area, 2013-2019



Sources: PEFC, 2020b; UNECE/FAO, 2019.

Summary of regional and subregional markets

The overall consumption of primary forest products declined modestly in the UNECE region in all general categories in 2019: by 3.4% for industrial roundwood; by 0.9% for sawnwood; by 1.5% for wood-based panels; and by 3.5% for paper and paperboard (table 1.3). Of the three subregions, only EECCA showed positive growth in consumption, although industrial roundwood consumption declined in that subregion (due to fewer exports).

TABLE 1.3

Apparent consumption of industrial roundwood, sawnwood, wood-based panels and paper and paperboard, UNECE region, 2015-2019

	Thousand	*2015*	*2016*	*2017*	*2018*	*2019*	*Change 2018-2019 (volume/ weight)*	*Change 2018-2019 (%)*	*Change 2015-2019 (%)*
Industrial roundwood									
Europe	m^3	401,548	410,042	409,358	441,652	424,913	-16,740	-3.8	5.8
EECCA	m^3	185,471	194,721	198,419	226,348	213,170	-13,178	-5.8	14.9
North America	m^3	494,222	516,384	513,350	534,285	522,862	-11,424	-2.1	5.8
Total, UNECE region	m^3	1,081,241	1,121,148	1,121,127	1,202,286	1,160,944	-41,341	-3.4	7.4
Sawnwood									
Europe	m^3	103,760	107,552	110,809	112,780	112,393	-387	-0.3	8.3
EECCA	m^3	17,219	16,689	17,792	17,039	17,890	850	5.0	3.9
North America	m^3	112,603	117,570	118,392	120,097	117,491	-2,605	-2.2	4.3
Total, UNECE region	m^3	233,582	241,811	246,992	249,916	247,774	-2,142	-0.9	6.1
Wood-based panels									
Europe	m^3	68,738	72,065	74,556	77,019	76,378	-641	-0.8	11.1
EECCA	m^3	17,131	16,687	18,351	21,198	21,326	128	0.6	24.5
North America	m^3	53,073	54,270	56,603	54,771	53,060	-1,711	-3.1	0.0
Total, UNECE region	m^3	138,943	143,023	149,511	152,988	150,765	-2,223	-1.5	8.5
Paper and paperboard									
Europe	tonnes	88,365	88,407	89,396	88,949	85,466	-3,483	-3.9	-3.3
EECCA	tonnes	9,106	9,561	9,507	10,016	10,052	36	0.4	10.4
North America	tonnes	75,651	75,602	75,037	74,445	71,835	-2,609	-3.5	-5.0
Total, UNECE region	tonnes	173,123	173,571	173,940	173,410	167,353	-6,056	-3.5	-3.3

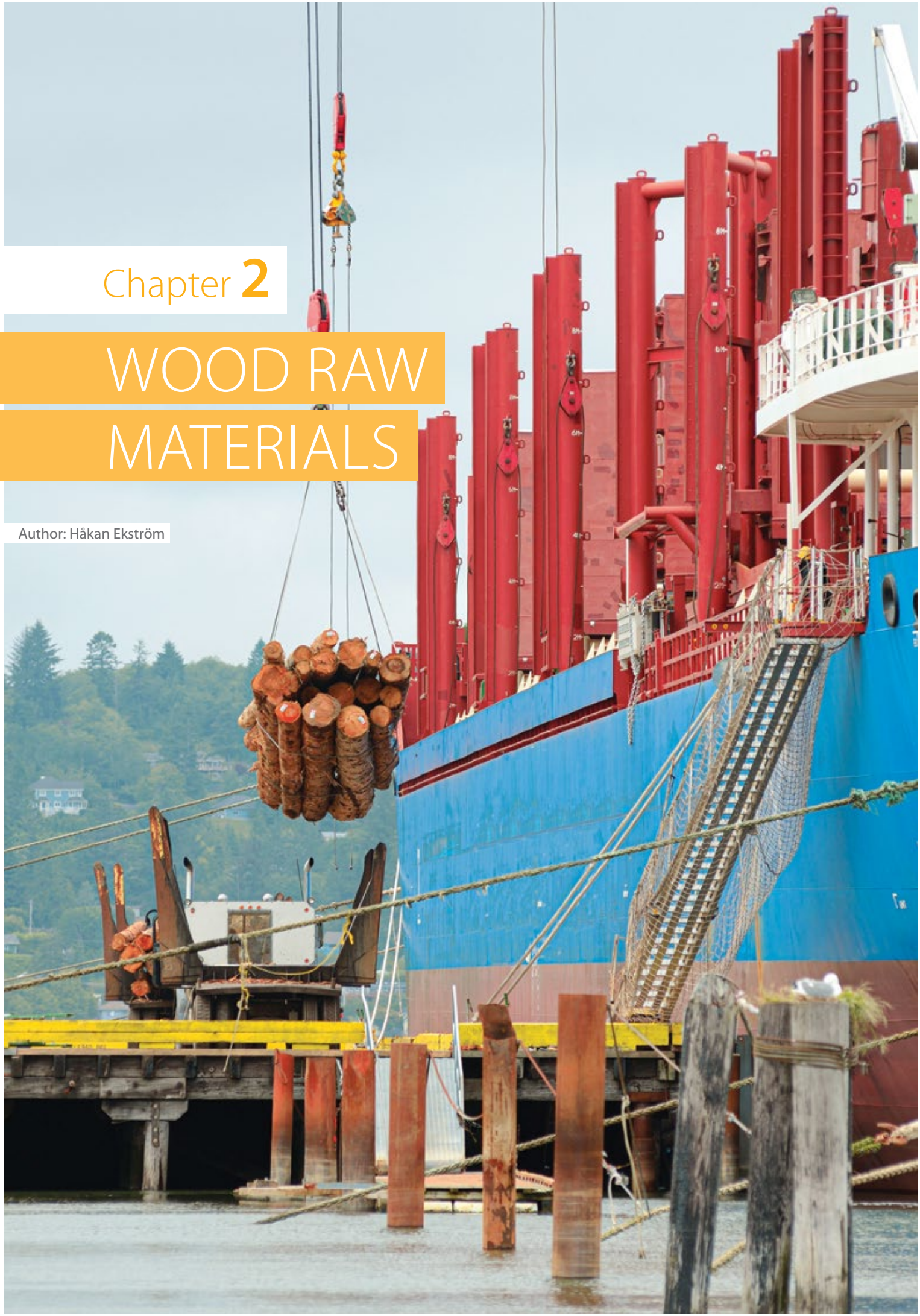
Note: Sawnwood does not include sleepers through 2016. Wood-based panels do not include veneer production.

Source: FAOSTAT, 2020; UNECE/FAO database, 2020.

Chapter **2**

WOOD RAW MATERIALS

Author: Håkan Ekström



Introduction and UNECE region overview

The total consumption of roundwood – comprising logs for industrial uses and fuel – in the UNECE region was estimated at 1.4 billion m^3 in 2019, the first decrease after six consecutive years of increase. The apparent consumption of logs for industrial purposes was down by 3.2%, to 1.16 billion m^3, although this was still 7.5% higher than in 2015. Of the total volume of roundwood harvested in the UNECE region in 2019, about 18% (260 million m^3) was used for fuel, a decrease of 3.7 million m^3 (-1.4%) compared with 2018.

Countries in the UNECE region are important in the global wood supply, contributing 60% of the total; seven countries in the region are in the top ten of industrial-roundwood-exporting countries globally. Czechia became the world's third-largest exporter of industrial roundwood in 2019, exporting 15 million m^3 of coniferous roundwood. The US dropped to sixth position, down from third in 2018.

Russian log exports have been in decline for more than a decade. In 2006, the country exported a record 37 million m^3 of softwood logs, but this had dropped to just 7.2 million m^3 by 2019, which was 35% lower than in 2018.

The biggest increases in European log production in the last two years were in Czechia (up by 50% from 2017, to 25.5 million m^3 in 2019) and Germany (up by 23% from 2017, to 53 million m^3 in 2019). The increase, which was due to the salvage logging of trees affected by bark beetle, was consumed by domestic industries as well as by forest product manufacturers in neighbouring countries and China.

Within Europe, the major log flows in 2019 were from Czechia to Austria and Germany; from Norway to Sweden; from Poland to Germany; and from Germany to Austria.

By far the biggest beneficiary of the log surplus in Europe in 2019 was China, which shifted its log sourcing from North America and the Russian Federation to Oceania and Europe. China's log imports from Europe increased 20-fold between 2017 and 2019. In contrast, its import volume from the US dropped by 80% in less than two years – from 1.5 million m^3 in the third quarter of 2018 to 0.32 million m^3 in the first quarter of 2020.

China is by far the world's biggest importer of industrial roundwood, and its import volume increased further in 2019. China imported four times more industrial roundwood in 2019 than the other nine countries in the top ten extraregional importers combined.

Europe

An estimated 425 million m³ of logs (77% coniferous) was processed in Europe in 2019 for industrial purposes, and 145 million m³ was used for energy. Log removals of both non-coniferous and coniferous industrial roundwood reached record highs in 2018 and dropped only slightly in 2019. The high levels were driven by a combination of a large supply of insect- and storm-damaged timber in central Europe and healthy demand for lumber, panels and pulp (graph 2.1 and graph 2.2).

The biggest increases in log production between 2017 and 2019 in Europe were in Czechia (up by 50%, to 25.5 million m³) and Germany (up by 23%, to 53 million m³), driven strongly by the bark-beetle infestation (see chapter 1). Turkey, Spain, Sweden, Finland, Romania, Ireland and Austria (in descending order, by volume) all experienced incremental expansions in their timber harvests between 2017 and 2019.

The large log volumes in Czechia and Germany were consumed not only by their domestic industries but also by forest product manufacturers in neighbouring countries and China. China has been the biggest beneficiary by far of the log surplus in Europe, with the country's log imports from Europe increasing from 440,000 m³ in 2017 to almost 7 million m³ in 2019.

The Confederation of European Paper Industries (CEPI) reported that its members consumed about 153 million m³ of pulp logs in 2019 (down by 1.3% from 2018) (CEPI, 2020). Coniferous wood provided about 76% (comprising 50% softwood logs and 26% wood chips from coniferous sawmills) of the raw-material demand for the pulp-and-paper sector. The intra-European softwood log trade fell in 2019 after reaching a 12-year high in 2018. Imported softwood and hardwood fibre accounted for 14% and 30%, respectively, of total fibre consumption in 2019. Table 2.1 shows the top five intra-European trade flows in 2019.

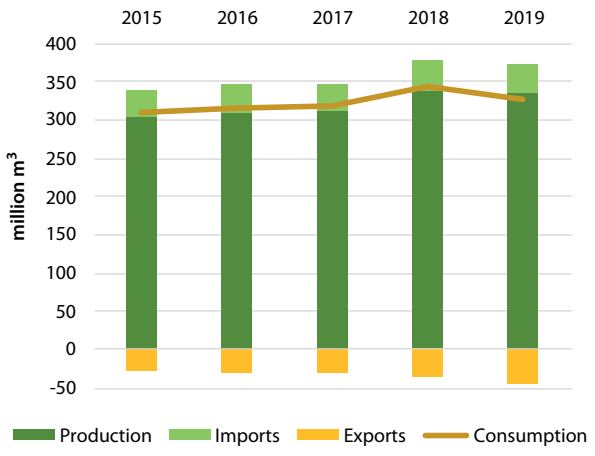
Import declared unit values for coniferous industrial roundwood dropped by 9.9% in 2019, to an average of $68/m³, and non-coniferous industrial roundwood unit values fell by 6.2%, to an average of $80/m³ (graph 2.3).

Exports of industrial roundwood increased strongly in 2019 for the second year in a row; volumes grew by almost 50% between 2017 and 2019, to 59 million m³ (of which 45 million m³ was coniferous). Declared unit values for coniferous industrial roundwood exports decreased by 7.9% in 2019, to an average of $70/m³. Average export declared unit values for non-coniferous industrial roundwood contracted by 4.0%, to $105/m³ (graph 2.3).

Sawlog prices in Europe declined throughout 2019 and in early 2020, resulting in a more globally competitive lumber industry. The major change in log pricing in Europe in recent years has been a reduction in differences between country groupings within the subregion. In 2017, the discrepancy in prices among the groups was about €40/m³. By late 2019 and early 2020, however, this had fallen to about €10/m³.

GRAPH 2.1

Europe: Coniferous industrial roundwood production, trade and consumption, 2015-2019

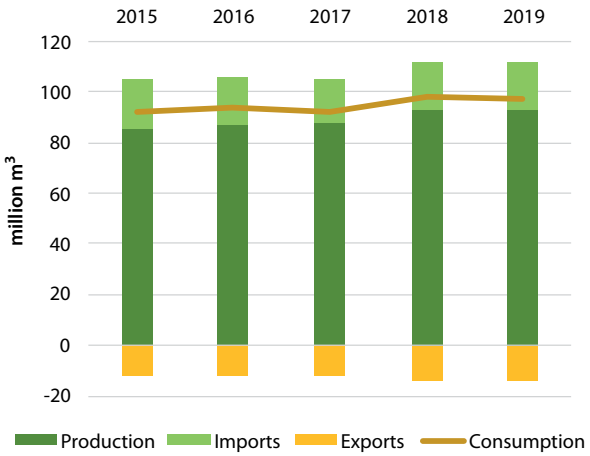


Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

GRAPH 2.2

Europe: Industrial non-coniferous roundwood production, trade and consumption, 2015-2019



Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

TABLE 2.1

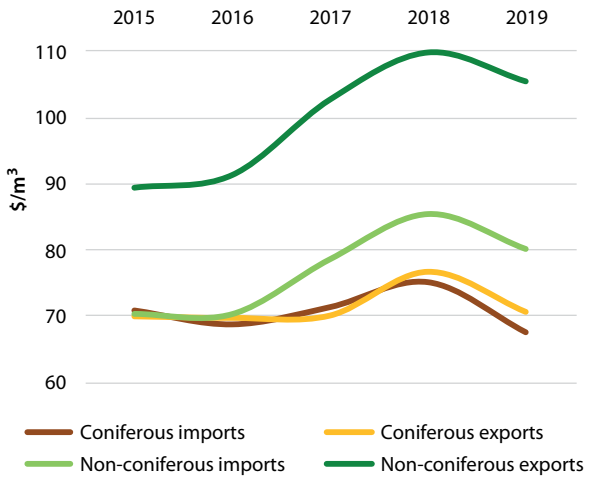
Top five intra-European trade flows of coniferous industrial roundwood, 2019

Origin–destination	*million m³*	*Change 2015-2019 (%)*
Czechia–Austria	4.6	120
Czechia–Germany	3.6	106
Norway–Sweden	2.8	8
Poland–Germany	2.4	26
Germany–Austria	1.6	-20

Source: Wood Resource International, 2020.

GRAPH 2.3

Europe: Traded industrial roundwood unit value, 2015-2019



Source: UNECE/FAO database, 2020.

The levelling of the price structure across Europe can be attributed largely to an increase in log trade, particularly around the Baltic Sea, and to an oversupply of logs in the highest-cost countries.

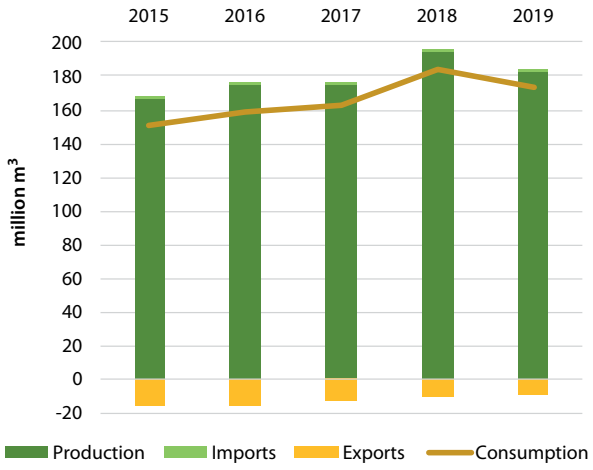
Eastern Europe, Caucasus and Central Asia

EECCA countries reported industrial roundwood removals of 229 million m³ in 2019, of which 80% was coniferous. This was down by 6.6%, year-on-year, with the fall driven entirely by lower removals in the Russian Federation (-7.5%); nevertheless, the removal volume in 2019 was still well above that recorded in 2017 (4.3% higher) as well as in previous years. In Belarus and Ukraine (the second- and third-largest timber producers in EECCA after the Russian Federation), removals of industrial roundwood were 16.0 million m³ (down by 1.7% compared with 2018) and 9.3 million m³ (up by 3.6%), respectively. The production of coniferous industrial roundwood in EECCA for 2019 was 182.5 million m³, down by 6.5% from 2018 (graph 2.4).

Exports of industrial roundwood contracted by 15% in EECCA in 2019, to 16.2 million m³. The Russian Federation accounts for the vast majority of log exports in the subregion, given log-export bans in Belarus and Ukraine. Nevertheless, Russian log exports have been in decline for more than a decade. The Russian Federation exported a record volume of

GRAPH 2.4

EECCA: Coniferous industrial roundwood production, trade and consumption, 2015-2019



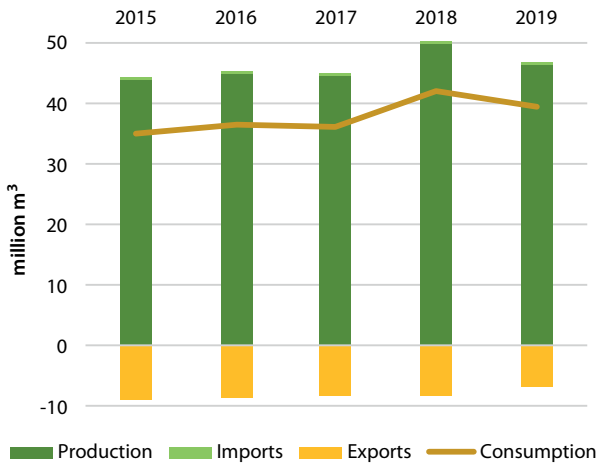
Note: Exports are shown as negative numbers.

Source: FAOSTAT, 2020.

37 million m³ of softwood logs in 2006 but only 9.1 million m³ in 2019, which was 17% lower than in 2018. High log export taxes (imposed ten years ago) have been the main driver of the decline. Export quotas are also in place based on historical shipments, as well as a requirement that exporting companies also produce value-added wood products.

GRAPH 2.5

EECCA: Industrial non-coniferous roundwood production, trade and consumption, 2015-2019

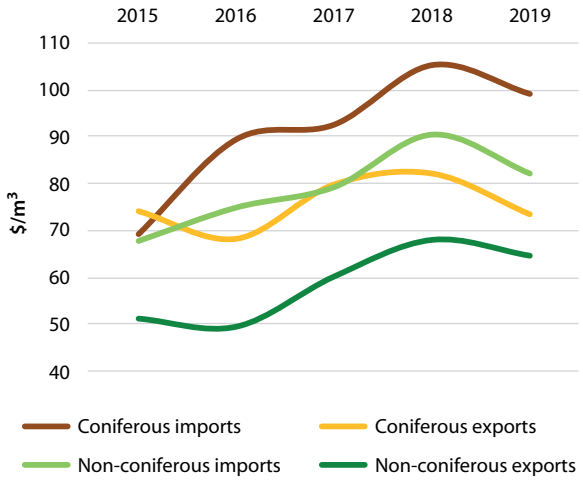


Note: Exports are shown as negative numbers.

Source: FAOSTAT, 2020.

GRAPH 2.6

EECCA: Traded industrial roundwood unit value, 2015-2019



Source: FAOSTAT, 2020.

The trend has been in the other direction for Russian exports of hardwood logs, with a substantial increase in the last decade. The country exported just over 8 million m³ of hardwood logs in 2018, more than double the volume in 2009. The upward trajectory was broken in 2019, however, with a decline in export volume of 17.4%, mostly into the Chinese market. Shipments to China, Finland and Sweden accounted for about 95% of total Russian hardwood log exports in 2019. Finland remains the largest market, with more than 4 million m³ of pulp logs crossing the border from the Russian Federation in 2019 to meet increasing wood-fibre demand in the expanding Finnish pulp sector.

The production of non-coniferous industrial roundwood in EECCA for 2019 was 46.4 million m³, down by 7.1% from 2018 (graph 2.5).

In the EECCA subregion in 2019, declared export unit values decreased by 11% for coniferous industrial roundwood, to an average of $73/m³, and by 5% for non-coniferous industrial roundwood, to an average of $65/m³. Import volumes of industrial roundwood increased by 6.6% in 2019, but import unit values dropped by 6% for coniferous (to an average of $99/m³) and by 9.1% for non-coniferous industrial roundwood (to an average of $82/m³) (graph 2.6).

The consumption of industrial roundwood dropped by 5.8% in EECCA in 2019, to 213 million m³ (down by 5.9% for coniferous and by 5.4% for non-coniferous).

North America

The harvest of industrial roundwood in North America fell by 3.0% in 2019 because of reduced log consumption by the sawmilling industry in Canada and by pulp mills and panel producers in the US.

Removals of industrial roundwood in the US totalled about 388 million m³ in 2019, of which 76% was coniferous. In Canada, removals reached 144 million m³ (81% coniferous), down by 7.5% from 2018 and the lowest quantity in ten years. Most of the decline in log production was in British Columbia, where the annual allowable cut has been in steady decline since 2010 and milling capacity has shrunk.

In the US, the timber harvest was down slightly in 2019 but still substantially above the five-year average. The sawmilling sector has grown faster than other sectors, continuing a sequence of ten year-on-year increases in 2019.

North America produced 410.1 million m³ of coniferous industrial roundwood in 2019, down 3.0% from 2018 (graph 2.7).

The production of non-coniferous industrial roundwood in North America was 121.5 million m³ in 2019, down by 3.1% from 2018 (graph 2.8).

GRAPH 2.7

North America: Coniferous industrial roundwood production, trade and consumption, 2015-2019

Note: Exports are shown as negative numbers.

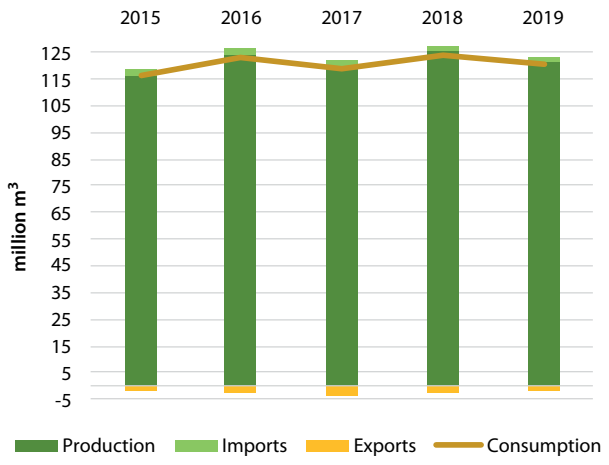
Source: UNECE/FAO database, 2020.

US softwood log exports fell from 9.8 million m³ in 2018 to 5.9 million m³ in 2019, the lowest level in more than 30 years and the first time that the US has exported less than Canada. The decrease was due mainly to a decline in US shipments to China, itself a result of the trade dispute between the two countries. The decline in US log exports continued in the first quarter of 2020, when only 260,000 m³ was shipped to China, down from 710,000 m³ in the first quarter of 2019.

Canadian softwood log exports declined by 11.3% in 2019, to 7.11 million m³. More than 90% of the export volume went overseas, with a majority (66% of total exports) destined for China. Relatively small volumes were shipped to Japan (26%) and the Republic of Korea (8%). All overseas exports of softwood logs from Canada originated in British Columbia. With tight log supplies and government moves to further restrict log shipments from the province, importers in Asia are likely to increasingly turn to other regions to satisfy their wood demand.

GRAPH 2.8

North America: Non-coniferous industrial roundwood production, trade and consumption, 2015-2019

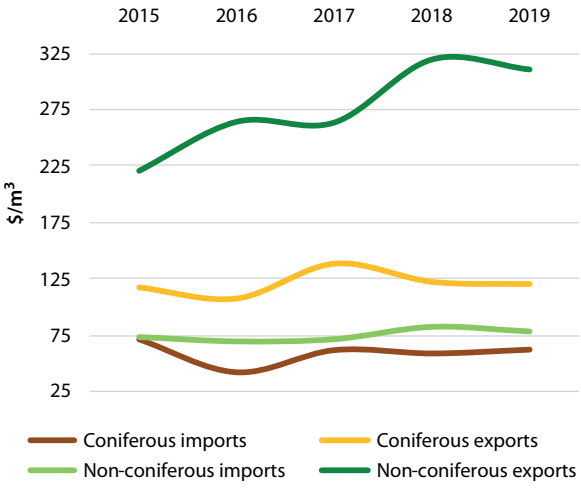


Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

GRAPH 2.9

North America: Traded industrial roundwood unit value, 2015-2019



Source: UNECE/FAO database, 2020.

North American declared unit values for exports decreased by 1.6% (to an average of $120/m^3$) for coniferous and by 2.7% (to an average of $310/m^3$) for non-coniferous industrial roundwood in 2019. Declared unit values for imports increased by 5.7% (to an average of $63/m^3$) for coniferous and by 4.7% (to an average $79/m^3$) for non-coniferous industrial roundwood (graph 2.9).

Extraregional influences on the UNECE

Seven of the ten major industrial-roundwood-exporting countries worldwide are in the UNECE region. There were two major changes in the top-ten ranking in 2019, with Czechia jumping to third place (with an export volume of coniferous roundwood of 15 million m^3) and the US dropping to sixth place, down from third in 2018 (table 2.2).

China is by far the world's biggest importer of industrial roundwood, and its import volume increased again in 2019 (by 17%). Table 2.3 shows the top ten extraregional industrial roundwood importers in 2019; China imported four times more industrial roundwood than the other nine countries in the top ten combined.

China shifted its log sourcing away from North America and the Russian Federation in 2019 towards Oceania and Europe. The major reasons for this were the trade dispute between

TABLE 2.2

Top ten industrial roundwood exporters worldwide, 2019

	Conifer	Non-conifer	Total	
	1,000 m³	*1,000 m³*	*1,000 m³*	*$ million*
New Zealand	21,418	303	21,721	2,273
Russian Federation	9,127	6,730	15,857	1,115
Czechia	15,010	287	15,297	789
Germany	7,141	1,417	8,558	749
Uruguay	1,396	6,781	8,178	670
US	5,919	1,882	7,801	1,676
Canada	7,112	436	7,548	611
Australia	3,719	642	4,361	445
Poland	3,717	458	4,175	298
France	1,716	2,161	3,877	341

Source: FAOSTAT 2020; UNECE/FAO database, 2020; TDM database, 2020.

TABLE 2.3

Top ten extraregional industrial roundwood importers, 2019

	Conifer	Non-conifer	Total	
	1,000 m³	*1,000 m³*	*1,000 m³*	*$ million*
China	44,445	12,997	57,442	9,434
India	1,728	2,644	4,372	1,001
Viet Nam*	61	3,500	3,562	677
Republic of Korea	2,539	940	3,480	407
Japan	2,839	180	3,019	739
Indonesia	0	575	575	54
Pakistan*	45	169	213	39
Bangladesh*	44	138	182	23
Egypt*	90	69	159	24
United Arab Emirates	120	14	134	19

Note: *2018 data; UNECE region countries are not included.

Source: FAOSTAT, 2020; TDM database, 2020.

TABLE 2.4

Softwood log exports to China, 2017 and 2019

	2017	2019	Change 2017-2019
Source	*million m³*	*million m³*	*(%)*
Oceania	17.5	20.4	16
Europe	0.9	7.0	685
Russian Federation	8.7	5.6	-35
North America	7.5	5.1	-32
Other	2.1	4.0	86
TOTAL	**36.8**	**42.1**	**14**

Source: China Customs, 2020.

the US and China and the large volumes of insect-damaged timber available in central Europe. China's import volume from the US fell from 1.5 million m^3 in the third quarter of 2018 to only 0.32 million m^3 in the first quarter of 2020, and the market share of total imports held by the US fell from 14% to 4%.

The presence of logs from central Europe in the Chinese market is a new phenomenon (Ukraine has exported logs to China since 2010). Relatively small volumes of logs were shipped from Europe to China in 2016 and 2017. There was a significant increase in 2018, to 1.3 million m^3, and a dramatic jump in 2019, to almost 7 million m^3. The main European countries supplying China in 2019 were Germany, Czechia and Poland (in descending order, by volume), all of which were affected by storms and insects in 2018 and 2019. Europe's share of softwood logs imported into China increased from 3% in the first quarter of 2018 to 25% in the first quarter of 2020 (table 2.4).

UNECE subregional data summary and forecast

Table 2.5 summarizes data on industrial roundwood production, consumption, trade and declared value of cross-border trade. Additional information and the complete forest products database is available at **www.unece.org/forests/fpamr2020-annex**.

Initial data supplied by UNECE member States (all figures are year over year) indicate that removals of industrial roundwood will decrease in the UNECE region by 1.3% in 2020 and 0.8% in 2021. Subregionally, the forecast is for Europe to decline by 3.5% in 2020 and grow by 1.4% in 2021; EECCA to increase by 0.2% in 2020 and 0.5% in 2021; and North America to shrink by 0.6% in 2020 and 2.6% in 2021.

TABLE 2.5

Industrial roundwood production, imports, exports, net apparent consumption and traded unit value, UNECE subregions, 2015-2019

	2015	*2016*	*2017*	*2018*	*2019*	*Change 2018-2019*
EUROPE						
Coniferous						
Production (1,000 m³)	303,214	309,971	313,600	339,507	334,948	-1.3%
Imports (1,000 m³)	34,475	35,585	34,127	39,615	37,242	-6.0%
Exports (1,000 m³)	28,499	29,283	30,844	35,862	44,866	25.1%
Consumption (1,000 m³)	309,190	316,273	316,883	343,259	327,324	-4.6%
Import unit value ($/m³)	$71	$69	$71	$75	$68	-9.9%
Export unit value ($/m³)	$70	$70	$70	$77	$71	-7.9%
Non-coniferous						
Production (1,000 m³)	85,692	87,038	87,857	93,276	92,886	-0.4%
Imports (1,000 m³)	18,949	18,665	16,777	18,729	18,601	-0.7%
Exports (1,000 m³)	12,283	11,933	12,159	13,612	13,898	2.1%
Consumption (1,000 m³)	92,358	93,770	92,475	98,393	97,589	-0.8%
Import unit value ($/m³)	$70	$70	$79	$85	$80	-6.2%
Export unit value ($/m³)	$89	$91	$103	$110	$105	-4.0%
EECCA						
Coniferous						
Production (1,000 m³)	166,377	174,220	174,864	195,217	182,474	-6.5%
Imports (1,000 m³)	459	395	390	402	428	6.6%
Exports (1,000 m³)	16,333	16,424	13,025	11,168	9,346	-16.3%
Consumption (1,000 m³)	150,502	158,190	162,230	184,451	173,556	-5.9%
Import unit value ($/m³)	$69	$90	$93	$105	$99	-5.8%
Export unit value ($/m³)	$74	$68	$80	$82	$73	-10.7%
Non-coniferous						
Production (1,000 m³)	43,909	45,093	44,498	49,957	46,423	-7.1%
Imports (1,000 m³)	84	69	84	93	85	-8.2%
Exports (1,000 m³)	9,024	8,631	8,393	8,153	6,895	-15.4%
Consumption (1,000 m³)	34,969	36,531	36,189	41,897	39,614	-5.4%
Import unit value ($/m³)	68	75	79	90	82	-9.1%
Export unit value ($/m³)	51	50	60	68	65	-5.0%
NORTH AMERICA						
Coniferous						
Production (1,000 m³)	389,493	405,249	407,422	422,708	410,148	-3.0%
Imports (1,000 m³)	3,591	5,214	3,420	4,995	4,707	-5.8%
Exports (1,000 m³)	15,364	17,308	16,204	17,834	13,030	-26.9%
Consumption (1,000 m³)	377,720	393,154	394,638	409,869	401,825	-2.0%
Import unit value ($/m³)	$72	$43	$62	$59	$63	5.7%
Export unit value ($/m³)	$117	$108	$138	$122	$120	-1.6%
Non-coniferous						
Production (1,000 m³)	116,543	123,921	120,083	125,431	121,548	-3.1%
Imports (1,000 m³)	2,216	2,219	2,027	1,915	1,807	-5.7%
Exports (1,000 m³)	2,257	2,911	3,398	2,929	2,318	-20.9%
Consumption (1,000 m³)	116,502	123,230	118,712	124,417	121,037	-2.7%
Import unit value ($/m³)	74	70	72	82	79	-4.7%
Export unit value ($/m³)	222	264	264	319	310	-2.7%

Note: Unit values 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.

Source: UNECE/FAO database, 2020 and FAOSTAT 2020.

Chapter 3

SAWNWOOD

Lead author: Russ Taylor

Contributing authors: Mathew Bumgardner, Antti Koskinen, Klaus Kottwitz, William Luppold, Fran Maplesden, Igor Novoselov

Introduction and UNECE region overview

Sawn softwood. The three UNECE subregions recorded mixed results in the consumption of sawn softwood in 2019, with modest declines in Europe (-1.8%) and North America (-2.7%) offset by a gain in EECCA (+5.3%). The production of sawn softwood was also mixed, increasing in Europe (+0.6%) and EECCA (+3.2%) but decreasing in North America (-3.9%).

In Europe, lower demand and higher production meant that sawn softwood exports increased in volume in 2019 (by 3.4%), with ample supplies of low-cost beetle-damaged timber enabling Scandinavian and central European countries to expand both outputs and exports. The volume of European sawn softwood exports increased in 2019 to 55.6 million m^3, but average export prices fell by 9.8%.

EECCA produced 48.7 million m^3 of sawn softwood in 2019 (up by 3.2% over 2018); the subregion's sawn softwood exports amounted to 37.4 million m^3 (+1.7%).

North American sawn softwood output was 102 million m^3 in 2019, a decrease of 3.9% compared with 2018. Exports dropped significantly (by 7.7%), to 30.0 million m^3, with the US recording a dramatic fall of 20.1% (-581,000 m^3) and Canada declining by 6.5% (-1.9 million m^3). North American imports fell by 4.1%, to 25.2 million m^3.

Sawn hardwood. The consumption and production of sawn hardwood were varied in the UNECE region in 2019, despite generally good economic conditions. The region is a net exporter of sawn hardwood, with only Europe exporting less than it imports. Apparent consumption rose by 10.2% in Europe in 2019 and by 2.1% in EECCA. Consumption was flat in North America, however, albeit at a much higher level than in Europe and EECCA.

European hardwood lumber production grew by 2.1% in 2019, to 14.4 million m^3, but it declined in the EECCA to 3.94 million m^3. Sawn hardwood production decreased slightly (by 2.1%) in North America, to 23.4 million m^3.

China continued to dominate imports of temperate and tropical sawnwood in 2019, with a volume of 38.8 million m^3 (valued at $10.5 billion). UNECE-region countries dominate global exports of sawnwood, with Canada and the Russian Federation the global leaders.

The biggest suppliers of tropical sawnwood to the UNECE region are Malaysia and Thailand. Sawnwood production declined in both these countries in 2019, a trend likely to continue in 2020.

Europe

SAWN SOFTWOOD

The production of sawn softwood increased only slightly (+0.6%) in Europe in 2019, to 113.4 million m³. Net apparent consumption was down by 1.8%, to 97.1 million m³ (graph 3.1). Sawn softwood production continued to increase in central Europe (Austria and Germany), with relatively inexpensive logs available due to timber salvage programmes. Sawn softwood production grew in Sweden (by 2.0%) but fell significantly (by 3.8%) in Finland.

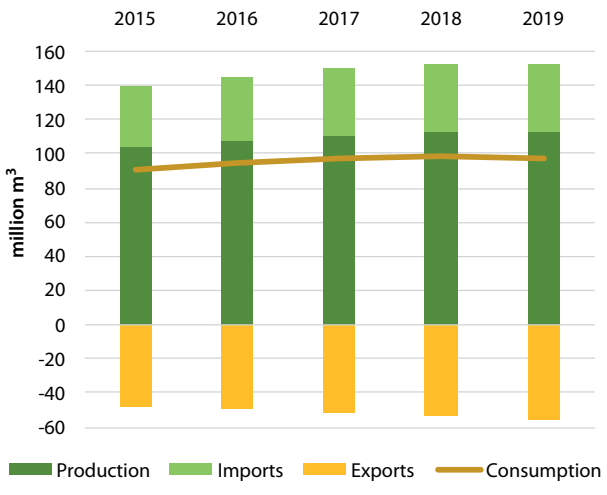
European sawn softwood dynamics were driven by exports, which were up by 3.4% in 2019, due mainly to China. All major producing countries in central Europe and the Nordic countries increased exports.

European sawn softwood imports declined in 2019 (by 1.6%), especially in Germany (down by 7.1%), which had more domestic supply available, and Turkey (down by nearly 50%).

The sawn softwood sector was influenced by market discontinuities in the first half of 2020. Finland cut production significantly due to labour disputes, and several central European countries harvested more than the industry needed to address infestations of the spruce bark beetle. The COVID-19 pandemic also reduced demand in both domestic and export markets.

GRAPH 3.1

Europe: Sawn softwood production, trade and consumption, 2015-2019



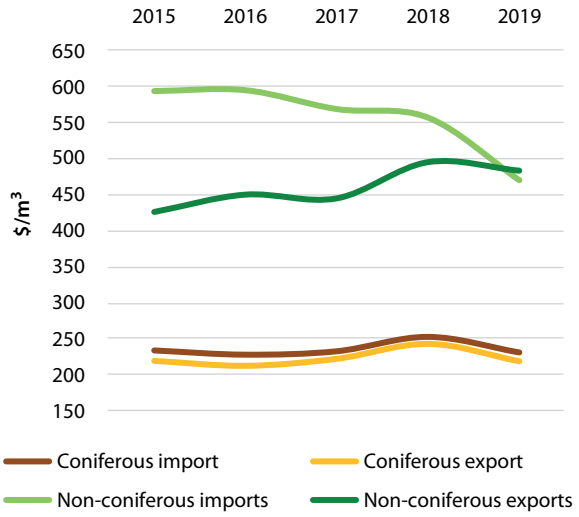
Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

Unit values decreased by 9-10% in 2019 for Europe's sawn softwood imports and exports (graph 3.2).

GRAPH 3.2

Europe: Traded sawnwood unit value, 2015-2019



Source: UNECE/FAO database, 2020.

SAWN HARDWOOD

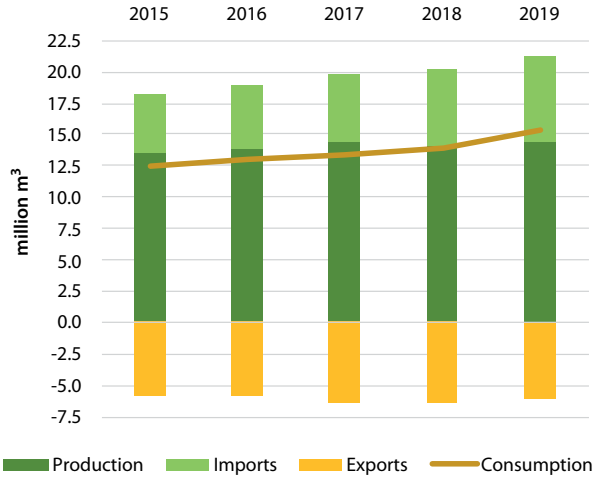
Sawn hardwood consumption in Europe picked up by 10.2% in 2019, to 15.3 million m³ and production hit a 12 year high of 14.4 million m³ (a 2.1% increase) (graph 3.3). The increase in European sawn hardwood production was due mainly to growth in Bosnia and Herzegovina, Germany and Turkey, which are all among the largest producers in the subregion. Of the larger producers, production declined only in France.

European sawn hardwood exports dropped by 4.5% in 2019 due to growing consumption in the subregion, and imports continued to grow (up by 13.6% in 2019). European sawn hardwood imports have increased by more than 40% since 2015.

Sawn hardwood import unit values in 2019 were well down – by 15.5% – from 2018, and export unit values decreased by 2.3% (graph 3.2). European hardwood sawmills are highly dependent on the international hardwood market (about 42% of production is exported). At the same time, a significant amount of hardwood lumber is imported (about 45% of consumption originates in another country). Demand for oak remained high in 2019, resulting in consistently high prices (Eurostat, 2020). Market opportunities for oak are limited, however, because the supply of oak timber is relatively low. Prices for beech were also high in 2019.

GRAPH 3.3

Europe: Sawn hardwood production, trade and consumption, 2015-2019

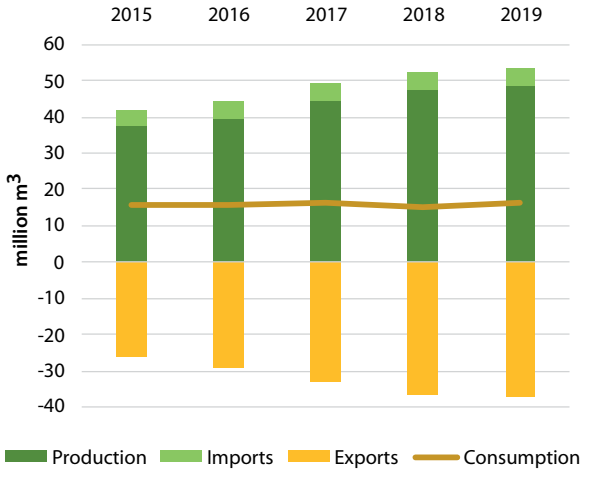


Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

GRAPH 3.4

EECCA: Sawn softwood production, trade and consumption, 2015-2019



Note: Exports are shown as negative numbers.

Source: FAOSTAT, 2020.

Eastern Europe, Caucasus and Central Asia

SAWN SOFTWOOD

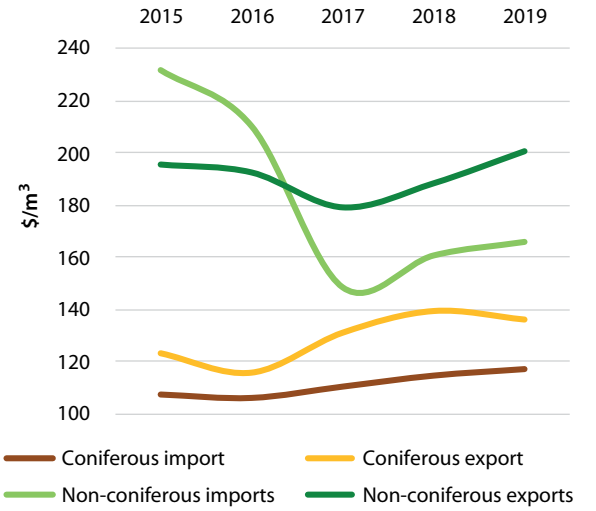
EECCA produced 48.7 million m³ of sawn softwood in 2019, up by 3.2% over 2018 (graph 3.4). The Russian Federation made up most of this volume, at 41.3 million m³, up by 4.5% in 2019. Apparent sawn softwood consumption increased in the subregion by 5.3%, to 16.1 million m³.

Russian sawmills continued to produce and export sawn softwood even though prices were down, as seen in declared unit values (graph 3.5). The Russian Federation exported 31.5 million m³ of sawn softwood in 2019, an increase of 5% compared with 2018.

The Russian Federation has increased its sawn softwood exports to China each year for the last five years, to 19.2 million m³ in 2019. The country's 2019 exports of sawn softwood declined to Egypt by about 7% (to 1.15 million m³); to Iran, by 36% (to 488,000 m³); and to the Netherlands, by 21% (to 311,000 m³). Export sales increased to Japan by 13% (to 970,000 m³); and to Germany by 7% (to 566,000 m³) (WhatWood, 2020b).

GRAPH 3.5

EECCA: Traded sawnwood unit value, 2015-2019



Source: FAOSTAT, 2020.

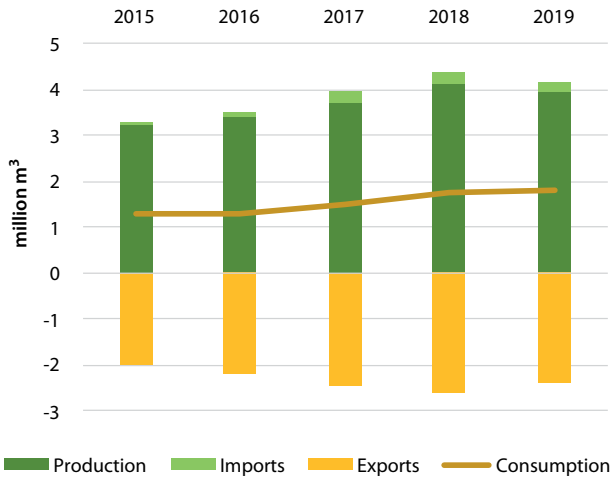
SAWN HARDWOOD

Sawn hardwood production decreased by 4.3% in EECCA in 2019, to 3.9 million m³, with Ukraine seeing the biggest drop (down by 36%, with a reduction of 189,000 m³). Consumption of sawn hardwood increased in EECCA by 2.1%, to 1.8 million m³ (graph 3.6). The Russian Federation produced 3.2 million m³ of sawn hardwood in 2019, almost unchanged from 2018.

Sawn hardwood exports from EECCA amounted to 2.4 million m³ in 2019 (a decline of 8.3% compared with 2018), of which 1.9 million m³ was from the Russian Federation (down by 2.2%).

GRAPH 3.6

EECCA: Sawn hardwood production, trade and consumption, 2015-2019



Note: Exports are shown as negative numbers.

Source: FAOSTAT, 2020.

North America

SAWN SOFTWOOD

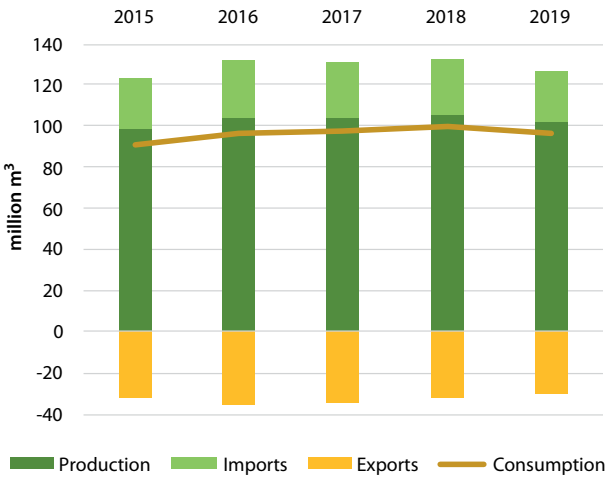
North American production of sawn softwood declined by 3.9% in 2019, to 101.6 million m³ (graph 3.7). The main cause of the slowdown in 2019 was delayed US demand, due mainly to extremely wet weather in the first half of the year, which limited house construction (Forest Economic Advisors, 2020a). Friction between the US and China resulted in a tariff war, which, coupled with slowing demand in China in 2019, restricted US trade, especially for hardwoods, until tariff exemptions commenced in the first quarter of 2020.

Although countervailing and antidumping duties on Canadian sawn softwood exports to the US continue to negatively affect Canadian producers, these are expected to drop from the current 20.2% to 8.2% in October 2020. Another policy issue affecting British Columbia (which accounts for more than 40% of Canada's production) is increased government stumpage rates[3] (Forest Economic Advisors Canada, 2020b).

US demand was strong late in the fourth quarter of 2019 and for much of the first quarter of 2020, but the COVID-19 pandemic caused the curtailment of up to 30% of the North American sawn softwood capacity early in the second quarter. On the other hand, the repair and remodelling business roared to life as stay-in-place homeowners started do-it-yourself projects. Coupled with home construction (considered an essential service in most areas of the US), dealer inventories were quickly depleted. This caused prices to soar from late April through early July, and curtailed mills restarted production. The outlook is clouded, but it appears that there will be a steady rebound in sawn softwood in the US and Canada and increased demand going into 2021 – as long as there is not a strong resurgence of COVID-19 infections (Forest Economic Advisors, 2020c). The market discussions to be held at the 2020 Committee on Forests and the Forest Industry in Geneva in November 2020 will address this issue in more detail.

GRAPH 3.7

North America: Sawn softwood production, trade and consumption, 2015-2019



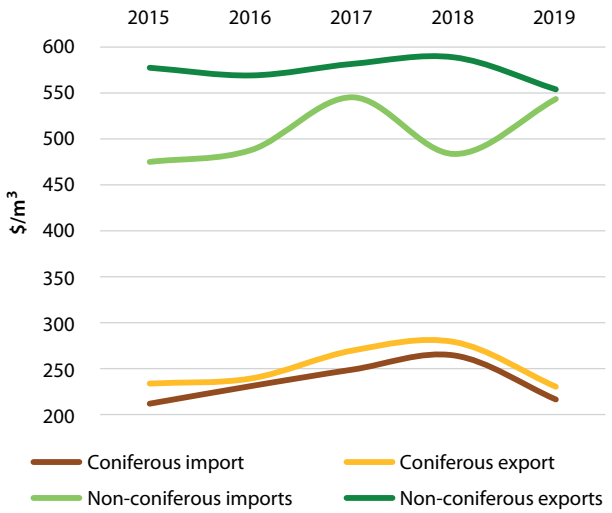
Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

3 Stumpage is the price of logs at the stump.

GRAPH 3.8

North America: Traded sawnwood unit value, 2015-2019



Source: UNECE/FAO database, 2020.

In general, declared unit prices for Canadian and US sawnwood exports were lower in 2019 than in 2018. This was also true for Canadian and US imports of coniferous sawnwood (graph 3.8).

SAWN HARDWOOD

Sawn hardwood production fell by 2.1% in North America in 2019, to 23.4 million m^3 (graph 3.9). The net apparent consumption of sawn hardwood was flat at 20.8 million m^3, and the export volume dropped by 14.6%.

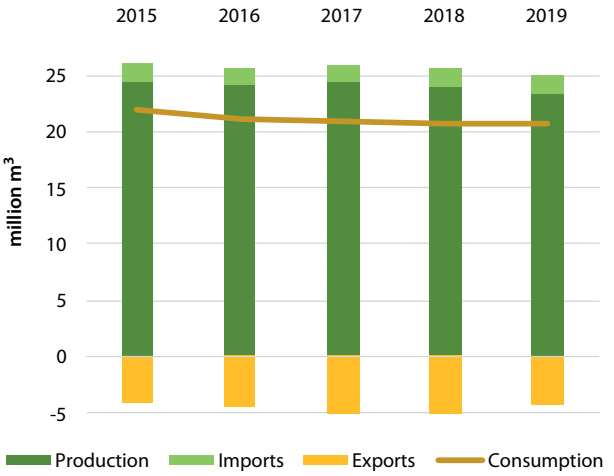
Sawn hardwood imports declined in 2019 as a result of reduced intraregional trade between the US and Canada and lower European beech imports by the US (US FAS, 2020).

The decline in North American exports in 2019 was the result of decreased US shipments (US FAS, 2020). Canadian exports remained relatively constant (Statistics Canada, 2020). US exports to China declined by 786,000 m^3 (39%), while exports to Viet Nam increased by 16,000 m^3 (3%). US exports to Europe declined by 32,000 m^3 (9%).

Apparent sawn hardwood consumption dropped in Canada and was flat in the US in 2019. Estimated US sawn hardwood consumption increased for industrial applications (pallets and sleepers) but dropped for appearance applications, due mainly to a reduction in solid hardwood flooring production as substitute products found greater acceptance. There was a small increase in single-family housing starts in 2019. However there was a decline in the value of single-family construction put in place in 2019 (US Census Bureau, 2020b, c), which suggests reduced consumption of higher-priced

GRAPH 3.9

North America: Sawn hardwood production, trade and consumption, 2015-2019



Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

hardwood products. Sawn hardwood consumption for furniture production remains at historically low levels, with a further slight drop in 2019.

The price of #1 common hardwood lumber (a hardwood lumber grade indicating two-thirds clear with cuttings of a minimum size) started to decline in late 2018 and continued downward in 2019 and the first half of 2020. The price of pallet cant (hardwood log centres) increased in 2019 but declined in the first half of 2020. These price trends reflect relative changes in the consumption of appearance versus industrial products in North American hardwoods (Hardwood Market Report, 2020).

Extraregional influences on the UNECE

China remains a powerhouse in the global sawnwood trade, importing considerably more sawnwood in 2019 than the next top nine extraregional importers combined (table 3.1). In 2019, US exports of sawn hardwood dropped by 786,000 m^3 (39%) to China but increased by 16,000 m^3 (3%) to Viet Nam.

TABLE 3.1

Top ten extraregional sawnwood importers, 2019

	Conifer	Non-conifer	Total	
	1,000 m^3	*1,000 m^3*	*1,000 m^3*	*$ million*
China	27,622	10,624	38,246	8,592
Japan	5,512	197	5,708	2,112
Egypt*	3,381	486	3,867	841
Republic of Korea	2,504	633	3,137	627
Viet Nam*	746	1,544	2,290	1,168
Algeria*	1,900	61	1,961	471
Mexico*	1,499	399	1,897	588
Saudi Arabia	512	1,004	1,516	418
Morocco	1,127	86	1,213	279
United Arab Emirates	986	110	1,096	279

Note: *2018 data; UNECE-region countries are not included.

Source: FAOSTAT 2020; TDM database, 2020.

Globally, eight of the top ten sawnwood exporters are countries in the UNECE region, with Chile and Thailand the only countries outside the region in the top ten in 2019 (table 3.2).

Asia is the main driver of the world's tropical sawnwood trade. China and, to a lesser extent, Thailand, India and Viet Nam are the major importers and Thailand and Malaysia are the major exporters. African suppliers – particularly Cameroon and Gabon – are also important in the tropical sawnwood trade (table 3.3). China's imports from Thailand are predominantly of lower-value rubberwood, and Africa supplies China with mainly high-value specialty timbers for high-end markets.

Balsa was the most important tropical hardwood species, by volume, imported into the US in 2019, and ipé was the most

TABLE 3.2

Top ten sawnwood exporters globally, 2019

	Conifer	Non-conifer	Total	
	1,000 m^3	*1,000 m^3*	*1,000 m^3*	*$ million*
Russian Federation	31,474	1,888	33,362	4,518
Canada	27,714	598	28,312	6,377
Sweden	12,601	32	12,634	3,023
Germany	8,787	760	9,546	2,305
Finland	8,955	15	8,970	1,937
Chile	6,980	797	7,776	789
Austria	6,090	167	6,256	1,482
US	2,305	3,709	6,013	2,978
Belarus	3,987	92	4,079	480
Thailand	1	3,903	3,904	1,090

Sources: COMTRADE, 2020; FAOSTAT, 2020; UNECE/FAO database, 2020; TDM database, 2020.

TABLE 3.3

Major importers and exporters of tropical hardwood sawnwood outside the UNECE region, 2017-2019

	(1,000 m^3)			*Change 2018-2019*
Importers	*2017*	*2018*	*2019*	*(%)*
China	7,393	6,845	6,474	-5.4%
Thailand	894	544	n/a	n/a
India	381	448	469	4.7%
Viet Nam	618	761	756	-0. 7%
Philippines	267	246	168	-31.7%
Exporters				
Thailand	4,861	4,469	3,903	-12.7%
Malaysia	2,153	1,920	1,802	-6.1%
Gabon	679	848	834	-1.7%
Cameroon	770	818	656	-19.8%
Indonesia	493	475	535	12.6%

Sources: UN Comtrade, 2020; ITTO, 2020e.

important by value (with 27% of the tropical market share in 2019).

China's tropical sawnwood imports slowed in 2019. Imports declined by 5.4% in 2019, to 6.5 million m^3, with 77% of imports originating in Thailand. Preliminary data on tropical sawnwood imports from member countries of the Association of South East Asian Nations indicate that trade dropped significantly in the first quarter of 2020 – by 81% by volume and 82% by value – compared with the same period in 2019 (ITTO, 2020b).

China's construction and manufacturing has been affected by a plunge in both international and domestic demand for construction and wooden furniture. China's gross domestic product contracted for the first time in 50 years in the first quarter of 2020, although it is still expected to reach 1.7% (on an annual basis) by year end (The Economist, 2020). The outlook for China's tropical sawnwood demand remains uncertain.

Thailand was the top-ranked exporter of tropical sawnwood – mostly plantation rubberwood – in 2019. Nevertheless, its export volume was down by 13% (to 3.9 million m^3) compared with 2018. This reflects a drop in demand in China's secondary processed wood products industries, which are the major destinations for Thailand's exports. Thailand's rubberwood sector was reportedly severely affected by declining demand in China in the first half of 2020 and by logistical supply issues arising from measures imposed by China to control COVID-19. By May 2020, 60% of Thailand's sawmills had ceased production and 40% were operating at minimal levels (ITTO, 2020c).

African sawnwood exporters have also been affected by logistical issues in China, reporting severe restrictions in unloading imported sawnwood at some Chinese ports due to strict measures to control COVID-19 (ITTO, 2020c). Cameroon's exports have fluctuated because of supply-side problems, notably shipment delays caused by bureaucratic procedures, poor port infrastructure at Douala (the country's only major port), and heavy and disruptive rains in early 2020 (ITTO, 2020b).

UNECE subregional data summary and forecast

Table 3.4 summarizes data on sawnwood production, consumption, trade and the declared value of cross-border trade. Additional information and the complete forest products database is available at **www.unece.org/forests/fpamr2020-annex**.

Initial data supplied by UNECE member states (all figures are year over year) indicate that the production of sawnwood will decrease in the UNECE region at an annual rate of 2.0% in 2020 and increase 1.1% in 2021. Subregionally, the forecast is for Europe to decline by 2.8% in 2020 and increase by 3.8% in 2021; EECCA to increase by 2.4% in 2020 and 2.8% in 2021; and North America to shrink by 3.1% in 2020 and 1.5% in 2021.

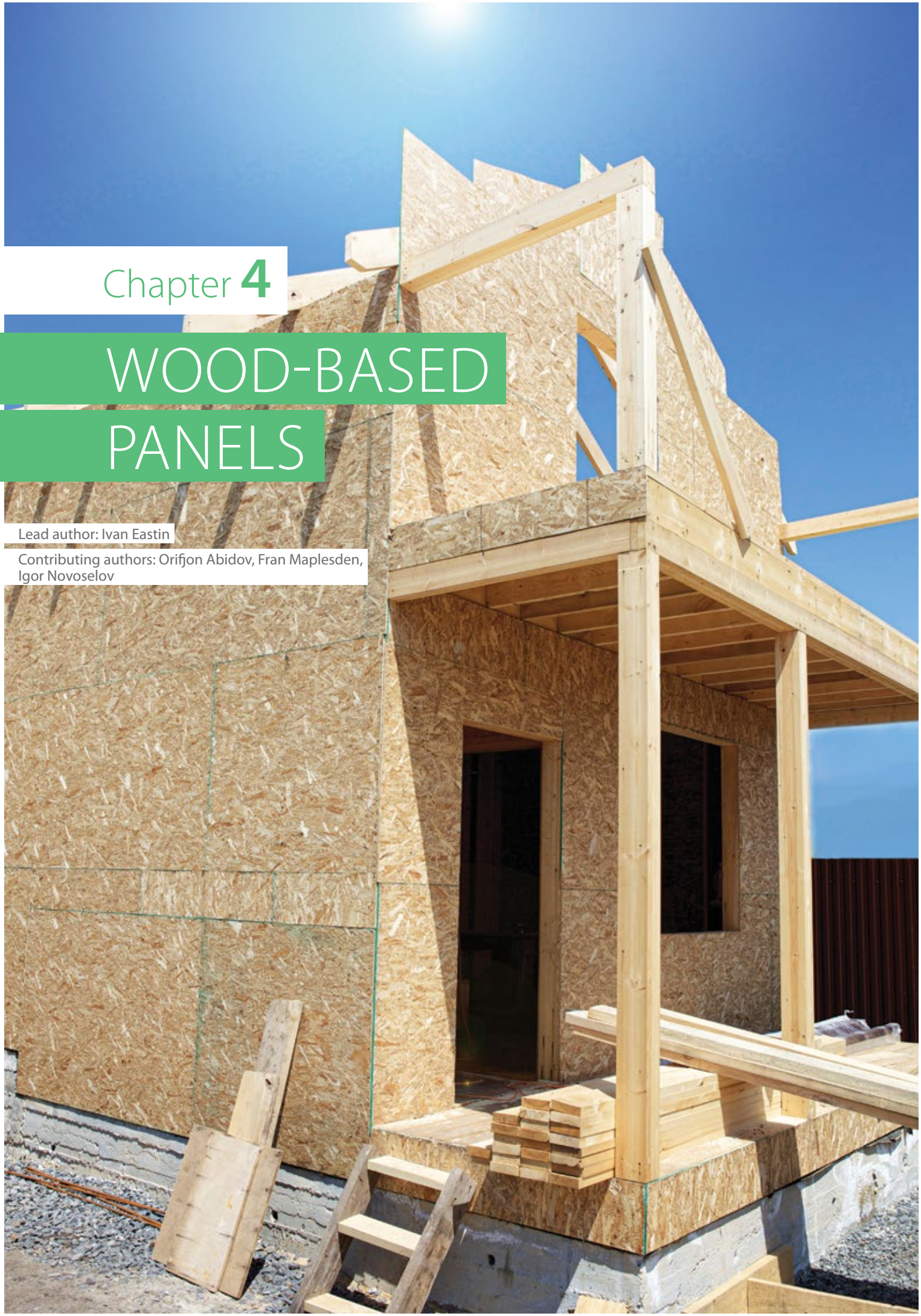
TABLE 3.4

Sawnwood production, imports, exports, net apparent consumption and traded unit value, UNECE subregion, 2015-2019

	2015	*2016*	*2017*	*2018*	*2019*	*Change 2018-2019*
EUROPE						
Sawn softwood						
Production (1,000 m³)	104,479	108,418	110,972	112,740	113,422	0.6%
Imports (1,000 m³)	34,642	35,975	38,562	39,945	39,313	-1.6%
Exports (1,000 m³)	47,816	49,872	52,040	53,790	55,636	3.4%
Consumption (1,000 m³)	91,305	94,521	97,493	98,896	97,099	-1.8%
Import unit value ($/m³)	$233	$227	$232	$253	$230	-9.0%
Export unit value ($/m³)	$220	$213	$223	$243	$220	-9.8%
Sawn hardwood						
Production (1,000 m³)	13,508	13,913	14,461	14,142	14,442	2.1%
Imports (1,000 m³)	4,789	4,960	5,320	6,076	6,902	13.6%
Exports (1,000 m³)	5,843	5,841	6,465	6,334	6,049	-4.5%
Consumption (1,000 m³)	12,454	13,031	13,315	13,884	15,294	10.2%
Import unit value ($/m³)	$595	$596	$570	$558	$471	-15.5%
Export unit value ($/m³)	$427	$451	$446	$495	$483	-2.3%
EECCA						
Sawn softwood						
Production (1,000 m³)	37,318	39,689	44,551	47,144	48,659	3.2%
Imports (1,000 m³)	4,621	4,781	4,720	4,892	4,819	-1.5%
Exports (1,000 m³)	26,048	29,099	33,006	36,754	37,383	1.7%
Consumption (1,000 m³)	15,891	15,372	16,265	15,282	16,095	5.3%
Import unit value ($/m³)	$108	$106	$111	$115	$117	2.1%
Export unit value ($/m³)	$123	$116	$131	$139	$136	-2.4%
Sawn hardwood						
Production (1,000 m³)	3,233	3,381	3,718	4,121	3,944	-4.3%
Imports (1,000 m³)	84	111	236	243	241	-0.9%
Exports (1,000 m³)	1,988	2,176	2,427	2,607	2,390	-8.3%
Consumption (1,000 m³)	1,328	1,317	1,527	1,757	1,795	2.1%
Import unit value ($/m³)	$231	$210	$149	$161	$166	3.2%
Export unit value ($/m³)	$195	$192	$179	$188	$201	6.7%
NORTH AMERICA						
Sawn softwood						
Production (1,000 m³)	99,153	103,788	103,892	105,696	101,553	-3.9%
Imports (1,000 m³)	24,011	28,031	27,624	26,278	25,198	-4.1%
Exports (1,000 m³)	32,517	35,413	33,946	32,516	30,019	-7.7%
Consumption (1,000 m³)	90,648	96,405	97,571	99,458	96,732	-2.7%
Import unit value ($/m³)	$213	$232	$249	$264	$218	-17.6%
Export unit value ($/m³)	$236	$241	$270	$279	$232	-16.7%
Sawn hardwood						
Production (1,000 m³)	24,323	24,101	24,343	23,905	23,408	-2.1%
Imports (1,000 m³)	1,718	1,557	1,564	1,779	1,659	-6.8%
Exports (1,000 m³)	4,086	4,493	5,086	5,046	4,307	-14.6%
Consumption (1,000 m³)	21,955	21,165	20,822	20,639	20,760	0.6%
Import unit value ($/m³)	$473	$486	$545	$482	$543	12.6%
Export unit value ($/m³)	$576	$567	$580	$587	$552	-6.1%

Note: Sawnwood does not include sleepers for data in 2015 and 2016. Unit values 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.

Source: UNECE/FAO database, 2020 and FAOSTAT 2020.



Chapter 4

WOOD-BASED PANELS

Lead author: Ivan Eastin

Contributing authors: Orifjon Abidov, Fran Maplesden, Igor Novoselov

Introduction and UNECE region overview

The wood-based panel sector had a mixed year in the UNECE region in 2019. Panel production declined slightly (by 0.7%) overall, and apparent consumption was down by 1.5%, despite the region's relatively good economic growth. The consumption of structural panels was down by 4.0%, but the consumption of non-structural panels increased by 0.2%.

In Europe, total wood-based panel consumption decreased by 0.8% in 2019, to 76.4 million m^3, and the apparent consumption of structural panels was weak (down by 3.4%). Production decreased by only 1.4%, however, due to a decrease in imports (-1.6%) and an increase in exports (+1.9%). The consumption of non-structural panels in Europe was stable, and there was a slight reduction in production (0.8%) due to a decrease in exports (-1.4%).

The apparent consumption of wood-based panels increased by 0.6% in EECCA in 2019, to 21.3 million m^3, and production increased by 1.1%, to 26.2 million m^3. The Russian Federation produced 17.6 million m^3 of wood-based panels in 2019, an increase of 1.3% compared with 2018.

The apparent consumption of wood-based panels fell by 3.1% in North America in 2019. Largely due to US trade actions, the value of Canadian and US panel exports fell by 21.9% and 9.7%, respectively. Production capacity increased marginally (1%) in the North American structural panel industry in 2019 but capacity utilization decreased from 78% in 2018 to 75% in 2019.

As in previous years, Indonesia and Malaysia were the dominant tropical plywood exporters in 2019, together supplying over 71% of total world exports.

Europe

Total wood-based panels production decreased by 0.9% in Europe in 2019, to 74.0 million m^3. All panel types posted production declines, led by plywood, which experienced a 2.4% drop.

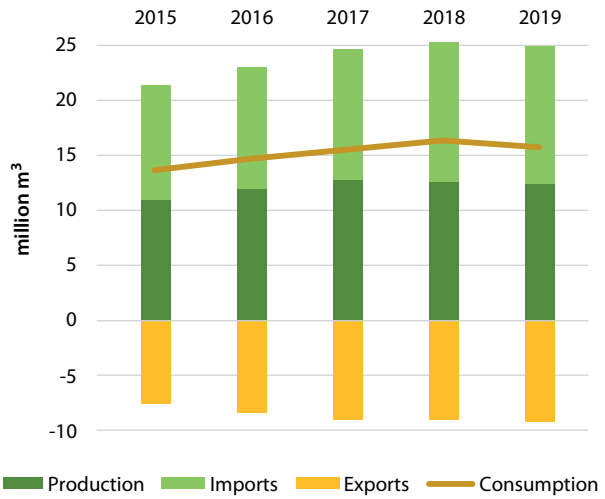
The production of fibreboard (which, with particle board, comprises the group of non-structural panels) declined by 1.9% in Europe in 2019. Fibreboard accounts for one-third (34%) of total wood-based panel production in Europe.

Production decreased across all fibreboard subcategories in 2019 due to announced capacity closures. Medium density fibreboard (MDF) production (by far the biggest subcomponent of all fibreboard products) contracted by 2.2%, and softboard posted the largest production decrease among the subcategories, dropping by 8.6%. The production of hardboard weakened by 2.9% (EPF, 2020).

The production of structural panels, comprising oriented strandboard (OSB) and plywood, declined by 1.4% in 2019 (graph 4.1). OSB production (-0.8%) declined by less than plywood and thus continued growing its relative market share in the European structural panels market.

GRAPH 4.1

Europe: Structural panels production, trade and consumption, 2015-2019

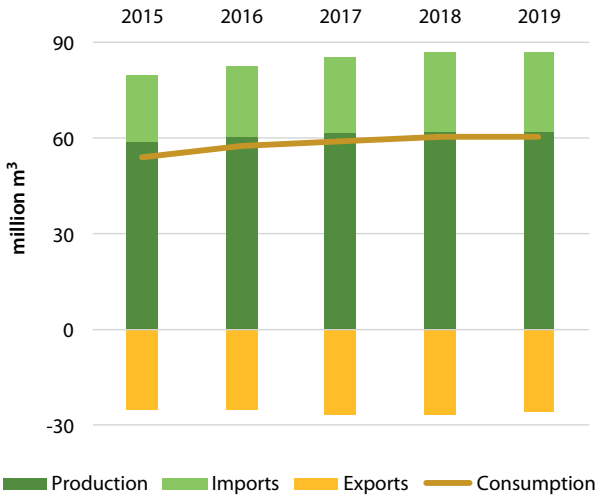


Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

GRAPH 4.2

Europe: Non-structural panels production, trade and consumption, 2015-2019

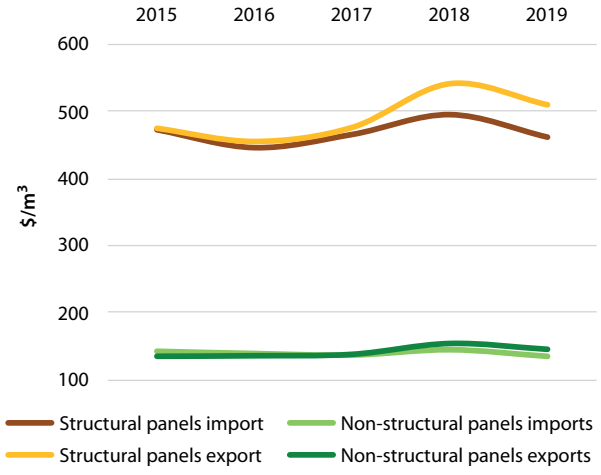


Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

GRAPH 4.3

Europe: Traded wood-based panels unit value, 2015-2019



Source: UNECE/FAO database, 2020.

Demand contracted by 3.4% for structural panels in 2019 and was flat for non-structural panels (-0.1%). The overall consumption of wood-based panels decreased by 0.8%. Exports dropped only slightly in volume (by 0.5%) but significantly in value (by 5.2%). Higher exports of structural panels (up by 1.9%) offset lower exports of non-structural panels (down by 1.4%).

Imports were stable in 2019 for non-structural panels (up by 0.2%) but contracted significantly (by 1.6%) for structural panels (graph 4.2).

Unit values decreased for both imports and exports of traded wood-based panels in 2019 (graph 4.3).

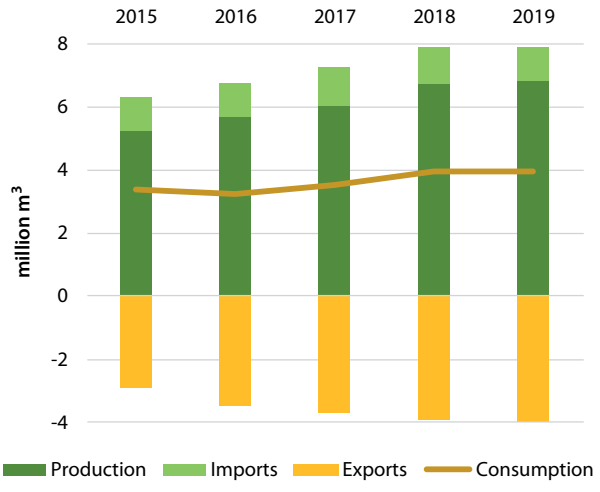
Eastern Europe, Caucasus and Central Asia

Apparent consumption increased slightly in EECCA in 2019 for both structural panels (up by 0.5%, to 3.9 million m^3) and non-structural panels up (by 0.6%, to 17.4 million m^3) (graphs 4.4 and 4.5). The apparent consumption of wood-based panels fell by 1.7% in the Russian Federation, to 12.4 million m^3. The production of wood-based panels increased in 2019 by 1.1% in EECCA, to 26.2 million m^3, and by 1.3% in the Russian Federation, to 17.6 million m^3.

The trade volume of wood-based panels grew for three consecutive years (2016–2018) in EECCA, driven mainly by trade developments in the Russian Federation, but it plateaued in 2019 (graphs 4.4 and 4.5). Imports by the Russian Federation reportedly declined volumetrically in 2019 for all panel products (plywood by 14%, fibreboard by 4%, particle board by 14% and OSB by 36%) due to the weakening of the Russian rouble against the US dollar (by 3.1%). At the same time, Russian exporters tried to increase sales volumes to external markets to offset global price declines for exported structural panels (WhatWood, 2020b).

GRAPH 4.4

EECCA: Structural panels production, trade and consumption, 2015-2019

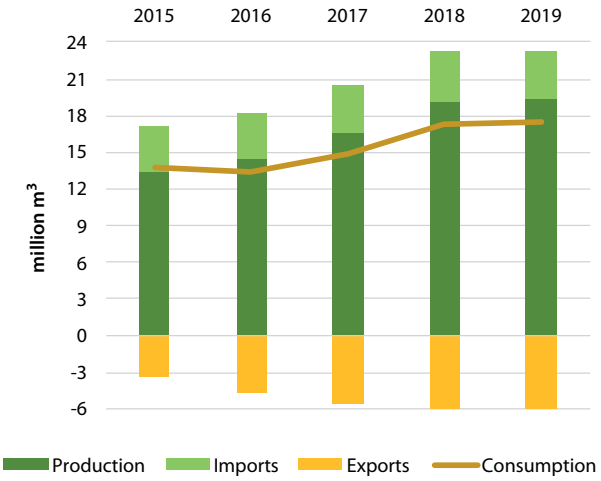


Note: Exports are shown as negative numbers.

Source: FAOSTAT, 2020.

GRAPH 4.5

EECCA: Non-structural panels production, trade and consumption, 2015-2019

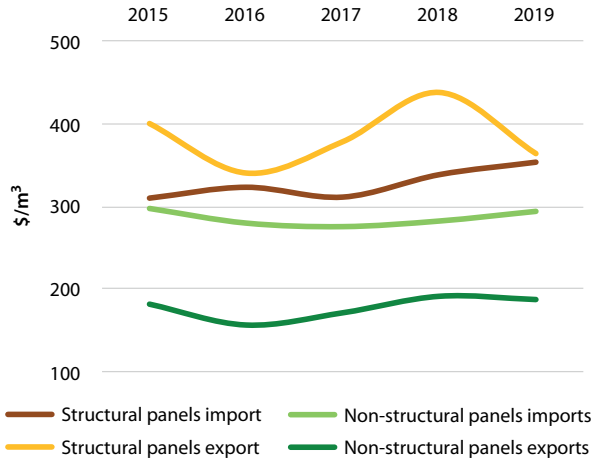


Note: Exports are shown as negative numbers.

Source: FAOSTAT, 2020.

GRAPH 4.6

EECCA: Traded wood-based panels unit value, 2015-2019



Source: FAOSTAT, 2020.

Plywood prices peaked in 2018 and trended downward in domestic markets in EECCA countries and in export markets (as seen in declared unit values) through most of 2019 (graph 4.6). Plywood prices paid to Russian suppliers declined for 15 consecutive months, starting in the first quarter of 2019, although there were signs of price recovery in the second quarter of 2020 (WhatWood, 2020c).

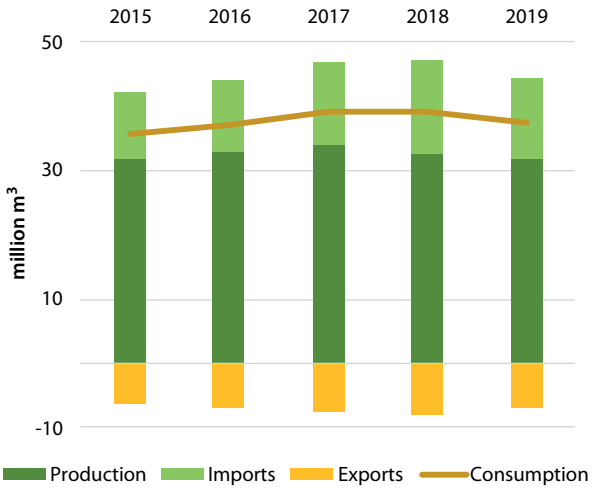
North America

The apparent consumption of wood-based panels fell by 3.1% in North America in 2019. This together with US trade actions, which reduced exporting options, caused the value of Canadian and US wood-based panel exports to fall by 21.9% and 9.7%, respectively. Total wood-based panel production in North America fell by 1.3%, to 45.9 million m^3 (graph 4.7). Production capacity increased by 1% in the North American structural panel industry and the utilization rate decreased from 78% in 2018 to 75% in 2019 (CPA, 2020).

The consumption of structural wood-based panels fell by 4.7% in North America in 2019 (graph 4.7), with demand for OSB and plywood falling by 4.1% and 5.6%, respectively. Trends in the consumption of wood-based structural panels were mixed across the four major end-use markets – flat (+0.04%) in the residential construction market; up by 0.6% in the remodelling market; down by 4.5% in the industrial market; and down by 1.8% in the non-residential market (APA, 2020a). North American consumption of non-structural panels (particle board and MDF) rose by 0.9% in 2019, with a decrease in MDF consumption of 4.0% offset by an increase in particle-board consumption of 11.9% (graph 4.8).

GRAPH 4.7

North America: Structural panels production, trade and consumption, 2015-2019

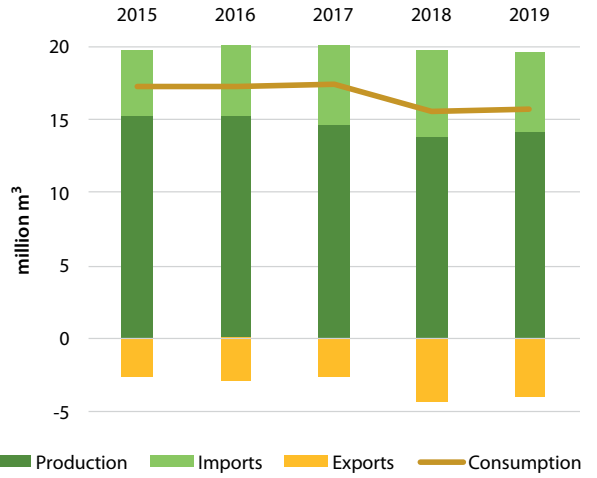


Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

GRAPH 4.8

North America: Non-structural panels production, trade and consumption, 2015-2019



Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

The value of North American imports of wood-based panels fell by 21.0% in 2019, to $5.8 billion. Imports to the US fell sharply (by 22.9%), with the exception of particle board (up by 10.2%). In Canada, panel imports fell overall by 8.1% in 2019, although imports of both particle board and OSB rose substantially.

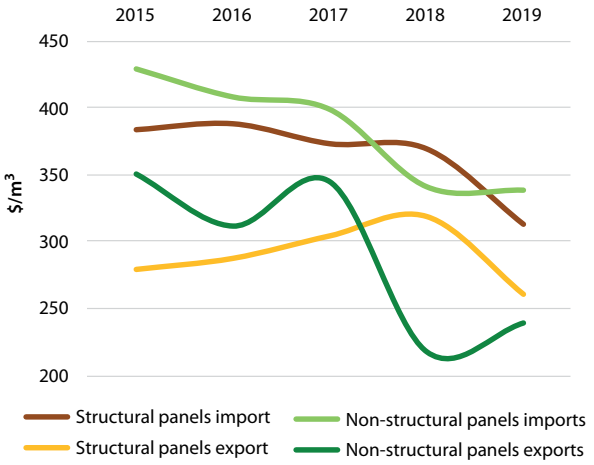
The value of wood-based panel exports from North America dropped by 19.3% in 2019, to $2.8 billion, with Canada accounting for 78% of the total. The value of exports from North America (including trade between Canada and the US) fell by 32.3% for OSB, 14.8% for plywood and 1.1% for fibreboard. Only particle board, up by 8.5%, showed an increase over 2018.

The overall weakening in demand for most types of wood-based panels in North America in 2019 led to a decrease in capacity utilization rates. The drop in demand also led to price declines throughout 2019, although OSB prices recovered slightly in the second half of the year.

Overall, OSB prices were down by 6.2% in 2019. Prices for both western and southern plywood were also lower – by 6.3% for southern plywood and 8.1% for western plywood. Of the non-structural panels, prices for particle board were up by 9.2% in 2019 and MDF prices were unchanged (Random Lengths, 2020). These trends are clearly visible in the declared unit prices of traded structural and non-structural panels (graph 4.9).

GRAPH 4.9

North America: Traded wood-based panels unit value, 2015-2019



Source: UNECE/FAO database, 2020.

Extraregional influences on the UNECE

Outside the UNECE region, Japan is the largest importer of wood-based panels by volume and easily the largest importer by value (table 4.1).

China is volumetrically the world's largest wood-based panel exporter, followed closely by Canada. Five countries in the UNECE region are among the top ten exporters globally (table 4.2).

Imports by Japan and the Republic of Korea and exports from Indonesia and Malaysia continue to dominate the global trade in tropical plywood (table 4.3). The UNECE region accounts for less than 25% of total tropical plywood imports.

Japan's imports of tropical plywood declined by 19% in 2019 (to 1.6 million m^3) due to weaknesses in the Japanese economy. Plywood from Indonesia and Malaysia, Japan's major suppliers, declined (and has continued to drop in 2020), while the share of domestic plywood increased to 55% of consumption in 2019 (ITTO, 2020b).

Malaysia's plywood exports continue to be affected by log supply shortages. Southeast Asian plywood prices rose in 2019 in response to increased log and manufacturing costs. Producers have been using more plantation-grown species, such as eucalypts and acacias, to address supply and cost issues.

According to anecdotal sources, government responses to the COVID-19 virus in Southeast Asian countries had a significant effect on the tropical plywood sector in early 2020. Production

TABLE 4.1

Top ten extraregional wood-based panels importers, 2019

	Structural	Non-structural	Total (all panels)	
	1,000 m³	*1,000 m³*	*1,000 m³*	*$ million*
Japan	2,906	889	3,795	1,918
South Korea*	1,298	1,759	3,057	1,249
China	994	1,482	2,475	880
Malaysia	1,021	848	1,869	361
Saudi Arabia	451	1,023	1,474	429
Viet Nam*	523	882	1,406	486
Mexico	690	706	1,396	556
Australia	477	259	736	438
Egypt	5	492	497	340
Philippines*	1	192	193	319

Note: *2018 data; UNECE region countries are not included..

Source: FAOSTAT, 2020; TDM database, 2020.

TABLE 4.2

Top ten wood-based panels exporters globally, 2019

	Structural	Non-structural	Total (all panels)	
	1,000 m³	*1,000 m³*	*1,000 m³*	*$ million*
China	8,607	2,593	11,200	5,431
Canada	6,257	2,807	9,063	2,135
Russian Federation	3,188	3,192	6,380	1,847
Germany	897	5,091	5,987	2,769
Thailand*	43	5,424	5,467	977
Brazil*	2,359	1,396	3,755	1,127
Indonesia	2,838	651	3,489	1,805
Malaysia	2,061	1,286	3,347	1,167
Poland	823	2,417	3,240	1,084
Belarus	679	2,303	2,983	529

Note: * 2018 data.

Sources: FAOSTAT 2020; TDM database, 2020; UNECE/FAO database, 2020.

TABLE 4.3

Major importers and exporters of tropical plywood outside the UNECE region, by volume, 2017-2019

	2017	*2018*	*2019*	*Change (%) 2018-2019*
Major importers				
Japan	1,810	1,985	1,604	-19.2
Republic of Korea	973	965	764	-26.3
Malaysia	271	483	601	24.4
Singapore	100	206	85	-58.7
Australia	105	116	82	-29.3
Major exporters				
Indonesia	2,438	3,096	2,107	-46.9
Malaysia	2,529	2,169	1,722	-20.6
China	806	792	569	-10.3
Viet Nam	494	770	984	27.8

Note: UNECE-region countries are not included.

Source: ITTO statistics database, 2020e; TDM database, 2020.

in Malaysia's forestry and timber sector slowed drastically, and trade associations are negotiating with authorities to allow at least partial operations (ITTO, 2020f). Most wood industries are operating in Indonesia, but production is slowing.

Although Viet Nam has been less affected by COVID-19 than some other Asian countries, the government there has been providing emergency support. Growth in the country's export-oriented wood-processing industry is expected to slow in 2020, however.

UNECE subregional data summary and forecast

Table 4.4 summarizes data on wood-based panels production, consumption, trade and the declared value of cross-border trade. Additional information and the complete forest products database is available at **www.unece.org/forests/fpamr2020-annex**.

Initial data supplied by UNECE member states (all figures are year over year) indicate that the production of wood-based panels will decrease in the UNECE region at an annual rate of 4.3% in 2020 and increase by 4.9% in 2021. Subregionally, the forecast is for Europe to decline by 3.9% in 2020 and grow by 3.8% in 2021; EECCA to decrease by 6.8% in 2020 and increase by 10.9% in 2021; and North America to shrink by 1.4% in 2020 and 2.4% in 2021.

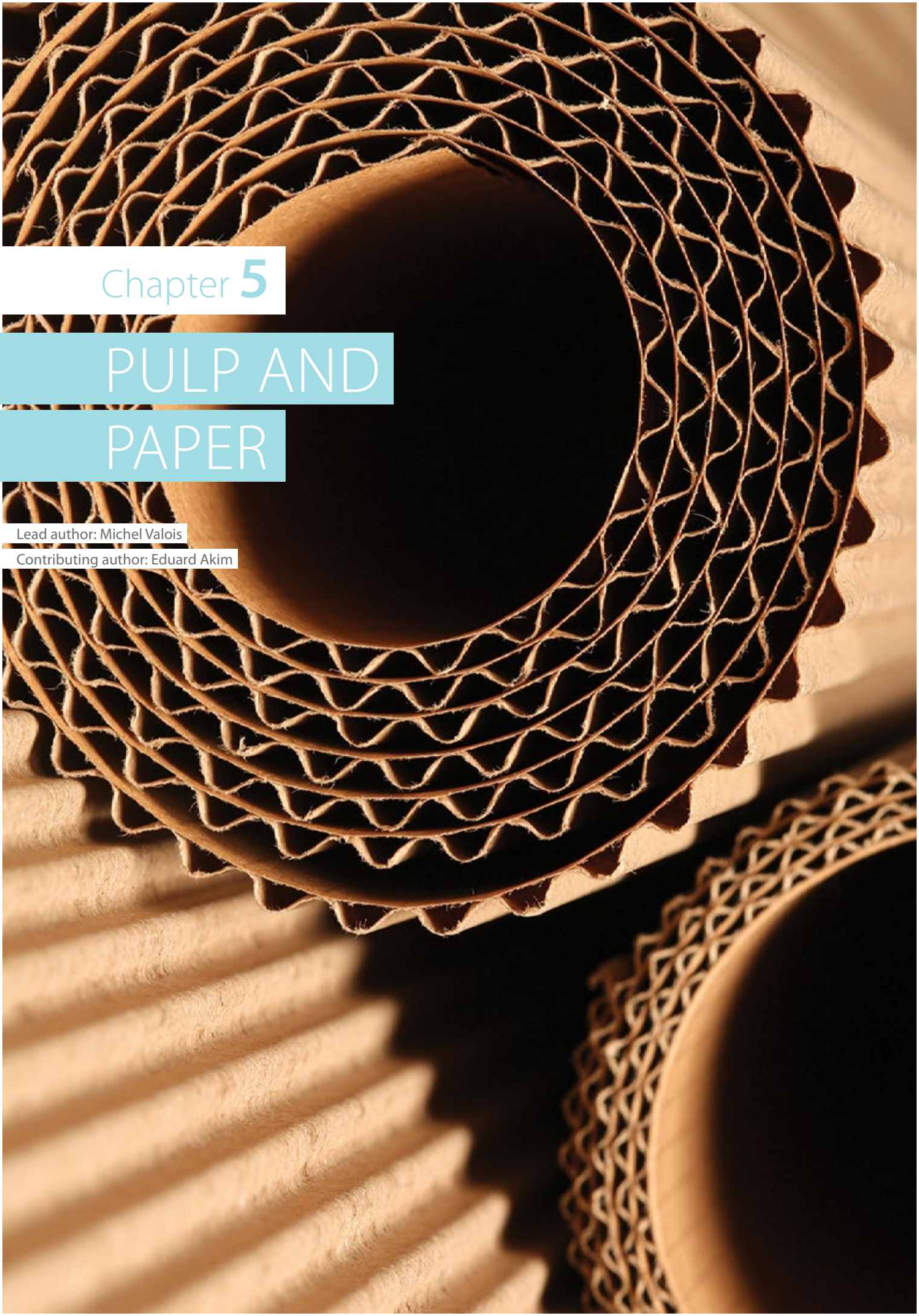
TABLE 4.4

Wood-based panel production, imports, exports, net apparent consumption and traded unit value, UNECE subregions, 2015-2019

	2015	*2016*	*2017*	*2018*	*2019*	*Change 2018-2019*
EUROPE						
Structural panels						
Production (1,000 m³)	10,831	11,996	12,705	12,564	12,386	-1.4%
Imports (1,000 m³)	10,406	11,042	11,857	12,660	12,457	-1.6%
Exports (1,000 m³)	7,651	8,433	9,038	8,967	9,139	1.9%
Consumption (1,000 m³)	13,586	14,605	15,523	16,257	15,704	-3.4%
Import unit value ($/m³)	474	448	467	496	463	-6.7%
Export unit value ($/m³)	474	454	475	540	509	-5.8%
Non-structural panels						
Production (1,000 m³)	58,943	60,703	61,753	62,148	61,645	-0.8%
Imports (1,000 m³)	20,953	21,998	23,897	24,891	24,944	0.2%
Exports (1,000 m³)	25,482	25,240	26,617	26,277	25,915	-1.4%
Consumption (1,000 m³)	54,414	57,461	59,033	60,762	60,674	-0.1%
Import unit value ($/m³)	142	138	136	145	133	-7.7%
Export unit value ($/m³)	134	135	137	153	145	-5.5%
EECCA						
Structural panels						
Production (1,000 m³)	5,217	5,665	6,027	6,684	6,820	2.0%
Imports (1,000 m³)	1,069	1,060	1,188	1,168	1,068	-8.5%
Exports (1,000 m³)	2,939	3,481	3,696	3,947	3,965	0.5%
Consumption (1,000 m³)	3,347	3,243	3,519	3,905	3,924	0.5%
Import unit value ($/m³)	310	324	311	340	355	4.6%
Export unit value ($/m³)	400	341	379	437	365	-16.7%
Non-structural panels						
Production (1,000 m³)	13,319	14,445	16,556	19,226	19,375	0.8%
Imports (1,000 m³)	3,722	3,690	3,846	3,930	3,904	-0.7%
Exports (1,000 m³)	3,256	4,690	5,569	5,864	5,876	0.2%
Consumption (1,000 m³)	13,784	13,444	14,832	17,292	17,403	0.6%
Import unit value ($/m³)	297	280	276	282	293	3.9%
Export unit value ($/m³)	183	158	173	193	189	-2.1%
NORTH AMERICA						
Structural panels						
Production (1,000 m³)	31,730	32,767	33,936	32,665	31,814	-2.6%
Imports (1,000 m³)	10,412	11,303	12,930	14,471	12,571	-13.1%
Exports (1,000 m³)	6,316	7,072	7,708	7,898	7,002	-11.3%
Consumption (1,000 m³)	35,826	36,999	39,158	39,238	37,383	-4.7%
Import unit value ($/m³)	383	388	373	369	314	-15.0%
Export unit value ($/m³)	280	288	305	319	261	-18.1%
Non-structural panels						
Production (1,000 m³)	15,307	15,203	14,645	13,876	14,118	1.7%
Imports (1,000 m³)	4,443	4,890	5,351	5,908	5,531	-6.4%
Exports (1,000 m³)	2,503	2,821	2,551	4,251	3,971	-6.6%
Consumption (1,000 m³)	17,247	17,272	17,445	15,533	15,678	0.9%
Import unit value ($/m³)	428	408	399	342	339	-0.7%
Export unit value ($/m³)	350	312	344	218	239	9.8%

Note: Structural panels comprise plywood and OSB. Non-structural panels comprise all categories of fibreboard and particle board. Unit values 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.

Sources: UNECE/FAO database, 2020 and FAOSTAT 2020.



Chapter 5

PULP AND PAPER

Lead author: Michel Valois

Contributing author: Eduard Akim

Introduction and UNECE region overview

The global pulp, paper and paperboard industry experienced general weakness in 2019 compared with 2018 (when pulp prices reached record levels and paperboard demand was strong). The production of graphic paper declined due to closures and reduced consumption, the result of increased electronic communication. In contrast, growth continued in the consumption of sanitary and household papers, certain paperboard products and specialty papers, and pulps, including fluff and dissolving.

Prices for printing and writing papers and newsprint fell in EECCA in 2019 due to weaker demand, but prices for paperboard and tissue were relatively stable. Prices for market pulp fell considerably in 2019 after a rapid rise in 2018.

The production of graphic papers declined throughout the UNECE region in 2019 – by 7.1% in Europe, 0.2% in EECCA and 11.2% in North America. Apparent consumption also fell in the three subregions – by 7.1% in Europe, 10.4% in EECCA and 10.7% in North America.

The apparent consumption of packaging material in 2019 fell in Europe (by 2.8%, the first decline since 2011) and North America (by 1.7%, the first drop since 2013); on the other hand, it increased by 2.4% in EECCA.

Europe

Total pulp production in Europe fell by 0.1% in 2019 (graph 5.1 and table 5.3) due to weaker graphic-paper demand. The apparent consumption of woodpulp fell by 6.0%, enabling a 10.2% rise in exports. Market-pulp production rose by 6.7%, to 15.1 million tonnes, and its apparent consumption fell by 8.4%, to 18.1 million tonnes.

Falling demand for printing and writing paper, and bigger margins on chemical and mechanical pulp, enabled integrated mills to fill machine time by running pulp for the market. As demand for market pulp waned through 2019, however, the additional volumes from integrated players added to overcapacity, and pricing weakness persisted to at least mid-2020.

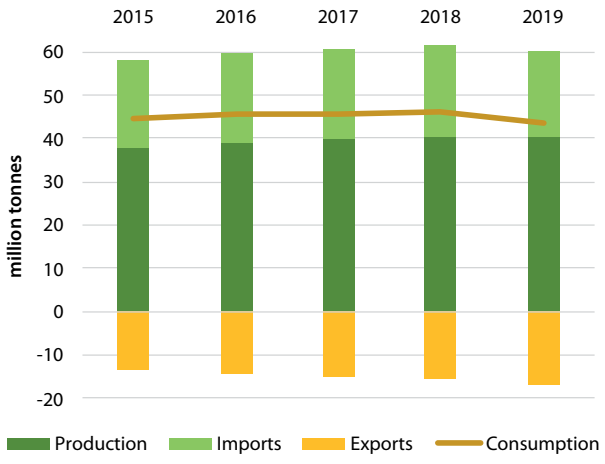
Europe's production of paper and paperboard was down by 3.2% in 2019, at 95.6 million tonnes (graph 5.2). Graphic-paper production fell by 7.1% and resulted in machine closures. The production of sanitary and household papers was flat (at -0.8%), and paperboard (packaging material) production dropped by 1.0%.

Europe's apparent consumption declined in 2019 by 3.9% for paper and paperboard and 7.1% for graphic papers. The consumption of packaging material fell (by 2.8%) in the subregion for the first time since 2011.

Unit values were lower for virtually every traded woodpulp and paper type in Europe in 2019, the result of lower demand (graph 5.3). There was a 17.5% decline in the unit value of woodpulp exports, and the import unit value dropped by 12.8%. Graphic-paper unit values fell by 2.7% for exports and by 1.8% for imports.

GRAPH 5.1

Europe: Woodpulp production, trade and consumption, 2015-2019

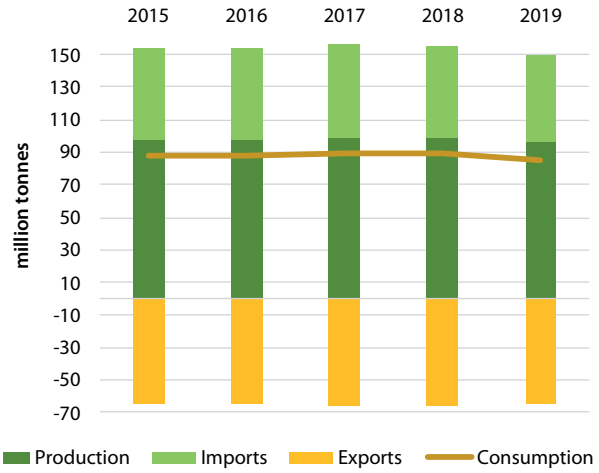


Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

GRAPH 5.2

Europe: Paper production, trade and consumption, 2015-2019

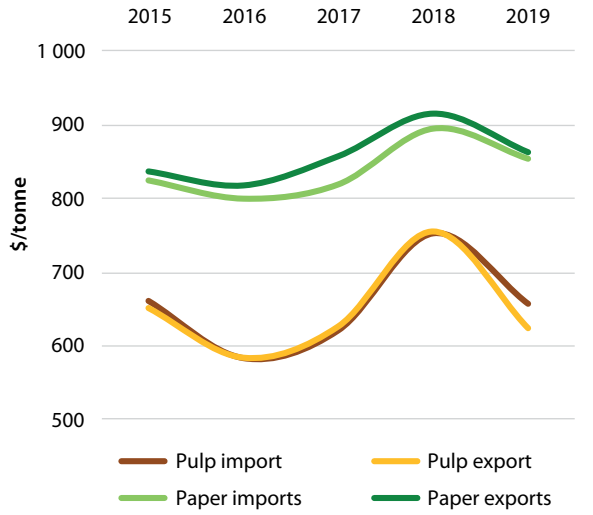


Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

GRAPH 5.3

Europe: Traded woodpulp and paper unit value, 2015-2019



Source: UNECE/FAO database, 2020.

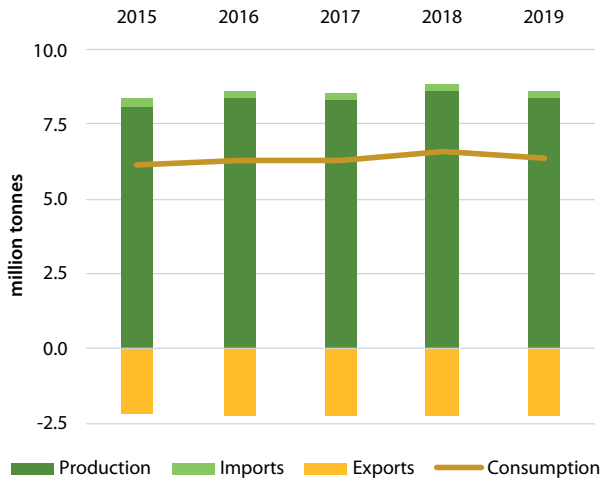
Eastern Europe, Caucasus and Central Asia

Chemical woodpulp production fell by 2.6% in EECCA in 2019, the result of higher maintenance outages in the Russian industry (graph 5.4). There was a corresponding drop in apparent consumption of 4.5%, to 4.1 million tonnes.

Paper and paperboard production and consumption was flat in the subregion in 2019 (graph 5.5). The pulp industry grew in parts of the EECCA – such as Belarus – with new capacity, but paper and paperboard production fell by 0.6%, to 10.9 million tonnes. The Russian Federation was by far the biggest paper and paperboard producer in EECCA in 2019, at 9.1 million tonnes.

GRAPH 5.4

EECCA: Woodpulp production, trade and consumption, 2015-2019



Note: Exports are shown as negative numbers.

Source: FAOSTAT, 2020.

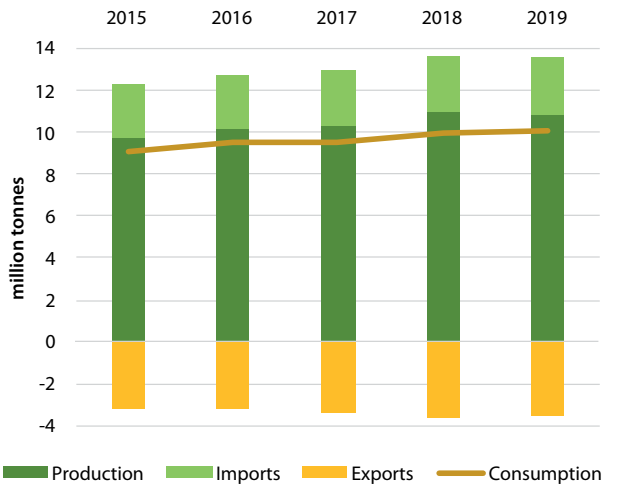
The production of pulp fell by 4.1% in the Russian Federation in 2019, to 8.2 million tonnes, but paper and paperboard production was up slightly (by 0.6%) (FAOSTAT, 2020).

Containerboard production fell by 11.7% in EECCA in 2019, and the production of flutings was 9.9% lower. Production increased by 6.4% for corrugated medium and by 11.5% for wallpaper. The production of paper bags fell by 30%.

Although the production of newsprint fell by 0.8% in EECCA in 2019, exports grew by 7%; the domestic consumption of this product dropped by 26.3%, to 369,000 tonnes. The

GRAPH 5.5

EECCA: Paper production, trade and consumption, 2015-2019

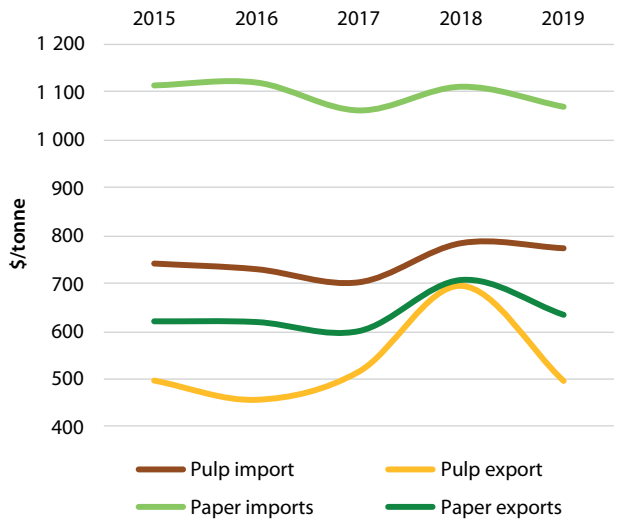


Note: Exports are shown as negative numbers.

Source: FAOSTAT, 2020.

GRAPH 5.6

EECCA: Traded woodpulp and paper unit value, 2015-2019



Source: FAOSTAT, 2020.

production of packaging papers made with recycled grades increased by 11.7% in EECCA in 2019.

Unit values for imported woodpulp and paper declined slightly in EECCA in 2019 – by 1.3% and 3.8%, respectively

(graph 5.6). Unit values dropped significantly, however, for exports of woodpulp and paper – by 28.5% and 10.4%, respectively; some of the decline was due to eroding rouble-to-US-dollar exchange rates in 2019, but weakening export markets were a bigger factor.

North America

North American production of woodpulp dropped by 1.6% in 2019 (graph 5.7). Chemical pulp production and apparent consumption fell by 1.9% (to 54.3 million tonnes) and 2.5% (to 45.8 million tonnes), respectively.

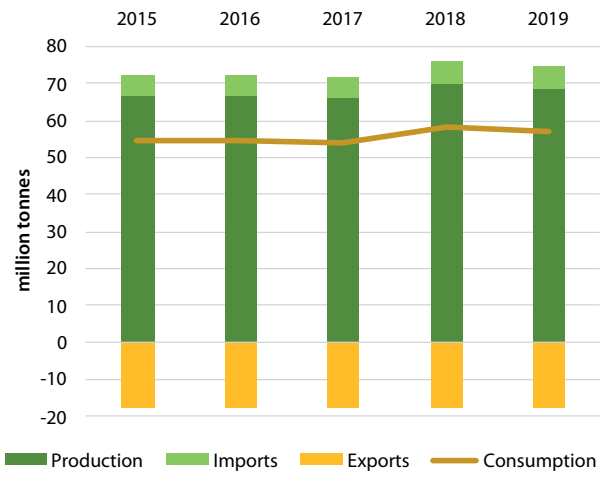
North America's production of paper and paperboard dropped by 4.2% in 2019, to 77.6 million tonnes. The apparent consumption of paper and paperboard continued its downward trend, declining by 3.5% to 71.8 million tonnes (graph 5.8).

The production of graphic papers in North America fell by 11.2% in 2019 as capacity was permanently removed due to falling demand and competition from imports. The production of packaging materials decreased by 2.7%.

The production of newsprint fell by 13.9%, to 3.4 million tonnes. Low prices and poor profitability resulted in capacity rationalization. Production dropped by 17.6% for uncoated mechanical paper (to 2.3 million tonnes), by 8.7% for uncoated wood-free paper (to 6.7 million tonnes) and by 9.0% for coated papers (to 4.5 million tonnes). The production of sanitary and household papers rose by 0.7%, to 7.7 million tonnes.

GRAPH 5.7

North America: Woodpulp production, trade and consumption, 2015-2019



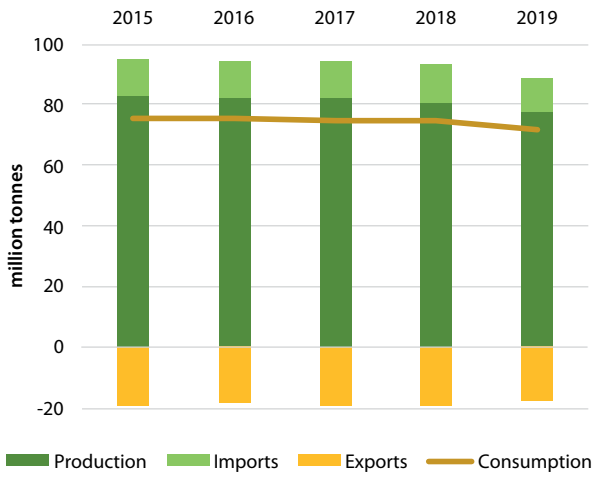
Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

North America's apparent consumption of graphic paper dropped by 10.7% in 2019, to 16.8 million tonnes, with the digitalization of communication continuing to affect the sector negatively. The apparent consumption of newsprint declined by 15.7%, to 2.1 million tonnes. There were drops

GRAPH 5.8

North America: Paper production, trade and consumption, 2015-2019

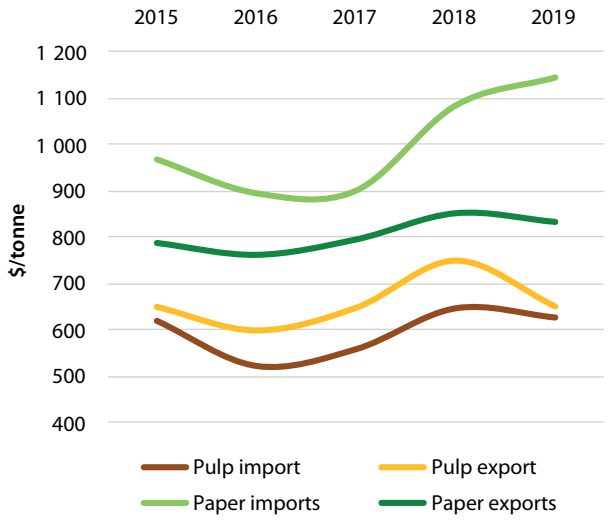


Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

GRAPH 5.9

North America: Traded woodpulp and paper unit value, 2015-2019



Source: UNECE/FAO database, 2020.

in apparent consumption of 17.6% for uncoated mechanical paper (to 2.3 million tonnes), 5.9% for uncoated wood-free paper (to 7.0 million tonnes) and 11.3% for coated papers (to 5.3 million tonnes).

Apparent consumption grew by 0.9% for sanitary and household papers (to 7.9 million tonnes) but dropped by 1.7% for packaging materials (to 45.7 million tonnes) – the first decline in this product category since 2013. Apparent consumption rose by 1.1% for cartonboard (to 6.3 million tonnes) but decreased by 2.2% for case materials (to 31.4 million tonnes) and by 1.5% for wrapping papers (to 2.3 million tonnes).

Traded woodpulp declared unit values were lower across all grades in North America in 2019, the result of lower apparent consumption (graph 5.9 and table 5.3). Woodpulp declared unit values declined by 13.2% for exports and by 3.1% for imports. Declared unit values for graphic paper edged up by 0.6% for exports and by 6.4% for imports.

Extraregional influences on the UNECE

CHINA

Paper production and consumption increased in China in 2019, despite a large drop in recovered-paper imports (China Paper Association, 2020). Overall, output reached 107.7 million tonnes, up by 3.2% compared with 2018. Consumption rose by 2.5%, to 107 million tonnes.

China's production of newsprint and coated printing and writing paper declined in 2019 by 21.1% (to 1.5 million tonnes) and 3.6% (to 6.8 million tonnes), respectively. Consumption dropped similarly, by 17.7% for newsprint (to 1.95 million tonnes) and by 10.3% for coated printing and writing paper (to 5.4 million tonnes).

Chinese production of uncoated printing and writing paper increased by 1.7% in 2019 (to 17.8 million tonnes). Boxboard production and consumption also grew – by 5.6% (to 14.1 million tonnes) and 4.8% (to 12.8 million tonnes), respectively.

TABLE 5.1

Top ten extraregional woodpulp and paper importers, 2019

	Woodpulp	Paper	Total woodpulp and paper	
	1,000 tonnes	*1,000 tonnes*	*1,000 tonnes*	*$ million*
China	26,229	6,159	32,387	21,119
Mexico	819	4,154	4,973	4,025
India	1,608	3,147	4,755	3,487
Republic of Korea	2,228	1,099	3,327	2,746
Japan	1,691	1,574	3,265	2,934
Egypt	292	2,880	3,172	1,308
Singapore	828	1,410	2,237	1,352
Indonesia	1,434	797	2,231	1,977
Malaysia	443	1,668	2,111	1,758
Thailand	567	1,119	1,986	1,595

Note: UNECE region countries are not included.

Source: TDM database, 2020.

China's containerboard sector posted growth in 2019 after years of rationalization. Mills in China produced 21.9 million tonnes of linerboard and 22.2 million tonnes of fluting in 2019, up by 2.1% and 5.5%, respectively, compared with 2018; consumption followed a similar trend.

China imported only 10.4 million tonnes of recovered paper in 2019, a drop of 39.2% (6.7 million tonnes) compared with 2018, due to import quotas and in anticipation of a total ban starting in 2021. China imported 920,000 tonnes of recycled pulp (replacing production from recovered paper) in 2019, three times as much as in 2018 (China Paper Association, 2020). China's market-pulp imports reached a record high of 26.2 million tonnes in 2019. The country also imported 6.2 million tonnes of paper and paperboard in 2019 (table 5.1).

BRAZIL

Brazil produced 19.7 million tonnes of pulp (integrated and market) in 2019, down by 6.6% compared with 2018, and 10.5 million tonnes of paper and paperboard, up by 1.0%. The lower pulp production was due mainly to production curtailments as a result of unfavourable market conditions,

including slower demand as consumers destocked. Brazil exported 15.3 million tonnes of pulp in 2019 (table 5.2) (Ibá, 2020).

Brazil's pulp imports rose by 40.6% in 2019, due mainly to the need for softwood kraft pulps (used for fluff pulp to make personal-hygiene products), of which the country has a limited supply.

CHILE

Chile's exports of pulp, paper and paperboard fell by 1.6% in 2019, due mainly to slower demand. The country's aggregate pulp exports fell by 1.4%, to 4.6 million tonnes, with bleached radiata-pine pulp down by 6.6% and unbleached radiata-pine pulp down by 5.7%. Bleached eucalyptus kraft pulp exports rose by 4.3%.

Chile's newsprint exports fell by 14.1% in 2019 due to lower demand from publishers. Paperboard exports were down by 1.5% on weaker global demand.

TABLE 5.2

Top ten woodpulp and paper exporters worldwide, 2019

	Woodpulp	Paper	Total woodpulp and paper	
	1,000 tonnes	*1,000 tonnes*	*1,000 tonnes*	*$ million*
US	7,850	10,569	18,419	14,766
Brazil	15,310	1,968	17,278	9,185
Canada	9,676	6,698	16,374	11,016
Germany	1,215	13,500	14,715	12,381
Finland	4,518	9,293	13,811	10,381
Sweden	4,233	9,201	13,434	10,334
Indonesia	5,288	5,162	10,450	6,640
China	39	5,765	5,804	6,568
Netherlands	1,435	2,632	4,067	3,186
Russian Federation	2,191	3,182	5,373	3,089

Sources: TDM database 2020; UNECE/FAO database, 2020; FAOSTAT, 2020.

UNECE subregional data summary and forecast

Table 5.3 summarizes data on woodpulp and paper production, consumption, trade and declared value of cross-border trade for the period 2015–2019. Additional information and the complete forest products database is available at www.unece.org/forests/fpamr2020-annex.

Initial data supplied by UNECE member States (all figures are year over year) indicate the production of paper and paperboard will decline in the UNECE region by 2.6% in 2020 and 2.0% in 2021. Subregionally, the forecast is for paper and paperboard production to decline in Europe by 4.8% in 2020 and remain steady (+0.1%) in 2021; increase in the EECCA by 1.0% in 2020 and by 1.6% in 2021; and North America to shrink by 1.1% in 2020 and 4.3% in 2021.

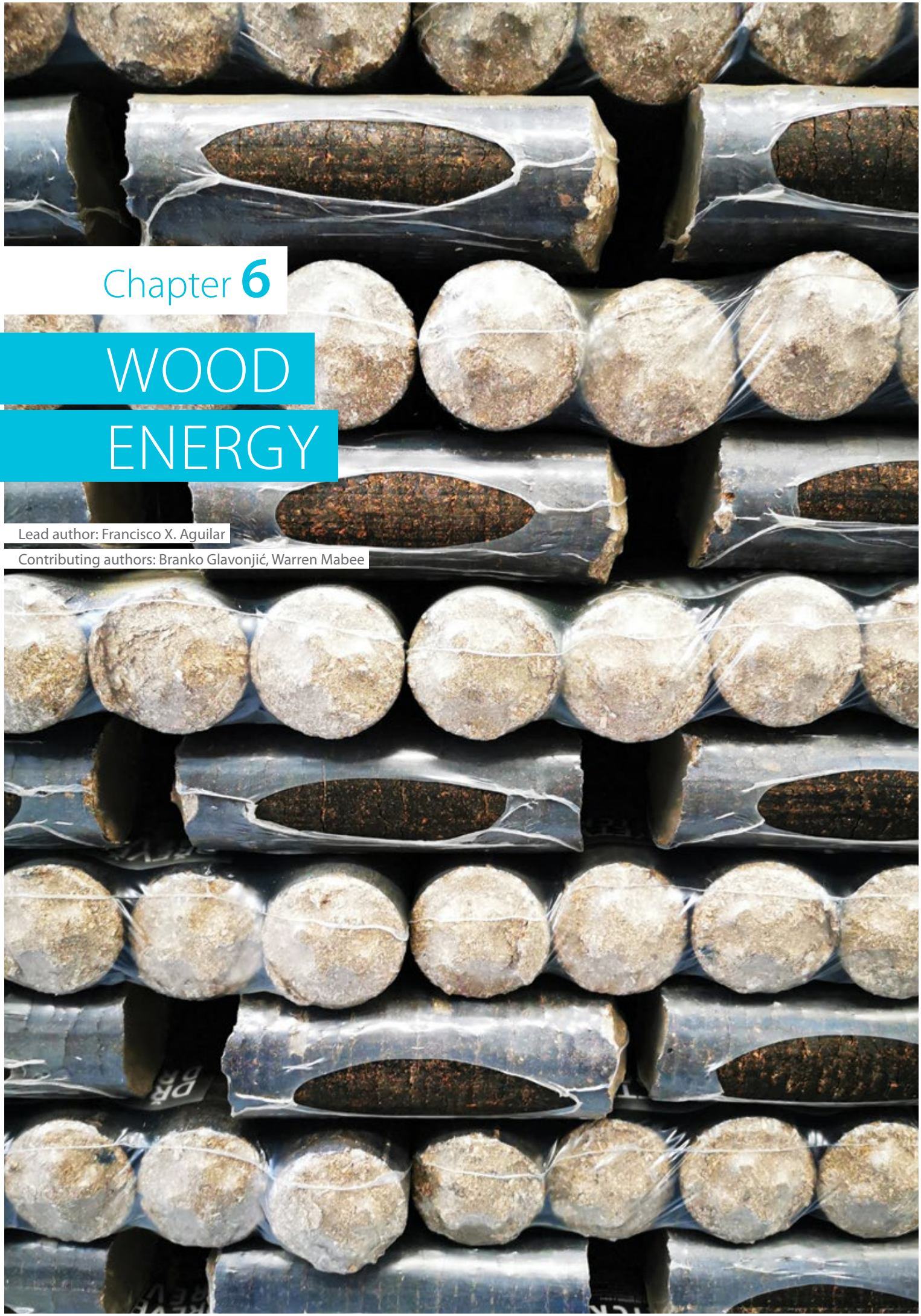
TABLE 5.3

Woodpulp and paper production, imports, exports, net apparent consumption and traded unit values, UNECE subregions, 2015-2019

	2015	*2016*	*2017*	*2018*	*2019*	*Change 2018-2019*
EUROPE						
Pulp						
Production (1,000 tonnes)	37,817	38,963	39,722	40,289	40,258	-0.1%
Imports (1,000 tonnes)	19,969	20,728	20,862	21,140	19,962	-5.6%
Exports (1,000 tonnes)	13,364	14,305	14,811	15,174	16,721	10.2%
Consumption (1,000 tonnes)	44,422	45,386	45,773	46,255	43,500	-6.0%
Import unit value ($/tonne)	660	582	620	752	656	-12.8%
Export unit value ($/tonne)	651	583	626	756	624	-17.5%
Paper						
Production (1,000 tonnes)	97,769	97,688	99,058	98,744	95,618	-3.2%
Imports (1,000 tonnes)	56,080	56,270	57,082	56,009	54,511	-2.7%
Exports (1,000 tonnes)	65,483	65,550	66,744	65,803	64,664	-1.7%
Consumption (1,000 tonnes)	88,365	88,407	89,396	88,949	85,466	-3.9%
Import unit value ($/tonne)	825	801	820	896	855	-4.6%
Export unit value ($/tonne)	836	816	856	914	862	-5.8%
EECCA						
Pulp						
Production (1,000 tonnes)	8,114	8,368	8,301	8,613	8,421	-2.2%
Imports (1,000 tonnes)	250	248	241	239	234	-1.9%
Exports (1,000 tonnes)	2,227	2,300	2,259	2,276	2,306	1.3%
Consumption (1,000 tonnes)	6,137	6,316	6,284	6,576	6,349	-3.4%
Import unit value ($/tonne)	742	731	704	784	773	-1.3%
Export unit value ($/tonne)	498	458	516	695	497	-28.5%
Paper						
Production (1,000 tonnes)	9,740	10,219	10,333	10,948	10,887	-0.6%
Imports (1,000 tonnes)	2,578	2,544	2,583	2,690	2,706	0.6%
Exports (1,000 tonnes)	3,212	3,201	3,410	3,622	3,540	-2.3%
Consumption (1,000 tonnes)	9,106	9,561	9,507	10,016	10,052	0.4%
Import unit value ($/tonne)	1,111	1,117	1,059	1,109	1,067	-3.8%
Export unit value ($/tonne)	620	618	599	707	633	-10.4%
NORTH AMERICA						
Pulp						
Production (1,000 tonnes)	66,548	66,571	66,085	70,023	68,877	-1.6%
Imports (1,000 tonnes)	5,683	5,902	5,720	5,916	5,698	-3.7%
Exports (1,000 tonnes)	17,667	17,702	17,887	17,584	17,526	-0.3%
Consumption (1,000 tonnes)	54,564	54,771	53,918	58,356	57,049	-2.2%
Import unit value ($/tonne)	620	522	558	647	627	-3.1%
Export unit value ($/tonne)	650	599	648	750	651	-13.2%
Paper						
Production (1,000 tonnes)	82,697	81,813	82,003	81,033	77,630	-4.2%
Imports (1,000 tonnes)	12,181	12,123	11,852	12,475	11,473	-8.0%
Exports (1,000 tonnes)	19,226	18,335	18,817	19,064	17,268	-9.4%
Consumption (1,000 tonnes)	75,651	75,602	75,037	74,445	71,835	-3.5%
Import unit value ($/tonne)	966	893	899	1,083	1,143	5.6%
Export unit value ($/tonne)	788	762	795	852	833	-2.2%

Note: Unit values 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.

Sources: UNECE/FAO database, 2020; FAOSTAT, 2020.



Chapter 6

WOOD ENERGY

Lead author: Francisco X. Aguilar

Contributing authors: Branko Glavonjić, Warren Mabee

Introduction and UNECE region overview

Wood energy plays a significant role in the UNECE region as the leading source of renewable energy. According to official reports, wood fuel production and consumption decreased slightly (by about 3 million m^3) in the region in 2019, to 260 million m^3. Wood fuel is often traded in informal markets, however, and officially reported volumes are often significant underestimates.

The consumption of wood pellets is increasing steadily for both industrial (electricity and heat) and private (household heating) uses. The UNECE region is the global centre for the production and consumption of wood pellets: 80% of world production is in the region, and 90% of global exports originate in UNECE countries.

A total of 33 million tonnes of wood pellets was produced in the UNECE region in 2019, an increase of 7.6% compared with 2018. Of the subregions, Europe consumed the most by far, and North America confirmed its position as the number-one exporter of wood pellets worldwide.

EECCA countries showed the most dynamic growth in wood pellet production in 2019, albeit from a relatively low base. Of the big producers, production increased in the Russian Federation by 14% and in Belarus by 48%.

Renewable-energy policies aimed at reducing the share of fossil fuels in national energy mixes are a main driver of increased demand for and international trade of wood pellets.

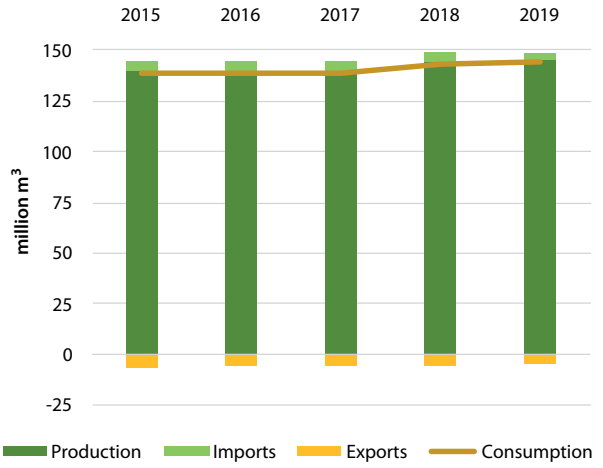
Outside the UNECE region, Viet Nam is the third most important exporter of wood pellets worldwide behind the US and Canada.

Europe

Recent data show that 25.3% of European roundwood removals was directed to energy generation in 2019. Wood fuel accounts for about half the wood removed from forests in one in every four countries in the subregion; in Albania, Italy and North Macedonia, 80% or more of the wood removed from forests is used for wood fuel. European wood fuel[4] consumption increased slightly in 2019 (graph 6.1).

GRAPH 6.1

Europe: Wood fuel production, trade and consumption, 2015-2019



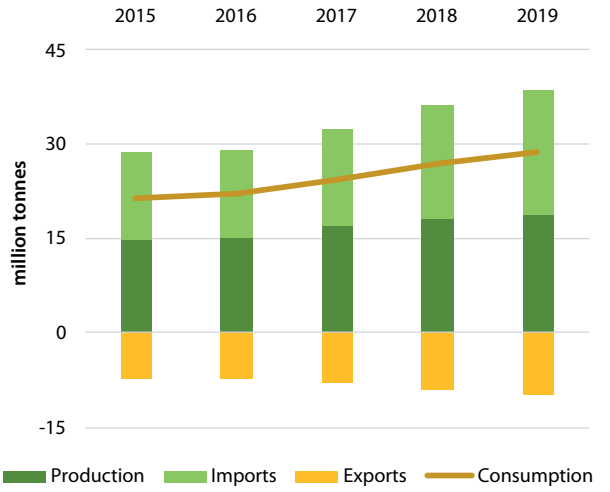
Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

The European market for wood pellets is forecast to be only lightly affected by the COVID-19 pandemic (Flach *et al.*, 2020). However, some 75% of respondents to a recent survey of ENplus-certified companies indicated that COVID-19 has negatively affected their businesses. Among reported impacts, about 8 in every 10 survey respondents reported reduced demand in the first half of 2020, and half of respondents expect to be severely affected. Only about 5% of respondents indicated positive effects. To date, there have been no major issues with the procurement of wood fibre for pellet production (ENplus, 2020). Comparatively, the crisis is expected to cut European demand for transport biofuels such as renewable diesel by 6-10% (Flach *et al.*, 2020).

GRAPH 6.2

Europe: Wood pellet production, trade and consumption, 2015-2019

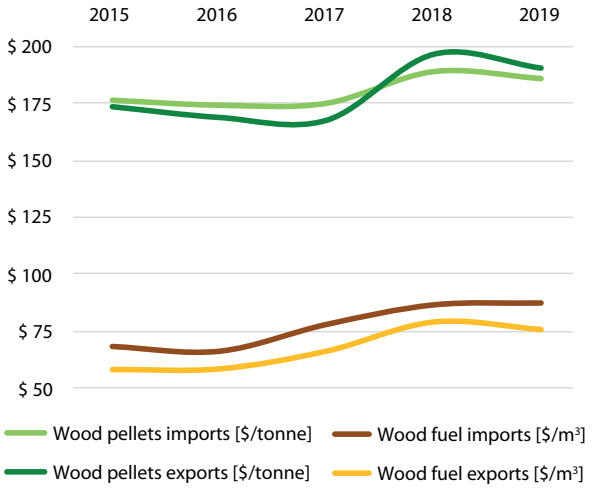


Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

GRAPH 6.3

Europe: Declared unit value of traded wood fuel and wood pellets, 2015-2019



Source: UNECE/FAO database, 2020.

4 Wood fuel is defined in the Joint Eurostat/FAO/ITTO/UNECE Forest Sector Questionnaire as, "roundwood that will be used as fuel for purposes such as cooking, heating or power production. It includes wood harvested from main stems, branches and other parts of trees (where these are harvested for fuel), round or split, and wood that will be used for the production of charcoal, wood pellets and other agglomerates. It also includes wood chips to be used for fuel that are made directly (i.e. in the forest) from roundwood. It excludes wood charcoal, pellets and other agglomerates. It is reported in cubic metres solid volume underbark (i.e. excluding bark)". This definition corresponds with code 313 of the Central Product Classification Version 2.1 of the United Nations Statistics Division and the sum of codes 4401.11 and 4401.12 of the Harmonized System of the World Customs Organization.

European wood-pellet production was about 18.8 million m^3 in 2019, an increase of 8%. European wood-pellet imports continue to grow, exceeding 19 million tonnes in 2019 (up by 5.3% compared with 2018) (graph 6.2); the Netherlands doubled its annual wood-pellet imports, to 1.22 million tonnes. The wood-pellet supply was sourced primarily from the Baltic states, followed by the Russian Federation, Belgium and the US (Flach, 2020). Flach (2020) identified a lack of certification at the forest level as a major obstacle to the growth of US-based wood-pellet exports to the Netherlands because such certification is required to receive Sustainable Energy Production stimulus funds.

Unit values for traded wood fuel, including pellets, declined slightly in 2019 (graph 6.3). Adequate supplies and milder-than-average winter temperatures in 2019 contributed to this trend.

Wood fuel production in the Western Balkans[5] increased sharply (by 11%) in 2019. Wood-pellet production jumped by 22%, to 1.5 million tonnes, of which more than half (781,000 tonnes) was exported. The production of wood pellets dropped by about 20% in the first quarter of 2020 compared with the first quarter of 2019, however, and even optimistic scenarios indicate a drop of 5-8% overall in 2020 (assuming no increase in COVID-19-related lockdowns). The wood fuel and charcoal component of production shrank slightly in the first quarter of 2020 in the Western Balkans. Wood fuel production is expected to drop by about 10% in 2020 (B. Glavonjić, personal communication, 2020).[6] The consumption of wood pellets and wood chips in the Western Balkans jumped by 21.3% and 18.5%, respectively, in 2019, likely the result of national policies in Serbia and Bosnia and Herzegovina to replace obsolete coal- and heating-oil-fired heaters in public buildings with wood-based systems.

Eastern Europe, Caucasus and Central Asia

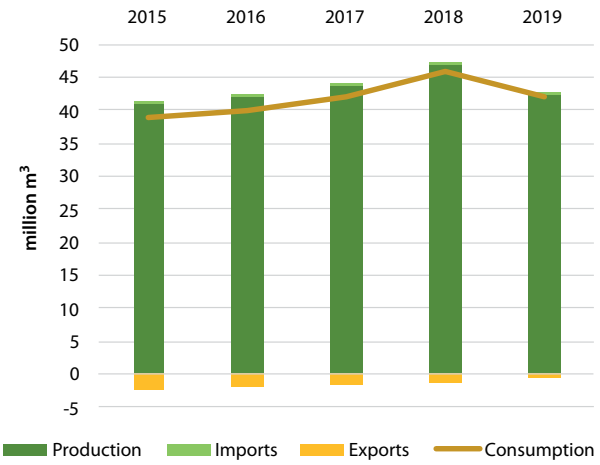
Wood fuel production and consumption in EECCA regressed to pre-2018 levels in 2019, dropping by 9.9% and 8.2%, respectively, after record highs in 2018. Most of the production was used domestically or traded among EECCA countries; thus, subregional production and consumption were similar in 2019, at about 42 million m^3 (graph 6.4).

The situation is much more dynamic in the wood pellet market, with production increasing by 12% in EECCA in 2019, to 2.5 million tonnes. The production of wood pellets has almost doubled in the subregion in the last five years, driven mostly by demand elsewhere (graph 6.5); about two-thirds of the production is exported to Asia and Europe. The Russian Federation remains the main wood pellet producer and consumer in the EECCA subregion, although Belarus saw the biggest increases in production and consumption in 2019, up by 48.2% (to 412,000 tonnes) and 102.3% (to 46,000 tonnes), respectively.

The construction of several new wood pellet plants has been announced in the subregion: two with capacities of 100,000+

GRAPH 6.4

EECCA: Wood fuel production, trade and consumption, 2015-2019



Note: Exports are shown as negative numbers.

Source: FAOSTAT, 2020.

5 The Western Balkans comprise: Albania, Bosnia and Herzegovina, Croatia, North Macedonia, Montenegro, Serbia and Slovenia.

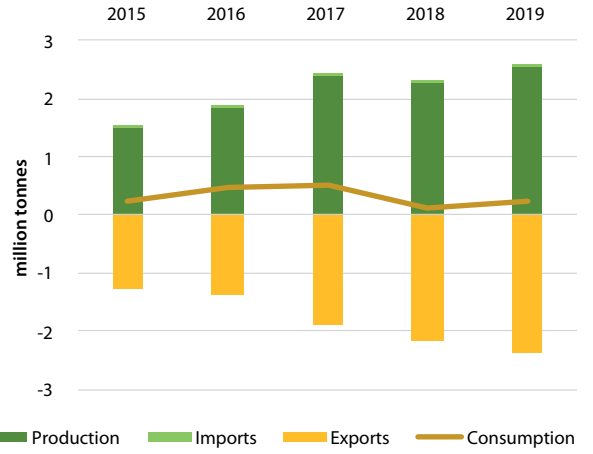
6 Data from the University of Belgrade Faculty of Forestry, Timber Trade Centre database. Belgrade, June 2020.

tonnes in Belarus (Vitebsk and Polotsk, which may come online in early 2021) (PRODESA, 2020) and one in the Russian Federation (in Boguchany, Siberia) (WhatWood, 2020d).

The average export declared unit value for wood fuel was $74 per m³ in 2019 (graph 6.6). The export unit value for pellets was unchanged at $125 per tonne, due mainly to a relatively stable exchange rate between the Russian rouble and the euro in 2019.

GRAPH 6.5

EECCA: Wood pellets production, trade and consumption, 2015-2019

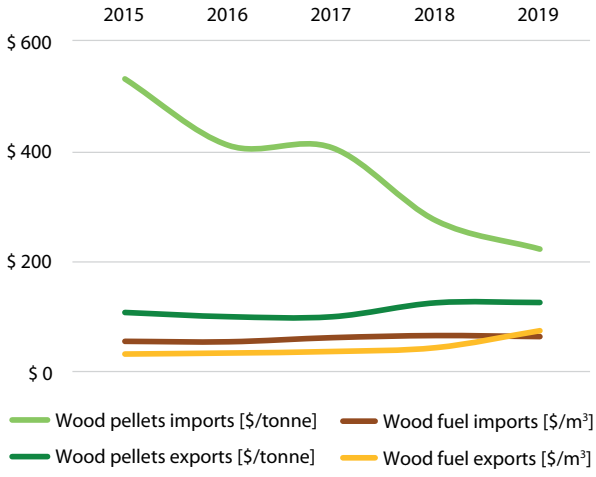


Note: Exports are shown as negative numbers.

Source: FAOSTAT, 2020.

GRAPH 6.6

EECCA: Declared unit value of traded wood fuel and wood pellets, 2015-2019



Source: FAOSTAT, 2020.

North America

North American wood fuel production was 73 million m³ in 2019, and wood pellet production reached 11.8 million tonnes (graphs 6.7 and 6.8). Additional growth in pellet production has come from new and restarting operations.

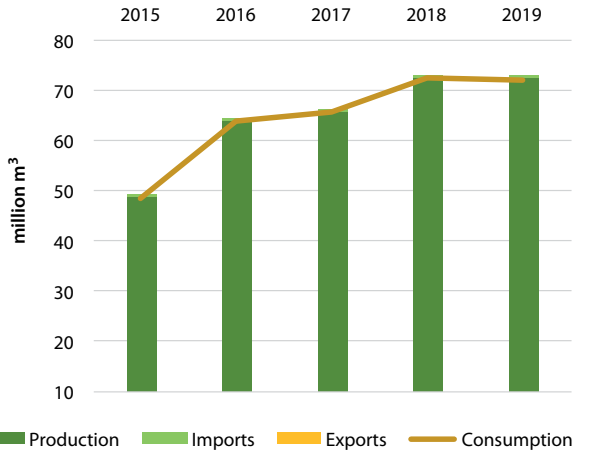
The US House Select Committee on the Climate Crisis has identified biomass as one of the pillars for achieving zero carbon emissions by 2050, and it has recommended investment in research on the implications of wood use and wood products for the climate (US House of Representatives, 2020).

The US has a total annual production capacity of 10.9 million tonnes in the manufacture of densified biomass (i.e. wood pellets) in 84 operating facilities (as of April 2020) (EIA, 2020). Three-quarters of this installed capacity is in the country's southeast, 18% is in the northeast and the remainder is in the west. Industrial wood pellets comprised 79% of total US wood pellet production in 2019, and the average domestic price was $183 per tonne. Flach *et al.* (2020) estimated that the US has the potential to supply 65% of EU import demand (about $1.6 billion at 2020 prices) if EU trade flows continue their current upward trajectory. So far, demand for US wood pellets has been unaffected by the COVID-19 pandemic.

In Canada, the majority of wood energy in 2019 was derived from the use of solid-wood processing residues (12.4 million tonnes) and spent pulping liquor (18.2 million tonnes) (Statistics Canada, 2020a). The domestic consumption and production of wood energy may increase in Canada as the

GRAPH 6.7

North America: Wood fuel production, trade and consumption, 2015-2019

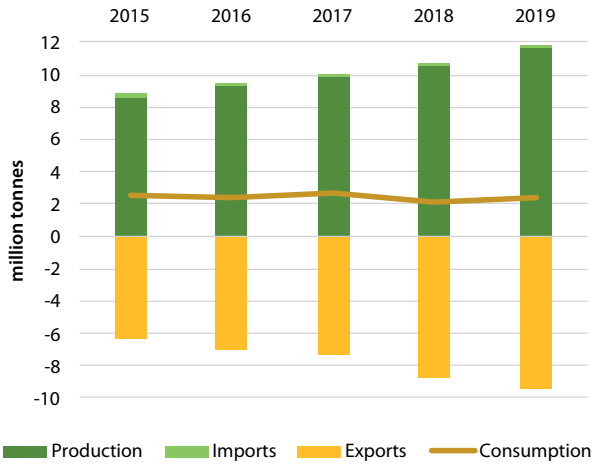


Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

GRAPH 6.8

North America: Wood pellet production, trade and consumption, 2015-2019

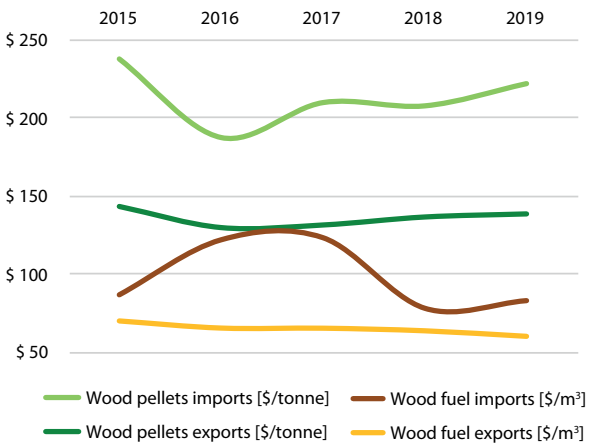


Note: Exports are shown as negative numbers.

Source: UNECE/FAO database, 2020.

GRAPH 6.9

North America: Declared unit value of traded wood fuel and wood pellets, 2015-2019



Source: UNECE/FAO database, 2020.

country's Clean Fuel Standard is implemented. Concerns have been raised recently about this policy, however, because it does not recognize the use of wood pellets in coal-fired generators (Clean Fuel Steering Committee, 2019). Recommendations have been made for policy changes, which, if acted on, could spur an increase in the domestic use of solid biomass fuels including wood pellets.

Canadian wholesale prices for wood pellets held close to $140 per tonne in 2019 (Statistics Canada, 2020b); the average US retail prices for wood pellets was $183 per tonne in 2019. Prices were lower in the US south, at $149 per tonne in 2017 and 2018, and higher in both the north and west. This reflects the concentration of utility pellet production in the south and domestic (premium bagged) pellet production in the north and west (EIA, 2020).

Graph 6.9 shows a gap between declared unit values for imported and exported pellets. This gap is due to the continued export of utility-grade pellets and the import of premium bagged product.

Extraregional influences on the UNECE

The UNECE region dominates the global trade in wood energy, in both volume and value terms. Viet Nam is the only significant producer outside the region; its production was almost zero in 2012, but the country is now the third most important exporter of wood pellets worldwide behind the US and Canada. (table 6.1).

Viet Nam's pellet industry is fuelled by demand from countries in the Asia-Pacific region, especially Japan and the Republic of Korea, which have low-carbon-fuel policies for the generation of heat and power. Almost all Vietnamese production is

TABLE 6.1

Global top ten wood fuel and wood pellet exporters, 2019

	Wood fuel		Wood pellets		Total
	1,000 m³	*$ million*	*1,000 tonnes*	*$ million*	*$ million*
US	365	21.7	6,858	943	964
Canada	81	5.1	2,634	377	382
Viet Nam	23	0.9	2,460	354	355
Latvia	319	47.4	1,666	255	303
Estonia	298	31.8	1,112	183	215
Austria	18	1.6	820	195	196
Russian Federation	175	8.9	1,511	186	195
Denmark	46	1.3	1,064	194	195
Germany	138	7.9	695	178	186
Lithuania	221	25.2	598	116	142

Sources: FAOSTAT, 2020; UNECE/FAO database, 2020.

destined for those two countries, accounting for about two-thirds of the Republic of Korea's imports and one-third of Japan's imports (FutureMetrics, 2019). Vietnamese wood pellet exports reached 2.46 million tonnes in 2019 (FAOSTAT 2020).

Japan and the Republic of Korea are the only two countries outside the UNECE region with established and growing wood pellet markets (table 6.2). South Africa, which imports large quantities of traditional fuelwood, ranks a very distant third, by value, among wood-energy importers outside the UNECE region.

TABLE 6.2

Top wood fuels and wood pellet importers outside the UNECE region, 2019

	Wood fuel		Wood pellets		Total
	1,000 m³	*$ million*	*1,000 tonnes*	*$ million*	*$ million*
Republic of Korea	0.3	0.1	3,445.1	521.8	521.8
Japan	5.0	0.6	1,059.5	195.0	195.6
South Africa	739.5	28.9	13.5	0.5	29.4
Eswatini	168.8	5.6	-	-	5.6
Saudi Arabia	14.3	3.9	-	-	3.9
Qatar	5.4	1.4	4.8	2.4	3.8
Malaysia	1.2	2.1	5.4	1.6	3.7
China	0.8	0.4	17.5	2.9	3.3
United Arab Emirates	7.0	2.6	0.5	0.4	3.0
Thailand	0.1	0.0	21.7	1.4	1.5

Note: UNECE region countries not included.

Sources: FAOSTAT, 2020.

UNECE subregional data summary and forecast

Table 6.3 summarizes data on the production, consumption, trade and declared value of cross-border trade of wood fuel and pellets in the UNECE subregions. Additional information and the complete forest products database is available at: www.unece.org/forests/fpamr2020-annex.

Initial data supplied by UNECE member States (all figures are year over year) indicate the production of wood pellets will decrease in the UNECE region by 1.0% in 2020 and increase by 2.6% in 2021. Subregionally, the forecast is for wood pellets production to grow in Europe by 2.4% in 2020 and by 5.2% in 2021; increase in the EECCA by 23% in 2020 and 7.7% in 2021; and North America to shrink by 9.2% in 2020 and 1.5% in 2021.

TABLE 6.3

Wood fuel and wood pellets production, imports, exports, net apparent consumption and traded unit values, UNECE subregions, 2015-2019

	2015	2016	2017	2018	2019	Change 2018-2019
EUROPE						
Wood fuel						
Production (1,000 m³)	139,366	139,734	139,903	144,077	145,217	0.8%
Imports (1,000 m³)	5,100	4,928	4,117	4,347	4,056	-6.7%
Exports (1,000 m³)	6,106	5,868	5,402	5,124	4,765	-7.0%
Consumption (1,000 m³)	138,359	138,794	138,617	143,300	144,508	0.8%
Import unit value ($/m³)	68	66	78	87	87	0.9%
Export unit value ($/m³)	58	58	66	80	76	-4.3%
Wood pellets						
Production (1,000 tonnes)	14,904	15,140	16,824	17,896	18,843	5.3%
Imports (1,000 tonnes)	13,683	13,969	15,469	18,134	19,677	8.5%
Exports (1,000 tonnes)	7,292	7,150	8,179	9,094	9,966	9.6%
Consumption (1,000 tonnes)	21,295	21,959	24,114	26,936	28,553	6.0%
Import unit value ($/tonne)	176	174	175	189	186	-1.6%
Export unit value ($/tonne)	173	168	167	196	190	-3.1%
EECCA						
Wood fuel						
Production (1,000 m³)	41,092	41,882	43,673	47,027	42,386	-9.9%
Imports (1,000 m³)	9	9	9	8	7	-15.7%
Exports (1,000 m³)	2,274	1,961	1,573	1,227	358	-70.8%
Consumption (1,000 m³)	38,828	39,930	42,108	45,808	42,035	-8.2%
Import unit value ($/m³)	56	55	63	67	65	-3.0%
Export unit value ($/m³)	30	32	35	42	74	74.8%
Wood pellets						
Production (1,000 tonnes)	1,493	1,844	2,399	2,268	2,540	12.0%
Imports (1,000 tonnes)	3	5	9	13	17	32.5%
Exports (1,000 tonnes)	1,242	1,370	1,890	2,170	2,340	7.8%
Consumption (1,000 tonnes)	255	479	518	111	217	95.9%
Import unit value ($/tonne)	530	409	405	272	221	-19.0%
Export unit value ($/tonne)	108	101	101	124	125	0.4%
NORTH AMERICA						
Wood fuel						
Production (1,000 m³)	48,984	64,206	65,904	72,782	72,601	-0.2%
Imports (1,000 m³)	183	153	149	165	235	42.4%
Exports (1,000 m³)	440	352	356	401	447	11.4%
Consumption (1,000 m³)	48,727	64,006	65,696	72,547	72,389	-0.2%
Import unit value ($/m³)	87	122	124	78	83	-70.8%
Export unit value ($/m³)	71	66	66	64	60	-5.9%
Wood pellets						
Production (1,000 tonnes)	8,617	9,282	9,806	10,517	11,641	10.7%
Imports (1,000 tonnes)	237	225	231	241	239	-0.9%
Exports (1,000 tonnes)	6,297	7,082	7,375	8,669	9,493	9.5%
Consumption (1,000 tonnes)	2,557	2,425	2,661	2,089	2,387	14.3%
Import unit value ($/tonne)	238	187	210	208	222	6.9%
Export unit value ($/tonne)	144	130	132	137	139	1.5%

Note: Unit values 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.

Sources: UNECE/FAO database, 2020 and FAOSTAT 2020.

Chapter 7

VALUE-ADDED WOOD PRODUCTS

Authors: Chris Gaston, Tapani Pahkasalo

Introduction and UNECE region overview

Value-added wood products are primary wood products that have been further processed into secondary products such as furniture; builders' joinery and carpentry (BJC); profiled wood; and engineered wood products (EWPs). Demand is linked to drivers such as economic growth; housing and construction; fashion and design; and demographics.

BJC comprises a wide array of wood products, including wooden windows and doors; pre-assembled wooden flooring; posts and beams; and shakes and shingles. EWPs include I-beams (also called I-joists); finger-jointed sawnwood; glulam (sawnwood glued into beams); laminated veneer lumber (LVL); and mass timber panels, including cross-laminated timber (CLT). Profiled wood is wood shaped by machines, such as mouldings, tongue-and-groove, and lap siding.

Despite relatively good economic growth and otherwise favourable conditions, 2019 was a mediocre year for most value-added wood products, including furniture, BJC and profiled wood. Oddly, the first half of 2020 was better for many value-added wood products than might have been expected in the circumstances.

CLT production and demand continue to grow at an astonishing pace. Global production capacity in 2020 is estimated at 2.8 million m^3, of which 48% is in Europe, 43% is in North America, 6% is in Oceania and 3% is in Asia (Africa and South America have minimal production capacity). Austria, Czechia, Germany, Italy and Switzerland continue to form the epicentre of global CLT production. These five countries accounted for more than 80% of the estimated global production of 920,000 m^3 in 2019.

Two CLT plants are under construction in the Russian Federation, and another was built recently in Ukraine and is now operative.

A wide variety of products categorized as mass timber panels is in production in North America, including CLT. As of late 2018, ten mass-timber-panel manufacturing plants were in operation in the subregion (five each in Canada and the US), with a combined annual production of about 400,000 m^3 (Beck Group, 2018). As of year-end 2019, 14 plants were producing mass timber panels in North America, and a further three were under construction. The current practical capacity (maximum capacity x 0.65) of these plants is 910,000 m^3, but industrial matting constitutes more than half this. Thus, the practical capacity of mass timber panels for use in buildings in North America was about 439,000 m^3 in 2019, and this is expected to increase by another 62,000 m^3 in 2020.

COVID-19 will have an impact on market developments in 2020 and 2021. There is a general perception that most segments of the value-added wood products sector will see a falling-off before things start to improve in late 2021.

Furniture

Furniture and cabinetry comprise a significant proportion of value-added wood products, a term used here synonymously with secondary wood products (i.e. primary products that have been reprocessed into new products with added value). A recent survey by the University of British Columbia found that furniture and cabinetry leads all other value-added forest products in Canada, with 29% of sales, and it is also the leader in providing employment, with almost 39% of workers in Canada's value-added wood products sector working in the production of furniture and cabinets (Freshwater and Park, personal communication, 2020).

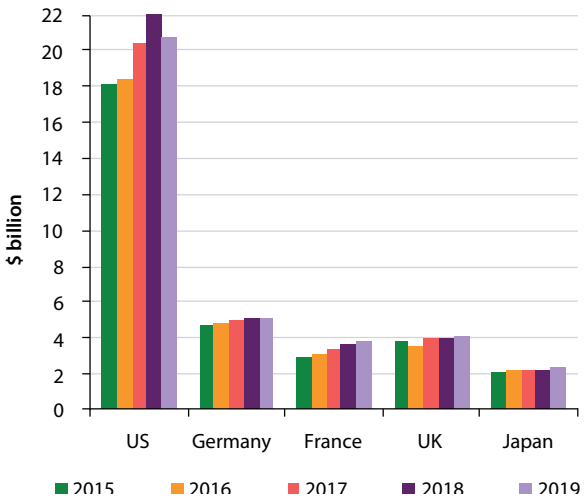
Office furniture accounts for about 10% of total furniture consumption in Europe. The value of the market grew for several years to reach $10 billion in 2019, the largest single consumers being Germany, the UK and the Netherlands (in descending order by value). About 75% of the products are made in Europe and traded within the subregion; nevertheless, the market for Chinese-made office furniture is increasing and now accounts for 9% of European consumption. According to a CSIL Milano analysis in June 2020, the consequences of the COVID-19 pandemic on office-furniture consumption vary among countries. At the time of the analysis, a huge drop in consumption was forecast for 2020, affecting all the top markets. The office-furniture market is expected to start recovering in Europe in early 2021 (CSIL Milano, 2020).

Furniture trade is dependent on global supply chains. For example, a UK-based furniture retailer specializing in chairs and sofas previously imported several containers per day from China, which, in normal circumstances, would mean inventory for a few weeks. When factories in China closed and shipping lines reduced cargo capacity, the company started looking for European manufacturers, only to realize that these also depend on raw materials and components from China (Pegden, 2020). Furniture imports for the world's top five importers were either flat or down in 2019 (that is, *before* COVID-19 started having an impact) (graph 7.1 and table 7.1).

Poland has doubled furniture production in the past ten years and is now the sixth-largest producer after China, the US, Germany, Italy and India. Poland has overtaken Germany

GRAPH 7.1

Wooden furniture imports, top five importing countries, 2015-2019



Source: UN Comtrade, 2020.

TABLE 7.1

Value of wooden furniture imports, and market share of supplying regions, top five importing countries, 2018-2019

	US		Germany		France		UK		Japan	
	2018	*2019*	*2018*	*2019*	*2018*	*2019*	*2018*	*2019*	*2018*	*2019*
Total value of imports ($ billion)	23.6	21.7	5.1	5.2	3.7	3.8	4.0	4.1	2.2	2.3
						Origin (%)				
Asia	75.2	73.2	17.2	18.6	26.8	22.0	52.2	55.0	92.3	93.1
Europe	10.1	10.6	81.6	79.8	72.0	76.9	39.8	38.3	7.1	6.4
North America	8.0	8.3	0.1	0.1	0.3	0.2	4.4	3.5	0.5	0.4
Latin America	6.6	7.8	0.3	0.3	0.7	0.8	2.2	2.0	0.0	0.0
Other	0.1	0.1	0.8	1.2	0.2	0.2	1.5	1.1	0.1	0.0

Source: UN Comtrade, 2020

as the main furniture exporter in Europe and ranks second globally behind China (Buy Poland, undated). This success has encouraged wood-based-panel producers and other furniture cluster companies to further invest in Poland (CSIL Milano, 2020).

The Russian Federation has a substantial furniture industry with over 6,000 manufacturers in the country. Production for 2019 at the end of the third quarter was up by 13% over the same period in 2018 (Russian Timber Industry. 2019). However, according to a recent survey, 70% of Russian furniture enterprises may go bankrupt in the wake of COVID-19; only one-quarter of those surveyed said they were sure they would survive the crisis (as of April 2020). The main exacerbating factors are forced downtime due to non-working days, an absence of State support, and non-payments from customers buying on credit (Association of Furniture and Woodworking Enterprises of Russia, 2020a).

According to a survey conducted in the US by consulting firm Smith Leonard, new orders to US domestic furniture manufacturers were down by 8% (year-on-year) in May 2020, but this was a 166% improvement over April 2020. Smith Leonard anticipated that June would see a further improvement on May (Furniture Today, 2020).

Working from home has been mainstreamed during COVID-19. In the first half of 2020, many people with desk jobs modified their homes accordingly, including with new desks, chairs and bookshelves. The pandemic has hastened structural changes already taking place in the furniture industry. Digitalization will not only support working from home but also drive online furniture sales. The industry is adapting quickly.

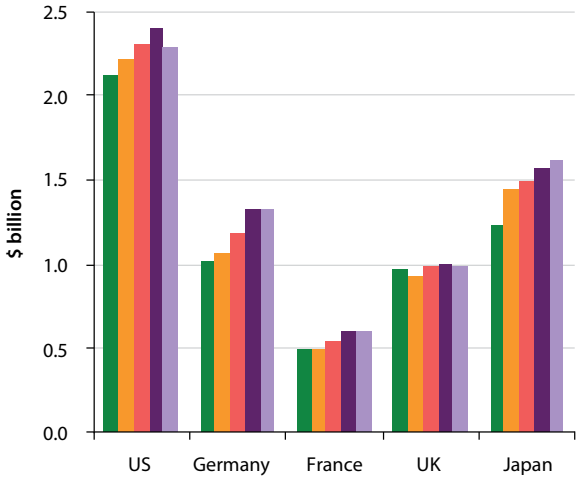
Builders' joinery and carpentry, and profiled-wood trade

The pandemic will likely cause changes in the office-building segment, simultaneously reducing the need for office space as more people work from home and increasing the need for separated space for those who don't.

In addition to new-building construction, home and office renovations and repairs are important demand drivers for BJC products. After almost a decade of sustained growth in spending on home-improvement projects, remodelling activity is likely to decline during the pandemic-induced economic downturn (despite anecdotal accounts of improved sales of wood products in the do-it-yourself market). Except for France (profiled wood), and Japan (BJC), profiled wood and BJC imports in the top five importing countries either plateaued or declined in 2019 (graphs 7.2 and 7.3 and tables 7.2 and 7.3). In the US, import value returned to 2017 levels in 2019.

GRAPH 7.2

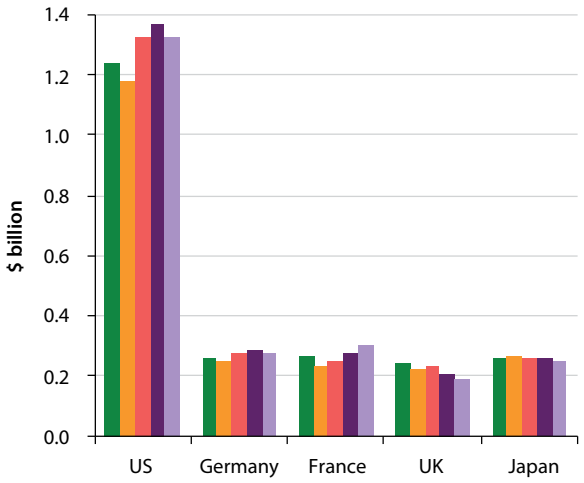
Builders' joinery and carpentry imports, top five importing countries, 2015-2019



Source: UN Comtrade, 2020.

GRAPH 7.3

Profiled-wood imports, top five importing countries, 2015-2019



Source: UN Comtrade, 2020.

According to the Leading Indicator of Remodeling Activity, expenditure on home renovations and repairs in the US is expected to decline through the first quarter of 2021 due to fallout from the COVID-19 pandemic (Joint Center for Housing Studies of Harvard University, 2020).

TABLE 7.2

Value of builders' joinery and carpentry imports, and market share of supplying regions, top five importing countries, 2018-2019

	US		Germany		France		UK		Japan	
	2018	*2019*	*2018*	*2019*	*2018*	*2019*	*2018*	*2019*	*2018*	*2019*
Total value of imports ($ billion)	2.3	2.2	1.3	1.3	0.6	0.6	1.0	1.0	1.6	1.6
						Origin (%)				
Asia	28.9	22.4	11.6	12.0	11.1	8.3	33.2	34.8	73.9	74.2
Europe	7.0	7.1	86.4	86.4	84.8	86.1	62.1	60.9	24.8	21.5
North America	49.3	52.7	0.2	0.2	0.5	0.8	0.9	0.7	1.3	1.2
Latin America	14.1	17.0	0.0	0.0	1.8	2.2	1.5	1.8	0.0	0.0
Other	0.7	0.8	1.8	1.4	1.9	2.7	2.3	1.8	0.0	3.1

Source: UN Comtrade, 2020

TABLE 7.3

Profiled-wood imports, top five importing countries, 2018-2019

	US		Germany		France		UK		Japan	
	2018	*2019*	*2018*	*2019*	*2018*	*2019*	*2018*	*2019*	*2018*	*2019*
Total value of imports ($ billion)	1.3	1.2	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3
						Origin (%)				
Asia	31.1	26.7	20.4	19.4	7.7	7.3	42.9	42.6	74.3	76.1
Europe	5.3	5.7	71.0	71.0	59.6	56.4	51.8	51.6	9.7	7.2
North America	8.7	8.6	0.6	0.6	0.6	0.9	3.3	2.1	9.6	8.9
Latin America	54.9	58.7	4.5	5.0	30.6	33.4	1.2	2.0	4.0	5.5
Other	0.1	0.4	3.4	4.0	1.5	2.0	0.7	1.8	2.4	2.2

Source: UN Comtrade, 2020

Engineered wood products

Glulam timber/beams, I-beams and LVL are all heavily dependent on residential construction (new and just as importantly, renovations and repairs) and non-residential building construction (e.g. offices, schools, restaurants, stores and warehouses).

Home construction was flat in Canada in 2019 and increased modestly in the US. The seemingly good news in the US was dampened, however, by a drop in spending on new housing in 2019 (suggesting more modest buildings). Similar results were obtained in non-residential construction.

It remains to be seen if recent societal trends towards working from home and doing less shopping in brick-and-mortar shops (in favour of online shopping) continue. If so, there could be a substantial reduction in non-residential construction. Although this sector is dominated by concrete and steel in North America, an estimated one-quarter is wood-framed, and there is room for growth, especially with the emergence of products and systems such as cross-laminated and heavy timber and, more recently, "tall buildings" of ten storeys or more.

The COVID-19 pandemic is clouding forecasts. Nevertheless, the question is not whether demand will slow further but, rather, how much slower it will be and for how long.

GLULAM TIMBER

Data on glulam in Europe and EECCA are generally limited to trade, with production data often unavailable. Austria exported just under 2 million m^3 of glulam and CLT in 2019. Exports were flat to Italy, at 686,000 m^3, but increased to Germany by 11% (to 484,000 m^3) and to France by 15% (to 161,000 m^3) (Jauk, 2020). Austria exported just over 600,000 m^3 in the first four months of 2020, down by 4%, year-on-year, despite a 3% increase to March. There were significant drops in imports by Italy, Spain and Norway, and Austrian exports fell away quickly in April 2020 (Nöstler, 2020).

TABLE 7.4

Glulam production and consumption, North America, 2018-2020

	2018	*2019*	*2020f*	*Change 2018-2019*
	(thousand m^3)			*(%)*
US				
Production	432	409	411	-5.3
Total consumption	437	415	417	-4.9
Residential	157	151	152	-3.9
Non-residential	157	151	152	-3.9
Industrial, other	22	22	22	0.0
Inventory change	-5	-6	-6	
Canada				
Production	35.4	33.8	33.8	-4.5
North America				
Total production	468	443	445	-5.3

Note: f = forecast. 1 m^3 = 650 board feet. Canadian imports are assumed to be minimal.

Source: APA – The Engineered Wood Association, 2020a.

Japan's imports of glulam from Europe increased in the first four months of 2020. Finland, Romania and Austria (in descending order) are the largest suppliers of glulam to Japan; combined, exports from these countries to Japan increased by 29,000 m^3 (16%) in this period. Glulam exports from the Russian Federation (the fourth-ranked glulam exporter behind Austria) also increased to Japan (by 26%) in the first four months of 2020 (Ebner, 2020).

Overall production of glulam in North America declined from 750,000 m^3 in 2006 to 285,000 m^3 in 2009 but increased between 2010 and 2018. There was a decrease of 5.3% in 2019 (to 443,000 m^3), but a slight increase is predicted for 2020, to about 445,000 m^3 (table 7.4).

I-BEAMS

I-beams are produced and consumed in Europe, but data and market intelligence for that subregion were unavailable for this report. The status of I-beam manufacture and markets in EECCA is unknown.

In North America, I-beams are over 80% dependent on new-home construction, mostly for single families. Builder surveys indicate that the I-beam share of raised-wood -floor area (which does not include concrete floor area) has remained steady between 44% and 46% for the last six years. I-beam market share was only 16% in 1992.

Demand for I-beams peaked in 2005, when it equalled the practical capacity of I-beam plants at that time; housing starts

TABLE 7.5

Wooden I-beam consumption and production, North America, 2018-2020

	2018	*2019*	*2020f*	*Change 2018-2019*
	(million linear metres)			*(%)*
US				
Production	157	144	142	-8.2
Total consumption	197	186	183	-5.4
New residential	172	162	160	-6.0
Repairs and remodelling	12	12	12	0.0
Non-residential, other	13	13	13	0.0
Canada				
Production	77	77	76	0.4
Consumption	34	31	31	-6.3
Exports	4.7	3.4	3.0	-8.1
Inventory change	-0.3	0	0	
Total production, North America	233.5	221.0	217.4	-5.4

Note: f = forecast. 1 linear metre = 3.28 linear feet. Canadian imports are assumed to be minimal.

Source: APA – The Engineered Wood Association, 2020b.

TABLE 7.6

LVL consumption and production in North America, 2018-2020

	2018	*2019*	*2020f*	*Change 2018-2019*
	(thousand m³)			*(%)*
Consumption				
I-beam flanges	592	561	552	-5.3
Beams, headers, other	1,625	1,512	1,487	-7.0
Total consumption	2,217	2,073	2,039	-6.5
Production				
US	2,019	1,889	1,869	-6.4
Canada	198	184	170	-7.1
Total production	2,217	2,073	2,039	-6.5

Note: f = forecast. 35.315 cubic feet = 1 m³.

Source: APA – The Engineered Wood Association, 2020b.

were so high that manufacturers were producing all they could. I-beam demand and production declined, however, when the US housing bubble burst. Roughly 115 million linear metres were produced in 2009, with significant increases since then; the forecast for 2020 is 217 million linear metres (table 7.5).

Most I-beams – 88% – are used in new residential construction. The balance is used in non-residential building construction and repairs and remodelling.

■ LAMINATED VENEER LUMBER

LVL is produced and consumed in Europe, but data and market intelligence for that subregion were unavailable for this report. The status of LVL manufacture and markets in EECCA is unknown.

In North America, LVL is used primarily in new-home construction. In 2019, 72% was used for beams and headers, rim boards and similar applications, and the balance was used for I-joist flanges. Rim boards are used on the perimeters of I-beam floor systems to provide fastening points for the I-beams and to assist in distributing loads on walls. Production peaked with the US housing market in 2005 at 2.6 million m³ and declined thereafter, along with I-beam production and the housing market. Production in 2020 is forecast at 2 million m³ (table 7.6), up by more than 120% from the trough in 2009 (APA – The Engineered Wood Association, 2020b).

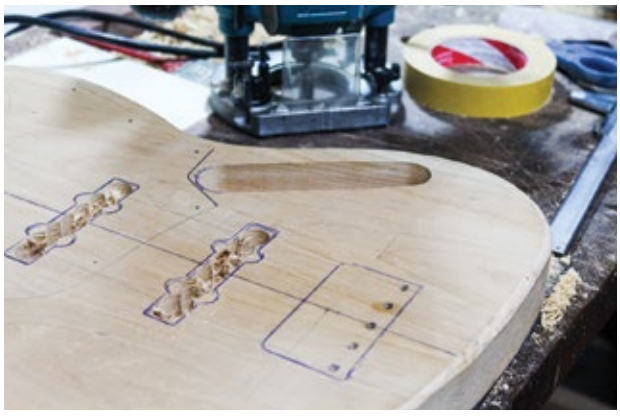
LVL is well accepted for use in beams and headers, and growth should return with an improving housing market. Like other EWPs, LVL enables the use of longer spans and fewer pieces to carry the same loads compared with conventional wood products.

■ CROSS-LAMINATED TIMBER

CLT has become popular in Europe, Japan, North America and Oceania. The global production of mass timber panels (primarily CLT) in 2019 was estimated at 1.44 million m³ (valued at $773 million), and it is forecast to more than double by 2025 (Jauk, 2019). The 2019 Wood Rise congress in Québec City indicated an increasing global trend in the number of medium- and high-rise wood-framed buildings due to the innovative use of CLT products. A list of outstanding high-rise projects in 12 UNECE countries has been made available (Woodrise, 2020). Annual global CLT production is predicted to exceed 2 million m³ in 2020 (to as high as 2.5 million m³) (Jauk, 2019), but that prediction was made before the COVID-19 pandemic, and it remains to be seen if it will come to fruition.

Global CLT production capacity is estimated at 2.8 million m³ in 2020, of which 48% is in Europe, 43% is in North America, 6% is in Oceania and 3% is in Asia (Africa and South America produce minimal CLT). If only mass timber panels for use in buildings are included (i.e. excluding industrial matting), Europe accounts for 61% of production, North America for 27%, Oceania for 7% and Asia for 3%, with the remainder in Africa and South America (Beck Group, 2020).

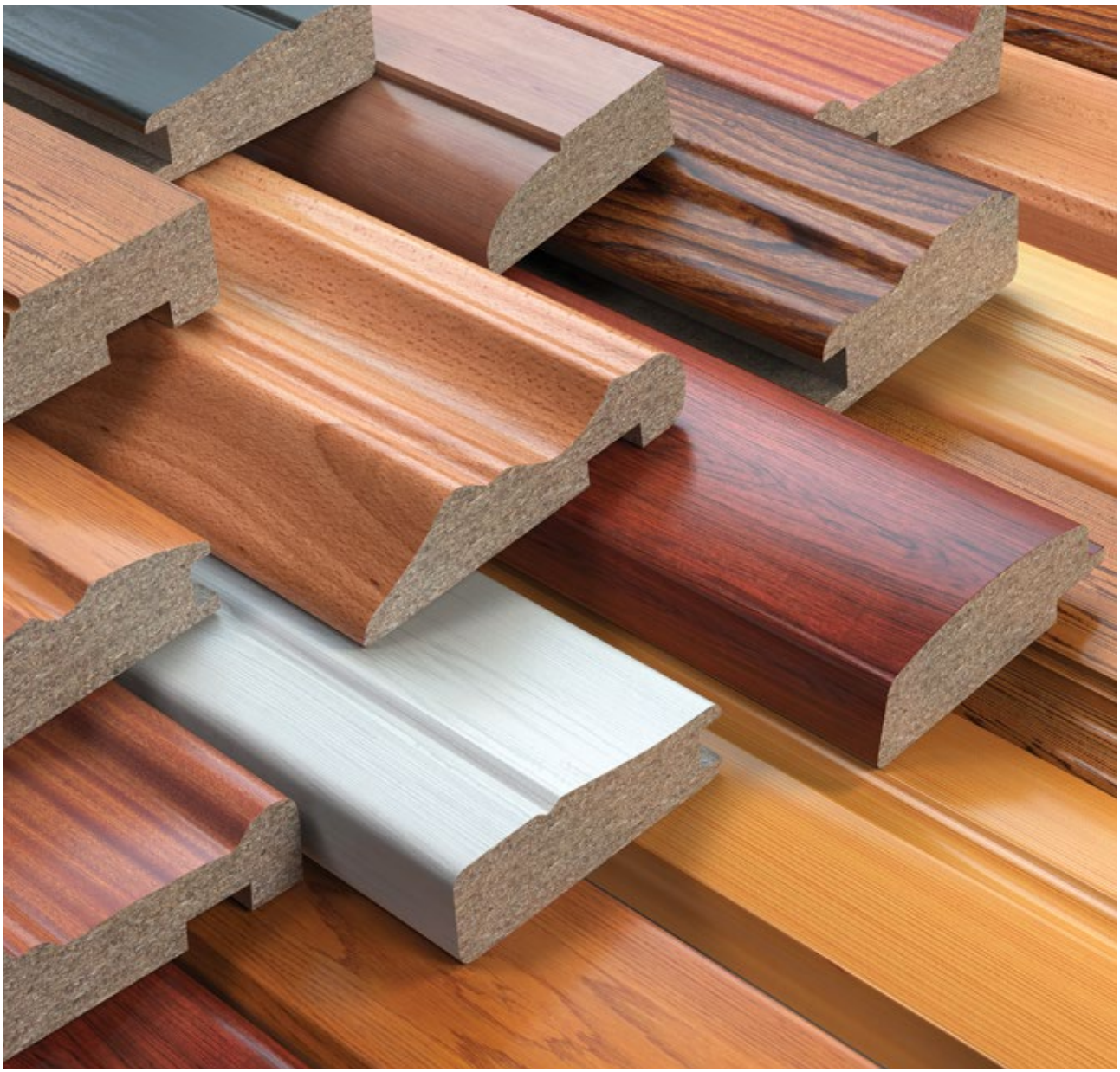
Austria, Czechia, Germany, Italy and Switzerland continue to form the epicentre of global CLT production. These five countries account for more than 80% of global production, estimated at 920,000 m³ in 2019 (Jauk, 2019). This volume was up by 12% over 2018, with most of the increase the result of greater capacity in existing plants rather than due to greenfield projects. The forecast is for production in the five countries to break the 1 million m³ mark. CLT production is also increasing dramatically in northern Europe, with Norway



(50,000 m^3 in 2019) and Sweden both increasing production faster than the central European CLT cluster countries; Sweden is increasing its production capacity from 25,000 m^3 in 2018 to 400,000 m^3 in the near future (Jauk, 2019).

In EECCA, two CLT plants are being built in the Russian Federation, and a recently constructed plant in Ukraine is now producing CLT.

A wide variety of products categorized as mass timber products is in production in North America. This section addresses only mass timber panels, which, in addition to CLT, includes nail-laminated timber, dowel-laminated timber and mass plywood panels. The 2019 *Review* noted that, as of late 2018, ten CLT manufacturing plants were in operation in North America (five each in Canada and the US), with a combined annual production of about 400,000 m^3 (Beck Group, 2018). As of year-end 2019, 14 plants were producing mass timber panels in North America, with a further three under construction and three more announced. The current practical capacity of these plants is 910,000 m^3, but the majority (slightly over half) of this production continues to be aimed at industrial matting (platforms for equipment to work on in muddy or environmentally sensitive areas). Thus, the practical capacity of mass timber panels for use in buildings in North America was about 439,000 m^3 in 2019, and this is expected to increase by another 62,000 m^3 in 2020, excluding proposed new plants (Beck Group, 2020).



REFERENCES

APA – The Engineered Wood Association. 2020a. Market outlook and regional production. Economic Report. APA–The Engineered Wood Association. Available at: www.apawood.org

APA – The Engineered Wood Association. 2020b. Structural panel and engineered wood yearbook. Available at: www.apawood.org

Association of Furniture and Woodworking Enterprises of Russia. 2020a. Available at: http://amedoro.com/ru/news/novosti-otrasli/proizvoditeli-mebeli-predupredili-o-vozmozhnom-bankrotstve-70-predpriyatij.html

Association of Furniture and Woodworking Enterprises of Russia. 2020b. Available at: http://amedoro.com/ru/news/novosti-otrasli/podpisano-postanovlenie-pravitelstva-ob-ogranichenii-importnykh-zakupok-dlya-munitsipalnykh-i-gosudarstvennykh-nuzhd.html

Beck Group. 2018. Mass timber market analysis. Completed for Council of Western State Foresters. November. Beck Group. Available at: www.oregon.gov/ODF/Documents/ForestBenefits/Beck-mass-timber-market-analysis-report.pdf

Beck Group. 2020. North American mass timber (2020 state of the industry). Forest Business Network. Available at: www.masstimberreport.com/?utm_source=Kaiser+%2B+Path&utm_campaign=5b6bf2c748-EMAIL_CAMPAIGN_2020_06_08_05_10_COPY_01&utm_medium=email&utm_term=0_6dbba1a997-5b6bf2c748-208039942

BIS (Bank of International Settlements). 2020. BIS real residential property price statistics, Q4 2020. Available at: www.bis.org/statistics/pp_selected.htm

Buy Poland. No date. Poland – the largest exporter of furniture in Europe. Available at: https://buypoland.pl/en/news/poland-the-largest-exporter-of-furniture-in-europe

Central Bank. 2020. Available at: www.cbr.ru/hd_base/KeyRate

CEPI. 2020. Confederation of European Paper Industries (CEPI). Available at: www.cepi.org

China Customs. 2020. General Administrations of Customs, People Republic of China. Available at: http://english.customs.gov.cn/

China Paper Association. 2020. Available at: http://enchinappi.org.

CHMC (Canada Mortgage and Housing Corporation). 2020a. Housing market outlook-Fall 2019. Available at: https://assets.cmhc-schl.gc.ca/sites/cmhc/data-research/publications-reports/housing-market-outlook/2019/housing-market-outlook-canada-61500-2019-b02-en.pdf

CHMC (Canada Mortgage and Housing Corporation). 2020b. Preliminary housing start data. Available at: https://assets.cmhc-schl.gc.ca/sites/cmhc/data-research/publications-reports/preliminary-housing-starts-data/2020/preliminary-housing-starts-data-64695-2020-m08.pdf

Clean Fuel Steering Committee. 2019. Solid biomass fuels in Canada's low carbon energy future. Available at: www.pellet.org/images/solidfuels.pdf

CPA. 2020. 2019 North American capacity report. Composite Panel Association. Available at: www.compositepanel.org/

CSIL Milano. 2020. The European market for office furniture. 32nd edition. Centre for Industrial Studies, Milan, Italy.

DeStatis. 2020. Fachserie 3 Reihe 3.3.1 Land- und Forstwirtschaft, Fischerei. Forstwirtschaftliche Bodennutzung - Holzeinschlagsstatistik -2016, 2017, 2018. Available at: www.statistischebibliothek.de/mir/receive/DESerie_mods_00002641

Ebner, G. 2020. Japan imports more laminated timber. Timber-Online. Available at: www.timber-online.net/wood_products/2020/05/japan-imports-more-laminated-timber.html

EIA (US Energy Information Administration). 2020. Monthly densified biomass fuel report. Available at: www.eia.gov/biofuels/biomass/#table_data

ENplus. 2020. The impact of Covid-19 on ENplus® certified companies. Available at: www.enplus-pellets.eu/en-in/component/attachments/attachments.html?task=download&id=524

EPF. 2020, European Panel Federation Annual Report 2019-2020 (https://europanels.org/how-to-order-the-annual-report/)

EU (European Union). 2019. Council Conclusions on the progress on the implementation of the EU Forest Strategy and on a new strategic framework for forests. Available at: https://www.consilium.europa.eu/media/39173/ccs-on-forestry-st08609-en19.pdf

EU (European Union). 2020a. The European Green Deal sets out how to make Europe the first climate-neutral continent by 2050, boosting the economy, improving people's health and quality of life, caring for nature, and leaving no one behind. Available at: https://ec.europa.eu/commission/presscorner/detail/e%20n/ip_19_6691

EU (European Union). 2020b. EU biodiversity strategy for 2030. Bringing nature back into our lives. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52020DC0380&from=EN

Euroconstruct. 2004. 57th Euroconstruct conference: the outlook for the European construction sector 2004-2006. June. Stockholm, Sweden.

Euroconstruct. 2020. 89th European construction: market trends until 2022. Euroconstruct summary report. June 2020. Stockholm, Sweden.

European Forest-Based Industries. 2019. Forest-based industries 2050: a vision for sustainable choices in a climate-friendly future. Available at: https://europanels.org/wp-content/uploads/2019/11/FBI-Vision-2050-Full.pdf

European Parliament. 2020. New EU forest strategy. Available at: www.europarl.europa.eu/legislative-train/api/stages/report/current/theme/a-european-green-deal/file/new-eu-forest-strategy

Eurostat. 2020. Database. European Commission. Available at: http://ec.europa.eu/eurostat/data/database

FAOSTAT. 2020. Forestry Production and Trade (FAOSTAT). Available at: www.fao.org/faostat/en/#data/FO

Federal Ministry of Food and Agriculture. 2020. Press release by the Federal Ministry of Food and Agriculture, 26 February 2020. Pressemitteilung Nr. 40/2020. Available at: www.bmel.de/SharedDocs/Pressemitteilungen/DE/2020/040-waldschaeden.html

Federal State Statistics Service. 2020. Available at: https://gks.ru/bgd/free/b04_03/IssWWW.exe/Stg/d05/20.htm

Flach, B. 2020. Dutch wood pellet imports surge to a new record in 2019. US Foreign Agricultural Service NL2020-0017. Available at: https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Dutch Government Advised to Cascade Biomass_The Hague_Netherlands_07-13-2020

Flach, B., Lieverz, S. & Bolla, S. 2020. Biofuels annual. US Foreign Agricultural Service. Report E42020-0032. Available at: https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Biofuels Annual_The Hague_European Union_06-29-2020

Forest Economic Advisors. 2020a. Monthly Lumber Advisor. Available at: www.getfea.com

Forest Economic Advisors. 2020b. China Bulletin, various issues. Available at: www.getfea.com/publications

Forest Economic Advisors. 2020c. Wood Markets Monthly, various issues. Available at: www.getfea.com/publications

Forest-based Sector Technology Platform. 2020a. Strategic research and innovation agenda 2030 of the European forest-based sector. Available at: http://new-www.forestplatform.org/system/attachments/files/000/000/692/original/SIRA_2030.pdf?1574846949

Forest-based Sector Technology Platform. 2020b. Vision 2040 of the European forest-based sector. Available at: https://www.forestplatform.org/wp-content/uploads/2019/11/ForestBased-Vision2040-Brochure-V9_final.pdf

Freightos. 2020. FBX12. North Europe to China/East Asia. Available at: https://fbx.freightos.com

Furniture Today. 2020. Industry news. May orders down 8% but bounce back big from previous months. Available at: www.furnituretoday.com/industry-news/may-orders-down-8-but-bounce-back-big-from-previous-months/

FutureMetrics. 2019. Japan and South Korean Industrial Wood Pellet Markets: Insights into their ability to pay for pellets October 28, 2019 By William Strauss, PhD, President, FutureMetrics. Available at: https://www.futuremetrics.info/wp-content/uploads/2019/10/Japan

Global Affairs Canada. 2019. Statement on WTO panel ruling against U.S. duties on Canadian softwood lumber. Available at: www.canada.ca/en/global-affairs/news/2019/04/statement-on-wto-panel-ruling-against-us-duties-on-canadian-softwood-lumber.html

Government of the Russian Federation. 2019a. Available at: http://government.ru/docs/36843

Government of the Russian Federation. 2019b. Available at: http://publication.pravo.gov.ru/Document/View/0001201909110005?index=0&rangeSize=1

Government of the Russian Federation. 2019c. Available at: http://publication.pravo.gov.ru/Document/View/0001201909100024?index=0&rangeSize=1

Government of the Russian Federation. 2020a. Available at: http://publication.pravo.gov.ru/Document/View/0001202004100041

Government of the Russian Federation. 2020b. Available at: http://publication.pravo.gov.ru/Document/View/0001202005010005

Government of the Russian Federation. 2020c. Available at: http://static.government.ru/media/files/CGHHI9UNm6PFNfn2X2rdgVW9fo757i7A.pdf and http:// static.government.ru/media/files/wBsWEEaCg83Wl4L0j1Eil1bvAhzS9OG7.pdf

Government of the Russian Federation. 2020d. Available at: http://publication.pravo.gov.ru/Document/View/0001202005100005 and http://minpromtorg.gov.ru/activities/sistema

Grégoire, J.C. & Evans, H.F. 2004. Damage and control of bawbilt organisms: an overview. In: F. Lieutier, K.R. Day, A. Battisti, J.C. Grégoire & H.F. Evans, eds. Bark and wood boring insects in living trees in Europe: a synthesis. Springer, Dordrecht, Germany.

Hardwood Market Report. 2020. Various issues, 2004–2020. Available at: www.hmr.com

Ibá. 2020. Associação Brasileira de Celulose e Papel (Ibá). Available at: www.iba.org/pt/dados-e-estatisticas/cenarios-iba

IMF (International Monetary Fund). 2020. International Monetary Fund data exchange rates. Available at: http://data.imf.org/?sk=388DFA60-1D26-4ADE-B505-A05A558D9A42

ITTO. 2020a. Tropical Timber Market Report, 24(5), 1–15 March 2020. Available at: www.itto.int/files/user/mis/MIS_1-15_Mar2020.pdf

ITTO. 2020b. Tropical Timber Market Report, 16-31 May 2020. Yokohama, Japan. Available at: www.itto.int/market_information_service

ITTO. 2020c. Impact of COVID-19 pandemic on tropical timber producers. 8 May 2020. Yokohama, Japan. Available at: www.itto.int/news/2020/05/08/survey_shines_light_on_covid_19_impacts_on_tropical_timber_sector

ITTO. 2020d. Tropical Timber Market Report, 1-15 February 2020. Yokohama, Japan. Available at: www.itto.int/market_information_service

ITTO. 2020e. Statistical database. Yokohama, Japan. Available at: www.itto.int/annual_review_output

ITTO. 2020f. ITTO Tropical Timber Market Report, 24(7), 1–15 April 2020.

Jabłoński, T., Skrzecz, I., Sierota, Z., Tarwacki, G., Sukovata, L., Sowińska, A., Ślusarski, S., Wolski, R., Plewa, R., Grodzki, W., Szmidla, H., Sikora, K. & Tkaczyk, M. 2020. Krótkoterminowa prognoza występowania ważniejszych szkodników i chorób infekcyjnych drzew leśnych w Polsce w 2020 roku [Short-term forecast for the occurrence of major pests and diseases of forest trees in Poland in 2020]. Forest Research Institute, Sękocin Stary. Available at: https://bip.lasy.gov.pl/pl/bip/px_~krotkoterminowa_prognoza_wystepowania_waznejszych_szkodnikow_i_chorob_infekcyjnych_drzew_lesnych_w_polsce_w_2020_roku.pdf

Jansen, S., Konrad, H. & Geburek, T. 2017. The extent of historic translocation of Norway spruce forest reproductive material in Europe. Annals of Forest Science, 74: 56. https://doi.org/10.1007/s13595-017-0644-z

Jauk, G. 2019. 100,000 m^3 cross-laminated timber factories as default? Timber-Online. Available at: www.timber-online.net/holzprodukte/2019/11/100000-m^3-cross-laminated-timber-factories-as-default.html

Jauk, G. 2020. Higher laminated timber exports. Timber-Online. Available at: www.timber-online.net/wood_products/2020/03/higher-laminated-timber-exports.html

Joint Center for Housing Studies of Harvard University. 2020. Leading Indicator of Remodeling Activity. Available at: www.jchs.harvard.edu/research-areas/remodeling/lira

Klimo, E., Hager, H. & Kulhavy, J. 2000. Spruce monocultures in central Europe: problems and prospects. Available at: www.efi.int/sites/default/files/files/publication-bank/2018/proc33_net.pdf

Kunca, A., Galko, J., Zúbrik, M., Vakula, J., Leontovyč, R., Gubka, A., Nikolov, C., Konôpka, B., Longauerová, V., Maľová, M., Rell, S., Lalík, M., Dubec, M. 2019. Zpravodaj ochrany lesa svazek 22/2019; Problémy ochrany lesa na Slovensku v roku 2018 a prognóza na rok 2019. Available at: www.los.sk/data/DownloadHandler.ashx?id=807&filename=4_Kunca.pdf

MBA (Mortgage Bankers Association). 2020. Mortgage finance forecast, July 15, 2020. Available at: https://mba-erm.informz.net/mba-erm/data/images/Mortgage%20Finance%20Forecast%20Jul%202020.pdf

Ministry of Industry and Trade. 2019. Available at: https://cdnimg.rg.ru/pril/168/16/55/54454.pdf10

Ministry of Natural Resources and Environment of the Russian Federation. 2020. Available at: www.mnr.gov.ru/press/news/v_rezultate_proverki_dogovorov_arendy_lesnykh_uchastkov_rastorgnuto_32_soglasheniya

Nöstler, M. 2020. Laminated timber exports on the decrease. Available at: www.timber-online.net/wood_products/2020/07/laminated-timber-exports-on-the-decrease.html

Nowak, D.J., Greenfield, E.J. & Ash, R.M. 2019. Annual biomass loss and potential value of urban tree waste in the United States. Urban Forestry & Urban Greening, 46: 126469. https://doi.org/10.1016/j.ufug.2019.126469

PEFC (Programme for the Endorsement of Forest Certification). 2018. PEFC annual review 2018. Available at: https://storage.googleapis.com/pefc-platform/pefc.org/media/2019-04/d720635e-4297-4da4-a894-6ecede29871f/bfbeb3b6-8a49-5088-a665-33d7a1bc7d01.pdf

PEFC (Programme for the Endorsement of Forest Certification). 2020a. Press release with FSC. Double certification FSC and PEFC – 2019 estimation. January 2020. Available at: https://cdn.pefc.org/pefc.org/media/2020-01/de73c4e1-7a28-46d2-b71d-b86100497b9d/f995b54a-aab1-52af-a47e-83ddc9825712.pdf

PEFC (Programme for the Endorsement of Forest Certification). 2020b. PEFC global statistics. June 2020. Available at: https://cdn.pefc.org/pefc.org/media/2020-08/d48bcf2b-562f-4feb-bde6-e5a6316ec7c1/5948cc30-e0ea-59bd-b3bc-6dabbb108685.pdf

Pegden, T. 2020. Coronavirus update: online furniture retailer warns that stock is drying up. BusinessLive. Available at: www.business-live.co.uk/retail-consumer/coronavirus-update-online-furniture-store-17820938

PRODESA. 2020. Press release. PRODESA will supply two complete pellet plants in Belarus. Available at: https://prodesa.net/prodesa-will-supply-two-complete-pellet-plants-in-belarus

Queloz, V., Forster, B., Beenken, L., Stroheker, S., Odermatt, O., Hölling, D., Klesse, S., Vögtli, I. & Dubach, V. 2020. Waldschutzüberblick 2019. WSL Berichte, 89. Available at: www.wsl.ch/de/publikationen/waldschutzueberblick-2019.html

Random Lengths. 2020. Random Lengths yearbook 2019. Random Lengths, Eugene Oregon.

Rokita, B. 2020. Utilization of urban wood waste for the manufacture of solid wood products. Bachelor's thesis. Bad Wimsbach-Neydharting, 3 July 2020.

Russian Timber Industry. 2020. a press-tour on furniture production was held in Moscow (12.12.2019). Available at: https://programlesprom.ru/en/a-new-wave-of-russian-industrial-design-a-press-tour-on-furniture-production-was-held-in-moscow/

Seidl, R., Schelhaas, M., Rammer, W., *et al.* 2014. Increasing forest disturbances in Europe and their impact on carbon storage. Nature Climate Change, 4: 806–810. Available at: https://doi.org/10.1038/nclimate2318

SFI (Sustainable Forestry Initiative). 2020. Standard revision process workshops. Available at: www.sfiprogram.org/standard-revision-process-workshops

Slovenian Environmental Agency. 2020. Protection of forests against beetles. Available at: www.zgs.si/delovna_podrocja/varstvo_gozdov/varstvo_gozdov_pred_podlubniki/index.html and www.zgs.si/aktualno/novice/news_article/vecje_poskodbe_gozdov_zaradi_prenamnozitve_smrekovih_podlubnikov_tudi_v_letu_2020_648/index.html

Statistics Canada. 2020a. Consumption of solid wood waste and spent pulping liquor for energy production. Available at: www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2510003101

Statistics Canada. 2020b. Canadian International Merchandise Trade Database Table 980-0044. Available at: www5.statcan.gc.ca/

Steyrer G., Perny B. & Hoch G. 2020. Waldschutzsituation: keine Entspannung. Forstzeitung, Wien, 131(4): 10-13. Dokumentation der Waldschädigungsfaktoren.

TDM database. 2020. Trade Data Monitor (TDM). Available at: https://tradedatamonitor.com

The Canadian Press. 2020. NAFTA panel sides with U.S. softwood lumber decision but B.C. hopes for final win. 22 May 2020. Available at: www.thestar.com/business/2020/05/22/nafta-panel-sides-with-us-softwood-lumber-decision-but-bc-hopes-for-final-win.html

The Economist, 2020. August 15 issue. Xi's new economy. Don't underestimate it.

The Federal law. 2018. No. 478-FZ. Available at: http://publication.pravo.gov.ru/Document/View/0001201812250106

UN Comtrade. 2020. UN Comtrade database. New York. Available at: http://comtrade.un.org/db

UNECE/FAO database. 2020. Data and Statistics, Forest Products Trade. Available at: https://www.unece.org/forests/fpm/onlinedata.html

UNECE/FAO. 2019. Forest Products Annual Market Review 2018-2019. Available at: www.unece.org/forests/areas-of-work/forestsfpm/outputs/forestsfpamr/forestsfpamr2019.html

US Census Bureau. 2020a. US housing starts. Available at: www.census.gov

US Census Bureau. 2020b. New residential construction. Available at: www.census.gov/construction/nrc/index

US Census Bureau. 2020c. Construction spending. Available at: www.census.gov/construction/c30/c30index

US FAS. 2020. USDA Foreign Agricultural Service. Global agricultural trade system. Available at: https://apps.fas.usda.gov/gats

US Federal Register. 2020a. North American Free Trade Agreement (NAFTA), Article 1904 Binational Panel Review: Notice of NAFTA final panel decision and order. Available at: www.federalregister.gov/documents/2020/06/10/2020-12511/north-american-free-trade-agreement-nafta-article-1904-binational-panel-review-notice-of-nafta-final

US Federal Register. 2020b. Implementation of revised Lacey Act provisions. 31 March 2020. Available at: www.federalregister.gov/documents/2020/03/31/2020-06695/implementation-of-revised-lacey-act-provisions

US House of Representatives. 2020. Select Committee on the Climate Crisis. Available at: https://climatecrisis.house.gov/report

USFS (US Forest Service). 2020. Current revisions to NEPA procedures. Available at: www.fs.fed.us/emc/nepa/revisions/index.shtml

USITC (US International Trade Commission). 2019. United States-Mexico-Canada Agreement: likely impact on the U.S. economy and specific industry sectors. Investigation No. TPA-105-003, USITC Publication 4889, April 2019. Available at: www.usitc.gov/publications/332/pub4889.pdf

WhatWood. 2020a. Available at: http://whatwood.ru/english/russian-timber-journal-04-2020

WhatWood. 2020b. Russian Forest Industry Review 2019-2020. Available at: www.whatwood.ru

WhatWood. 2020c. Russian Timber Journal 05-2020. Available at: www.whatwood.ru

WhatWood. 2020d. Kraslesinvest plans to launch a new pellet plant. Available at: https://whatwood.ru/english/kraslesinvest-plans-to-launch-a-new-pellet-plant

Wood Housing Association. 2020. Available at: https://npadd.ru/novosti/v-rossii-uvelichilsya-spros-na-stroitelstvo-derevyannykh-domov

Wood Resources International. 2020. Wood Resource Quarterly. Available at: www.WoodPrices.com

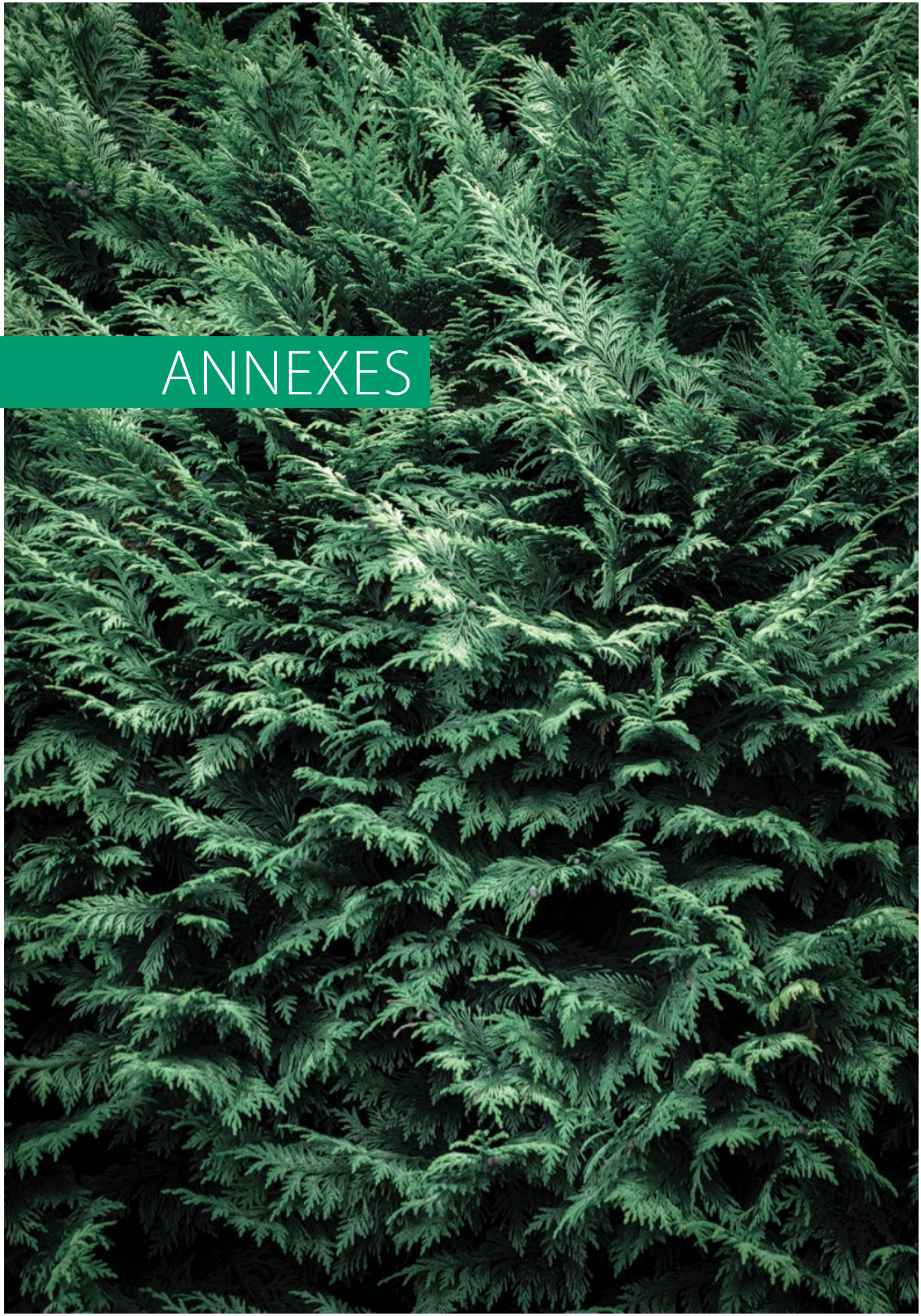
Woodrise. 2020. Woodrise – The International Conference at Quebec, September 20 to October 3, 2020. Projects. Available at: https://en.woodrise.org/projects

WRI (Wood Resources International). 2020. Sawlog prices fell throughout much of North America during the 3Q/14 because of reduced lumber production and slowing log exports to Asia. Market Insights 2020. Available at: https://woodprices.com

WTO (World Trade Organization). 2018. WTO establishes two panels to rule on US lumber duties. Available at: www.wto.org/english/news_e/news18_e/dsb_09apr18_e.htm

WTO (World Trade Organization). 2019a. DS534: United States – anti-dumping measures applying differential pricing methodology to softwood lumber from Canada. Available at: www.wto.org/english/tratop_e/dispu_e/cases_e/ds534_e.htm#bkmk534r

WTO (World Trade Organization). 2019b. United States – countervailing measures on softwood lumber from Canada. Communication from the Panel WT/DS533/4. 19 November 2019. Available at: www.wto.org/english/tratop_e/dispu_e/cases_e/ds533_e.htm



ANNEXES

COMPONENTS OF WOOD PRODUCTS GROUPS 72

Roundwood flowchart 72
Wood-based panels flowchart 72
Woodpulp flowchart 73
Paper and paperboard flowchart 73

COUNTRIES IN THE UNECE REGION AND ITS SUBREGIONS 74

LIST OF AUTHORS 75

SOME FACTS ABOUT THE EUROPEAN FORESTRY COMMISSION 76

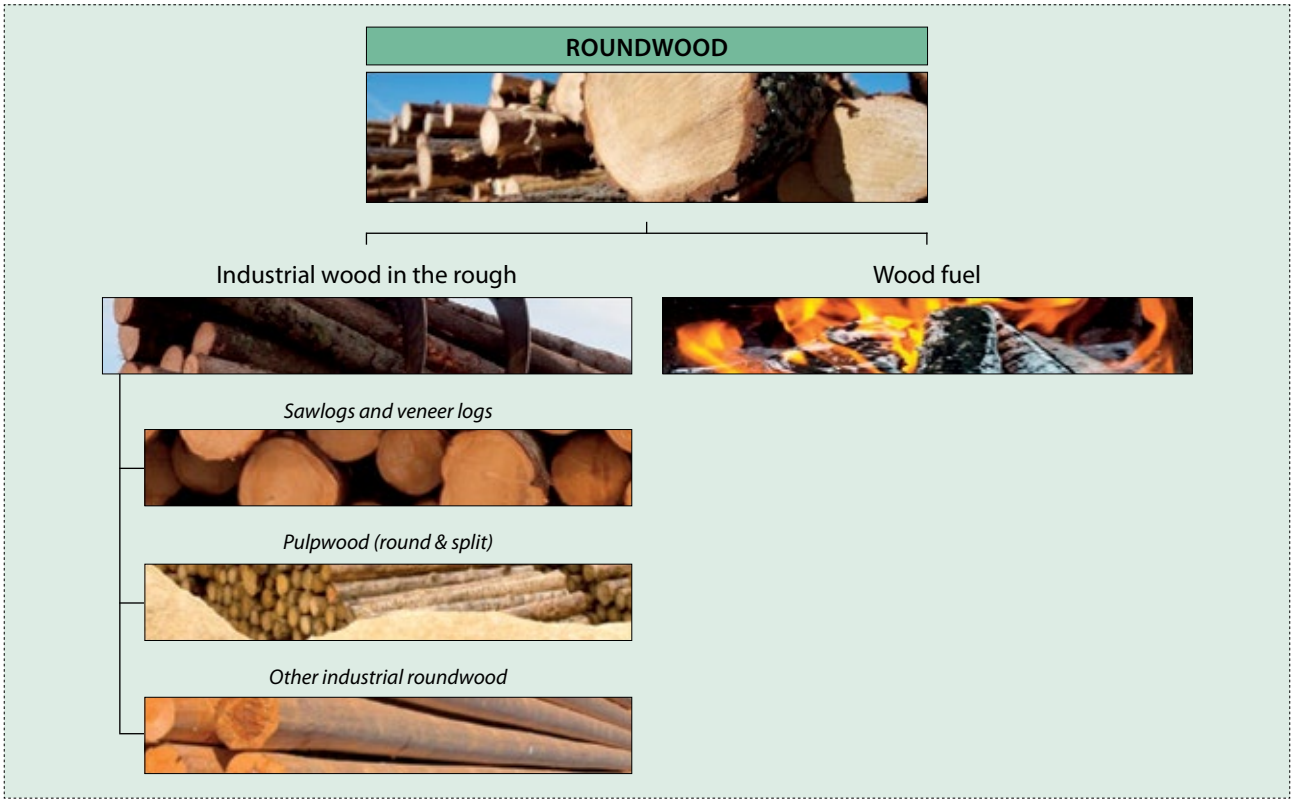
SOME FACTS ABOUT THE COMMITTEE ON FORESTS AND THE FOREST INDUSTRY 77

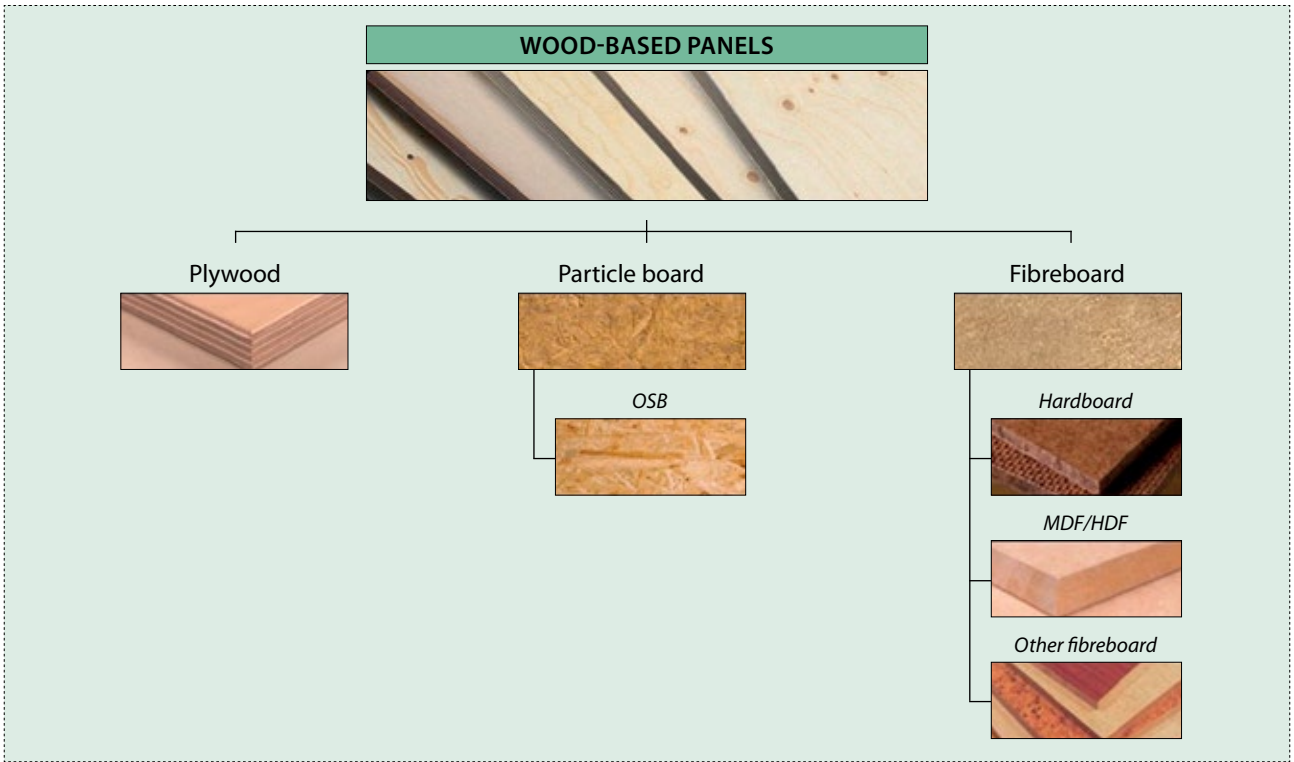
UNECE/FAO PUBLICATIONS 78

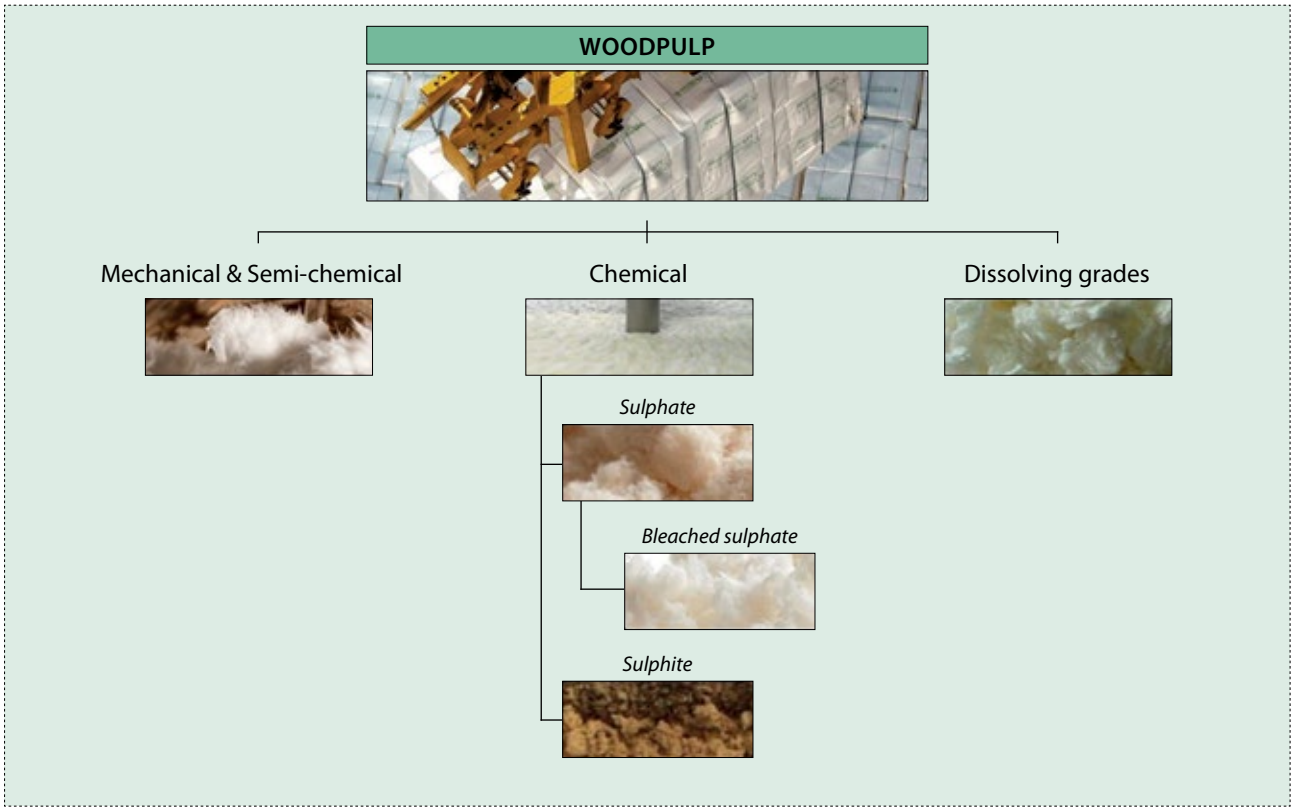
COMPONENTS OF WOOD PRODUCTS GROUPS

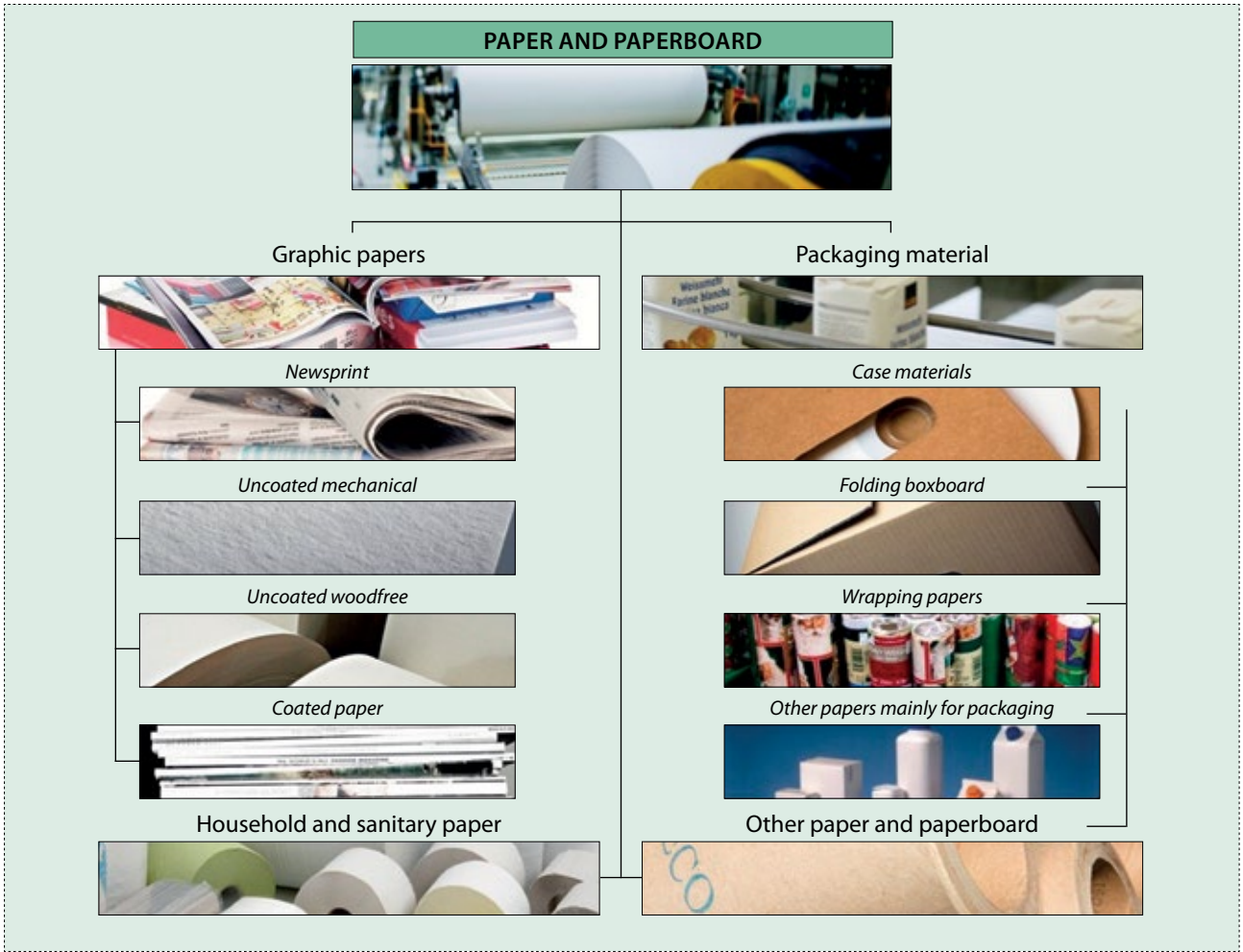
(Based on Joint Forest Sector Questionnaire nomenclature)

The diagrams below show the important breakdowns of the major groups of primary forest products. In addition, some sub-items (all roundwood products; sawnwood; veneer and plywood) are further divided into softwood or 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.



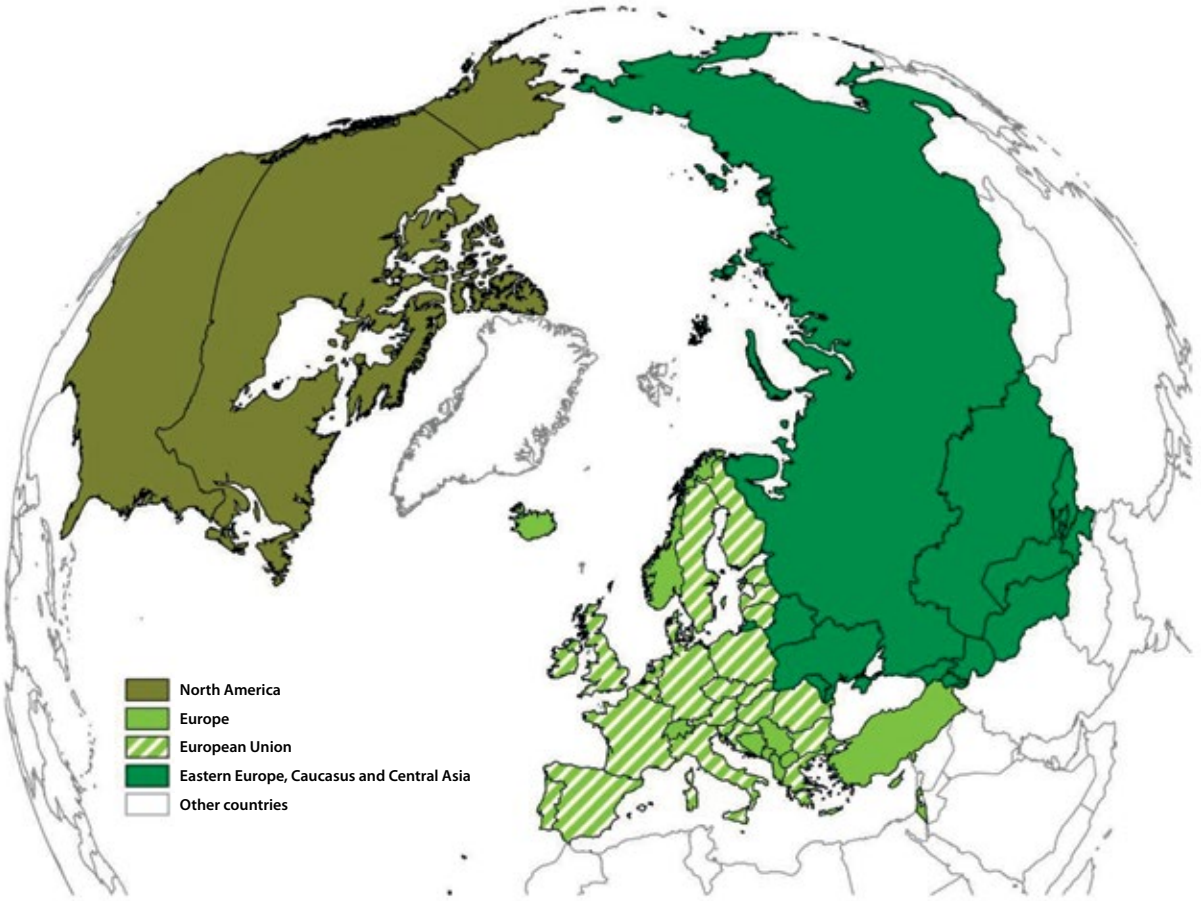






Sources for images in these diagrams are databanks of Metsä Group (2012), Raunion Saha (2012), Stora Enso (2012) and UPM (2012).

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
Czechia	Netherlands
Denmark	Poland
Estonia	Portugal
Finland	Romania
France	Slovakia
Germany	Slovenia
Greece	Spain
Hungary	Sweden
Ireland	United Kingdom*

Europe (other countries)
Albania
Andorra
Bosnia and Herzegovina
Iceland
Israel
Liechtenstein
Monaco
Montenegro
North Macedonia
Norway
San Marino
Serbia
Switzerland
Turkey

Note: *The United Kingdom left the European Union on 31 January 2020.

LIST OF AUTHORS

First name	*Family name*	*Chapter(s)*	*Affiliation*	*Email address*
Orifjon	**Abidov**	4	European Panel Federation, Brussels, Belgium	orifjon.abidov@europanels.org
Francisco	**Aguilar**	6	University of Missouri, Columbia, Missouri, USA	aguilarf@missouri.edu
Eduard	**Akim**	5	State Technological University of Plant Polymers, St Petersburg, Russian Federation	akim-ed@mail.ru
Delton	**Alderman**	1	USDA Forest Service, Princeton, West Virginia, USA	dalderman@fs.fed.us
Matthew	**Bumgardner**	3	USDA Forest Service, Delaware, Ohio, USA	mbumgardner@fs.fed.us
Ivan	**Eastin**	4	University of Washington, Seattle, Washington, USA	eastin@uw.edu
Håkan	**Ekström**	2	Wood Resources International LLC, Seattle, Washington, USA	hekstrom@wri-ltd.com
Kathryn	**Fernholz**	1	Dovetail Partners, Minneapolis, Minnesota, USA	katie@dovetailinc.org
Christopher	**Gaston**	7	University of British Columbia, Vancouver, Canada	chris.gaston@ubc.ca
Branko	**Glavonjić**	6	Faculty of Forestry, Belgrade State University, Belgrade, Serbia	branko.glavonjic@sfb.bg.ac.rs
Antti	**Koskinen**	3	Pöyry Management Consulting Oy, Vantaa, Finland	antti.koskinen@poyry.com
Klaus	**Kottwitz**	3	Timber and Sawmill Industry (DeSH), Germany	klaus.kottwitz@saegeindustrie.de
William	**Luppold**	3	USDA Forest Service, Princeton, West Virginia, USA	wluppold@fs.fed.us
Warren	**Mabee**	6	Queens University, Kingston, Ontario, Canada	warren.mabee@queensu.ca
Frances	**Maplesden**	3, 4	Maplesden Consulting, Rotorua, New Zealand	fran_map@clear.net.nz
Igor	**Novoselov**	1, 3, 4	WhatWood, Moscow, Russian Federation	igor.novoselov@whatwood.ru
Tapani	**Pahkasalo**	7	Dasos Capital Oy, Helsinki, Finland	tapani.pahkasalo@dasos.fi
José	**Palacín**	1	United Nations Economic Commission for Europe, Geneva, Switzerland	jose.palacin@unece.org
Russ	**Taylor**	3	International Wood Markets Group Inc., Vancouver, British Columbia, Canada	retaylor@woodmarkets.com
Michel	**Valois**	5	Valois Vision Marketing, Vancouver, British Columbia, Canada	michel@valoisvision.com

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 the Food and Agriculture Organization of the United Nations (FAO) to provide a policy and technical forum for countries to discuss and address forest issues on a regional basis.

The purpose of EFC is to advise on the formulation of forest policy and to review and coordinate its implementation at the regional level; to exchange information; to advise on suitable practices and actions to address technical and economic problems (generally through special Subsidiary Bodies); and to 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.

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.

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 United Nations Economic Commission for Europe (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, Eastern Europe, Caucasus and Central Asia, the United States of America, 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, and in particular with FAO (the Food and Agriculture Organization of the United Nations) and its European Forestry Commission, and with the International Labour Organization, in order to ensure complementarity and to avoid duplication, thereby optimizing the use of resources.

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
CH-1211 Geneva 10, Switzerland

info.ECE-FAOforests@un.org

www.unece.org/forests

UNECE/FAO PUBLICATIONS

Forest Products Annual Market Review 2019-2020 **ECE/TIM/SP/50**

Note: other market-related publications and information are available in electronic format at www.unece.org/forests.

Geneva Timber and Forest Study Papers

Forest Products Annual Market Review 2018-2019	ECE/TIM/SP/48
State of Forests of the Caucasus and Central Asia	ECE/TIM/SP/47
Forest Products Annual Market Review 2017-2018	ECE/TIM/SP/46
Forests and Water	ECE/TIM/SP/44
Wood Energy in the ECE Region	ECE/TIM/SP/42
Forest Products Annual Market Review 2016-2017	ECE/TIM/SP/41
Forest Products Annual Market Review 2015-2016	ECE/TIM/SP/40
Forest Products Annual Market Review 2014-2015	ECE/TIM/SP/39
Promoting sustainable building materials and the implications on the use of wood in buildings	ECE/TIM/SP/38
Forests in the ECE Region: Trends and Challenges in Achieving the Global Objectives on Forests	ECE/TIM/SP/37
Forest Products Annual Market Review 2013-2014	ECE/TIM/SP/36
Rovaniemi Action Plan for the Forest Sector in a Green Economy	ECE/TIM/SP/35
The Value of Forests: Payments for Ecosystem Services in a Green Economy	ECE/TIM/SP/34
Forest Products Annual Market Review 2012-2013	ECE/TIM/SP/33
The Lviv Forum on Forests in a Green Economy	ECE/TIM/SP/32
Forests and Economic Development: A Driver for the Green Economy in the ECE Region	ECE/TIM/SP/31
Forest Products Annual Market Review 2011-2012	ECE/TIM/SP/30
The North American Forest Sector Outlook Study 2006-2030	ECE/TIM/SP/29
European Forest Sector Outlook Study 2010-2030	ECE/TIM/SP/28
Forest Products Annual Market Review 2010-2011	ECE/TIM/SP/27
Private Forest Ownership in Europe	ECE/TIM/SP/26
Forest Products Annual Market Review 2009-2010	ECE/TIM/SP/25
Forest Products Annual Market Review 2008-2009	ECE/TIM/SP/24
Forest Products Annual Market Review 2007-2008	ECE/TIM/SP/23
Forest Products Annual Market Review 2006-2007	ECE/TIM/SP/22
Forest Products Annual Market Review, 2005-2006	ECE/TIM/SP/21
European Forest Sector Outlook Study: 1960 – 2000 – 2020, Main Report	ECE/TIM/SP/20
Forest policies and institutions of Europe, 1998-2000	ECE/TIM/SP/19
Forest and Forest Products Country Profile: Russian Federation *(Country profiles also exist on Albania, Armenia, Belarus, Bulgaria, former Czech and Slovak Federal Republic, Estonia, Georgia, Hungary, Lithuania, Poland, Romania, Republic of Moldova, Slovenia and Ukraine)*	ECE/TIM/SP/18
Forest resources of Europe, CIS, North America, Australia, Japan and New Zealand	ECE/TIM/SP/17

Geneva Timber and Forest Discussion Papers (original language only)

Overview of the State of Forests and Forest Management in Uzbekistan	ECE/TIM/DP/85
Overview of the State of Forests and Forest Management in Turkmenistan	ECE/TIM/DP/84
Overview of the State of Forests and Forest Management in Tajikistan	ECE/TIM/DP/83
Overview of the State of Forests and Forest Management in Kyrgyzstan	ECE/TIM/DP/82
Overview of the State of Forests and Forest Management in Kazakhstan	ECE/TIM/DP/81
Overview of the State of Forests and Forest Management in Georgia	ECE/TIM/DP/80
Overview of the State of Forests and Forest Management in Azerbaijan	ECE/TIM/DP/79
Overview of the State of Forests and Forest Management in Armenia	ECE/TIM/DP/78
Guidelines on the Promotion of Green Jobs in Forestry	ECE/TIM/DP/77
Forest Sector Workforce in the UNECE Region	ECE/TIM/DP/76
Rovaniemi Action Plan for the Forest Sector in a Green Economy: Mid-term Review	ECE/TIM/DP/75
Trends in green jobs in the forest sector in the UNECE region	ECE/TIM/DP/74
Guidelines for the Development of a Criteria and Indicator Set for Sustainable Forest Management	ECE/TIM/DP/73
Forest Landscape Restoration in the Caucasus and Central Asia	ECE/TIM/DP/72
Green Jobs in the Forest Sector	*ECE/TIM/DP/71
Measuring the Value of Forests in a Green Economy	*ECE/TIM/DP/70
Forecast of the Committee on Forests and the Forest Industry: Forest Products Production and Trade 2016-2018	*ECE/TIM/DP/69
Forecast of the Committee on Forests and the Forest Industry: Forest Products Production and Trade 2015-2017	*ECE/TIM/DP/68
ECE Committee on Forests and the Forest Industry and European Forestry Commission: 70 years working in the Service of Forests and people	ECE/TIM/DP/67
Pilot project on the System for the Evaluation of the Management of Forests (SEMAFOR)	ECE/TIM/DP/66
Comparative assessment of wood biomass for energy in Europe	*ECE/TIM/DP/65
Forecast of the Committee on Forests and the Forest Industry: Forest Products Production and Trade 2014-2016	ECE/TIM/DP/64
Forecast of the Committee on Forests and the Forest Industry: Forest Products Production and Trade 2013-2015	ECE/TIM/DP/63
Competitiveness of the European Forest Sector	ECE/TIM/DP/62
Forecast of the Committee on Forests and the Forest Industry: Forest Products Production and Trade 2012-2014	ECE/TIM/DP/61
Forecast of the Committee on Forests and the Forest Industry: Forest Products Production and Trade 2011-2013	ECE/TIM/DP/60
Econometric Modelling and Projections of Wood Products Demand, Supply and Trade in Europe	ECE/TIM/DP/59
Swedish Forest Sector Outlook Study	ECE/TIM/DP/58
The Importance of China's Forest Products Markets to the UNECE Region	ECE/TIM/DP/57
Good Practice Guidance on Sustainable Mobilisation of Wood: Proceedings from the Grenoble Workshop	*ECE/TIM/DP/56
Harvested Wood Products in the Context of Climate Change Policies: Workshop Proceedings - 2008	*ECE/TIM/DP/55
The Forest Sector in the Green Economy	ECE/TIM/DP/54
National Wood Resources Balances: Workshop Proceedings	*ECE/TIM/DP/53
Potential Wood Supply in Europe	*ECE/TIM/DP/52
Wood Availability and Demand in Europe	*ECE/TIM/DP/51
Forest Products Conversion Factors for the UNECE Region	ECE/TIM/DP/49
Mobilizing Wood Resources: Can Europe's Forests Satisfy the Increasing Demand for Raw Material and Energy Under Sustainable Forest Management? Workshop Proceedings - January 2007	*ECE/TIM/DP/48
European Forest Sector Outlook Study: Trends 2000-2005 Compared to the EFSOS Scenarios	ECE/TIM/DP/47
Forest and Forest Products Country Profile; Tajikistan	*ECE/TIM/DP/46
Forest and Forest Products Country Profile: Uzbekistan	ECE/TIM/DP/45
Forest Certification – Do Governments Have a Role?	ECE/TIM/DP/44
International Forest Sector Institutions and Policy Instruments for Europe: A Source Book	ECE/TIM/DP/43
Forests, Wood and Energy: Policy Interactions	ECE/TIM/DP/42
Outlook for the Development of European Forest Resources	ECE/TIM/DP/41
Forest and Forest Products Country Profile: Serbia and Montenegro	ECE/TIM/DP/40
Forest Certification Update for the UNECE Region, 2003	ECE/TIM/DP/39
Forest and Forest Products Country Profile: Republic of Bulgaria	ECE/TIM/DP/38

Forest Legislation in Europe: How 23 Countries Approach the Obligation to Reforest, Public Access and Use of Non-Wood Forest Products	ECE/TIM/DP/37
Value-Added Wood Products Markets, 2001-2003	ECE/TIM/DP/36
Trends in the Tropical Timber Trade, 2002-2003	ECE/TIM/DP/35
Biological Diversity, Tree Species Composition and Environmental Protection in the Regional FRA-2000	ECE/TIM/DP/33
Forestry and Forest Products Country Profile: Ukraine	ECE/TIM/DP/32
The Development of European Forest Resources, 1950 To 2000: a Better Information Base	ECE/TIM/DP/31
Modelling and Projections of Forest Products Demand, Supply and Trade in Europe	ECE/TIM/DP/30
Employment Trends and Prospects in the European Forest Sector	ECE/TIM/DP/29
Forestry Cooperation with Countries in Transition	ECE/TIM/DP/28
Russian Federation Forest Sector Outlook Study	ECE/TIM/DP/27
Forest and Forest Products Country Profile: Georgia	ECE/TIM/DP/26
Forest certification update for the UNECE region, summer 2002	ECE/TIM/DP/25
Forecasts of economic growth in OECD and central and eastern European countries for the period 2000-2040	ECE/TIM/DP/24
Forest Certification update for the UNECE Region, summer 2001	ECE/TIM/DP/23
Structural, Compositional and Functional Aspects of Forest Biodiversity in Europe	ECE/TIM/DP/22
Markets for secondary processed wood products, 1990-2000	ECE/TIM/DP/21
Forest certification update for the UNECE Region, summer 2000	ECE/TIM/DP/20
Trade and environment issues in the forest and forest products sector	ECE/TIM/DP/19
Multiple use forestry	ECE/TIM/DP/18
Forest certification update for the UNECE Region, summer 1999	ECE/TIM/DP/17
A summary of "The competitive climate for wood products and paper packaging: the factors causing substitution with emphasis on environmental promotions"	ECE/TIM/DP/16
Recycling, energy and market interactions	ECE/TIM/DP/15
The status of forest certification in the UNECE region	ECE/TIM/DP/14
The role of women on forest properties in Haute-Savoie (France): Initial research	ECE/TIM/DP/13
Interim report on the Implementation of Resolution H3 of the Helsinki Ministerial Conference on the protection of forests in Europe (Results of the second enquiry)	ECE/TIM/DP/12
Manual on acute forest damage	ECE/TIM/DP/7

* signifies electronic publication only

Many of the above publications can be downloaded free of charge at:

www.unece.org/forests

Publications and subscriptions are available through United Nations Publications Offices as follows:

Sales and Marketing Section, Room DC2-853
United Nations
2 United Nations Plaza
New York, NY 10017
United States of America
Fax: + 1 212 963 3489

E-mail: publications@un.org

Web site: https://shop.un.org/

Forest Products Annual Market Review 2019-2020

The *Forest Products Annual Market Review 2019-2020* provides a comprehensive analysis of markets in the UNECE region and reports on the main market influences outside the UNECE region. It covers the range of products from the forest to the end user - from roundwood and primary processed products to value-added, housing and wood energy. Statistics-based chapters analyse the markets for wood raw materials, sawnwood, wood-based panels, paper, paperboard and woodpulp. Underlying the analysis is a comprehensive collection of data. The *Review* highlights the role of sustainable forest products in international markets. Policies concerning forests and forest products are discussed, as well as the main drivers and trends. The *Review* also analyses the effects of the current economic situation on forest products markets.

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 and objective information for other policymakers, researchers and investors.

Further information on forest products 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: www.unece.org/forests/fpamr2020.

Information Service
United Nations Economic Commission for Europe

Palais des Nations
CH - 1211 Geneva 10, Switzerland
Telephone: +41(0)22 917 12 34
Fax: +41(0)22 917 05 05
E-mail: unece_info@un.org
Website: http://www.unece.org

Designed and Printed at United Nations, Geneva – 2011553 **(E)** – October 2020 – 1,059 – **ECE/TIM/SP/50**

ISBN 978-92-1-117257-7