Food and Agriculture Organization of the United Nations

UNECE

Forest Products

Annual Market Review 2014-2015

UNITED NATIONS

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NOTE

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DISCLAIMER

The views expressed in this paper are those of the authors and do not necessarily reflect the views or carry the endorsement of the United Nations.

ABSTRACT

The ***Forest Products Annual Market Review 2014-2015*** provides a comprehensive analysis of markets in the UNECE region and reports on the main market influences outside the UNECE region, using the best-available data from diverse sources. It covers the range of products from the forest to the end-user: from roundwood and primary-processed products to value-added products and those used in housing. Statistics-based chapters analyse the markets for wood raw materials, sawn softwood, sawn hardwood, wood-based panels, paper, paperboard and woodpulp. Other chapters analyse policies, institutional forestland ownership and its effects on forest products markets, and markets for wood energy. 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.

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FOREWORD

The UNECE/FAO *Forest Products Annual Market Review 2014-2015* provides an early look at, and a comprehensive analysis of, forest products markets and policies in the UNECE region in 2014 and the first half of 2015. It focuses on the various sectors of the forest products industry, presenting data and analyses of markets and the policy and economic factors driving trends. This information is critical: many rural livelihoods in the UNECE region have a significant stake in the forest sector, and the products covered by the review offer a multitude of options for greener, low-carbon economies.

In previous editions, the *Review* described the slow recovery of forest products markets in developed economies. The recovery has now picked up a little steam, but is uneven across the countries and industries of the region. The currencies used to trade wood products fluctuated significantly in late 2014 and early 2015. These fluctuations, along with global changes in competition, trade and policies, and the ownership of forestlands, have had significant impacts on the UNECE region's forest products industry. This year's edition of the *Review* provides a first assessment of these and other impacts on the various sectors and the trade flows of wood products. It is likely that these fluctuations will continue to change where wood is harvested, transformed and consumed, with significant impacts on States/Countries in the UNECE region and the rest of the world.

The recovery is uneven across subsectors of the forest products industry. The woodpulp sector is probably the most striking example of an industry that has been shaken structurally: for example, the consumption of newsprint in North America is now half of what it was ten years ago. Electronic bill pay, e-readers and email have drastically reduced paper consumption for billing, media, books and communication, while the consumption of packaging paper products has increased due to the rise of online shopping. On the other hand, some long-standing products, such as railway ties, continue to be in demand.

Other breakthrough changes are occurring in the forest sector. The traditional limits of wood in engineering have changed, with new products such as cross-laminated timber allowing the construction of wooden buildings that are 14 storeys tall. Many countries in the region now have policies to support the use of wood, not only because of wood's suitability for construction but also because of its strong green credentials – it is renewable, has low embodied carbon, and constitutes a carbon store.

We take this occasion to express our appreciation to everyone who has played a part in the preparation of this joint publication – the experts, the many partner organizations, the information suppliers, the governments, and the staff of our two organizations.

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Christian Friis Bach
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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. 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. This edition could not have been published without the financial support of the Government of the Russian Federation.

The *Review* benefits from a longstanding partnership with the Department of Forest Sciences at the University of Helsinki, which each year provides two marketing assistants. For this edition of the *Review,* Riikka Vehviläinen and Ossi Huovila undertook market research; prepared price data; generated all graphics and revised the Graphics Production System; and reviewed and prepared data. Their input has been critical for ensuring the quality of the publication and meeting deadlines. Professor Anne Toppinen and Lei Wang at the Department of Forest Sciences facilitated these annual internships: we thank them and look forward to continuing this mutually beneficial arrangement.

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, including the summarized information in the Overview. You can find contact details and affiliations of all authors in the annex.

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In all, 44 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 6 August 2015.

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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 2014-2015***. The base data for the ***Review*** were supplied by country statistical correspondents, who are acknowledged in a separate listing. We regret any omissions.

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The national statistical correspondents listed below are the key suppliers of data for this publication. We are grateful for their essential contributions and their significant efforts in collecting and preparing the data. Complete contact information for the correspondents is provided in the publication ***Forest Products Statistics***.[1]

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[1] *Forest Products Statistics* is available at: www.unece.org/forests/fpm/onlinedata.html

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DATA SOURCES

The data on which the *Forest Products Annual Market Review* is based are collected from official national correspondents through the FAO/UNECE/Eurostat/ITTO Joint Forest Sector Questionnaire, distributed in April 2015. Within the 56-country UNECE region, data for the 32 EU and European Free Trade Association countries are collected by Eurostat and for other UNECE countries by UNECE/FAO Geneva. All data are validated by UNECE/FAO Geneva.

The statistics for this *Review* are from the TIMBER database system. Because the database is continually updated, any single publication provides only a snapshot of the database. Data quality differs between countries, products and years. Improving data quality is a continuing task of the secretariat.

With our partner organizations and national correspondents, we strongly believe that the quality of the international statistical base for the analysis of the forest products sector is improving steadily. The goal of the partner organizations is to have a complete and current database, validated by national correspondents, available from FAO in Rome, Eurostat in Luxembourg, ITTO in Yokohama and UNECE/FAO in Geneva. We are convinced that the dataset used in the *Review* is the best available anywhere, as of August 2015.

The data in this publication form only a small part of the total data available. *Forest Products Statistics* will include all available data for the years 2010-2014. The TIMBER database is available on the website of the joint UNECE Committee on Forests and the Forest Industry and FAO European Forestry Commission at www.unece.org/forests/fpm/onlinedata More complete trade flow information is available at www.unece.org/forests/fpm/onlinedata/forest-products-trade-flow.

The secretariat is grateful that correspondents provided actual statistics for 2014 or, in the absence of formal statistics, their best estimates. Therefore, all statistics for 2014 are provisional and subject to later revision. The responsibility for national data lies with the national correspondents. The official data supplied by correspondents account for the great majority of records. In some cases, where data were not supplied, lacked internal consistency or were confidential, the secretariat estimated figures to keep regional and product aggregations comparable and to maintain comparability over time. Estimates are flagged in this publication, but only for products at the lowest level of aggregation.

Despite the best efforts of all involved, significant problems remain. Chief among these are differing definitions, especially when definitions are not specified in the data, and unrecorded removals and production. For woodfuel removals, for example, in some countries the officially reported volumes may be as low as 20% of actual removals. The Joint Wood Energy Enquiry has gone some way towards improving the quality and coverage of data for wood energy. Conversions into the standard units used in this publication are not necessarily used consistently, either. The Joint FAO/UNECE Working Party on Forest Statistics, Economics and Management is carrying out work to increase awareness of problems in measurement and how to deal with them. Intra-EU trade, for example, is less reliable than extra-EU trade.

In addition to the official statistics received through the Joint Forest Sector Questionnaire, trade association and government statistics have been used in this publication to complete the analysis for 2014 and early 2015. Supplementary information was obtained from experts, including national statistical correspondents, trade journals, the United Nations trade database (COMTRADE) and websites. These sources are given in the text.

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". In the statistical annex, subregional consumption is a total of the countries with consumption data; in the rest of the tables, this is the sum of the subregion's production, imports and exports. Regional consumption totals may differ where data are missing for a particular flow in a country.

For ease of reading, the publication mostly provides value data in US dollars (indicated by the sign "$"). Unless specific for a given period, the applied exchange rates in 2014 are €0.75 = $1 for euros and 39.2 RUB = $1 for Russian roubles. Both these exchange rates are based on the annual average rate provided by UNECE (http://w3.unece.org/PXWeb/en).

"Net trade" is the balance of exports and imports and is positive for net exports (i.e. when exports exceed imports) and negative for net imports (i.e. when imports exceed exports). 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 and references to trade in the text include trade occurring between countries of the subregion except where noted otherwise.

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 in 2015. The term Commonwealth of Independent States (CIS) refers collectively to 12 countries: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, the Republic of Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan. It is used solely for the convenience of readers.

The term "softwood" is used synonymously with "coniferous". "Hardwood" is used synonymously with "non-coniferous" or "broadleaved". More definitions appear in the electronic annex.

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

A billion refers to one thousand million (10^9).

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

The use of the term "oven-dry" in this text is used in relation to the weight of a product in a completely dry state: e.g. an oven-dry metric tonne of wood fibre means 1,000 kg of wood fibre containing no moisture at all.

The term "chemical pulp" refers to semi-chemical woodpulp, chemical woodpulp and dissolving grades, unless otherwise indicated.

ACRONYMS, ABBREVIATIONS AND SYMBOLS

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

…	not available
€	euro(s)
$	US dollar(s) unless otherwise specified
AHEC	American Hardwood Export Council
APA	The Engineered Wood Association
BC	British Columbia, Canada
BJC	builders' joinery and carpentry
CEPI	Confederation of European Paper Industries
CIF	cost, insurance and freight
COFFI	Committee on Forests and the Forest Industry
CIS	Commonwealth of Independent States
CLT	cross-laminated timber
CoC	chain-of-custody
CSA	Canadian Standards Association
EU	European Union
EUTR	European Union Timber Regulation
EWP	engineered wood product
FSC	Forest Stewardship Council
FOB	free on board
GDP	gross domestic product
GHG	greenhouse gas
ha	hectare
IMF	International Monetary Fund
ITTO	International Tropical Timber Organization
LVL	laminated veneer lumber
LSL	laminated strand lumber
m.t.	metric ton or tonne
m^2	square metre

m^3	cubic metre
MDF	medium-density fibreboard
MTCS	Malaysian Timber Certification System
MWe	megawatt electrical
NGO	non-governmental organization
OSB	oriented strandboard
OSL	oriented strand lumber
PEFC	Programme for the Endorsement of Forest Certification
PJ	petajoule
PoC	Province of China
PSL	parallel stand lumber
REDD	Reducing Emissions from Deforestation and Forest Degradation
SFI	Sustainable Forestry Initiative
UK	United Kingdom of Great Britain and Northern Ireland
US	United States of America
VAT	value-added tax

1 OVERVIEW OF FOREST PRODUCTS MARKETS AND POLICIES

Author of economic overview: José Palacín

HIGHLIGHTS

- A general improvement in the economic situation in the UNECE region helped increase demand for forest products in 2014, but results were uneven across countries and substantial currency fluctuations have modified the landscape in the trade of forest products.
- The transition towards a green economy depends heavily on policies and market-based instruments. The EU Forest Strategy, international trade agreements and timber regulations have significant influence, along with non-regulatory systems such as voluntary certification programmes, markets for ecosystem services, and green building innovations.
- Timberland investment by institutional investors began in the US in the early 1980s, when forestry companies needed to divest less-productive assets and took advantage of a change in the law favouring the institutional ownership of real assets. Financial investors hold close to 24 million hectares of timberland worldwide, at an estimated value of close to $100 billion.
- The consumption of roundwood continued to increase in all three UNECE subregions in 2014 and, overall, was 7% higher than in 2010. Sawlog prices fell in almost all markets worldwide in 2014 and the first half of 2015, however, with the biggest declines occurring in northern and central Europe.
- The production of sawn softwood, sawn hardwood and wood-based panels increased in the UNECE region in 2014. The apparent consumption of forest products rose in Europe and North America but fell in the CIS, primarily due to reduced consumption in the Russian Federation.
- Paper, paperboard and woodpulp production increased in the CIS in 2014 but fell in Europe and North America, as capacity closures in the graphic grades followed years of declining demand. Newsprint consumption has fallen dramatically, with consumption in North America in 2015 expected to be less than half what it was in 2005.
- Wood energy markets continue to develop strongly, and wood remains the single-most important source of renewable energy in the UNECE region.
- The use of cross-laminated timber (CLT) is enabling the construction of tall wooden buildings, such as a 14-storey residential high-rise in Bergen, Norway. About 90% (560 thousand m^3) of the global production of CLT was in Europe in 2014, and this volume is forecast to increase to 630 thousand m^3 in 2015.
- The housing construction market in Europe remains subdued, but residential housing construction is projected to improve by 2.4% in 2015 and by 4.3% in 2017. The US housing market continues to improve in all its sectors.

1.1 INTRODUCTION

The 2015 edition of the UNECE/FAO ***Forest Products Annual Market Review*** provides a comprehensive review of market developments in the UNECE region in 2014 and the first half of 2015 and of the policies driving those developments. The UNECE region comprises three subregions: Europe; the Commonwealth of Independent States (CIS); and North America. It encompasses Canada and the United States of America (US), Europe, the Russian Federation, the Caucasus and the Central Asian republics. It includes almost all boreal and temperate forests in the Northern Hemisphere and covers about 1.7 billion hectares, which is just under half the world's total forest area.

The *Review* serves as a background document for the joint session of the UNECE Committee on Forests and the Forest Industry and FAO's European Forestry Commission, which will take place on 2-5 November 2015 in Engelberg, Switzerland.

This chapter constitutes an executive summary by providing an overview of the other ten chapters of the publication.

Section 1.2, which follows this section, provides background on the macroeconomic health of the region. The effects of the economy are further elaborated in chapters 2-11, which outline the impacts of the economic situation on particular sectors and geographical regions.

Chapter 2 provides background on the policies and market tools that are influencing the forest products sector, including those related to trade, energy and the environment (e.g. certified forest products, carbon accounting and markets, and green building).

Chapter 3 is a special chapter on institutional forest ownership and its effects on forest product markets.

Chapters 4-10 cover the major forest product sectors. Chapter 11, on housing (a leading driver of wood consumption in the UNECE region), concludes the publication.

The *Review* presents and analyses the best available annual statistics for the period 2014-2015 collected by the UNECE/FAO Forestry and Timber Section from official country statistical correspondents and expert estimates.

Note that 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 author-provided data, which may be derived from various sources, including the authors' own market intelligence. A strong effort has been made to reconcile data and trends, but occasionally small differences arise between sources. Additionally, authors may sometimes present trends or data for different geographic aggregations than the standard UNECE subregions. References to "Europe", the "CIS" and "North America" in this publication always pertain to those subregions, however.

Electronic annexes[2] provide additional statistical information, and the full UNECE/FAO TIMBER database, which was updated with statistics from national correspondents in July 2015, is also available on the web.[3] These comprehensive data, which form the basis of many of the chapters, ensure the transparency of the ***Review***. References at the end of each chapter give credit to the sources of information and provide further reading.

A common thread in this 2015 edition of the ***Review*** is the analysis of markets outside the region. Forest products are increasingly traded at the global level, with pronounced effects on markets inside the UNECE region.

1.2 ECONOMIC DEVELOPMENTS WITH IMPLICATIONS ON THE FOREST SECTOR

The world economy continued to expand modestly in 2015, although there were sharp variations in growth rates and economic prospects, including among countries in the UNECE region. The decline in oil prices has supported the global recovery but also contributed to the divergence of growth rates. For a number of energy-exporting economies in the CIS, notably the Russian Federation, weaker oil prices have caused a significant economic shock.

After the global financial crisis in 2008, growth restarted earlier in the US than in the advanced European economies and has continued at a faster clip. Expansion rates in North America will continue to exceed those observed in western Europe in 2015-2016. Nevertheless, the gap is narrowing as the pace of growth increases in the euro area, where, after years of austerity, fiscal policy has become less of a drag on economic activity. The economic expansion in the euro area is now more broad-based, but significant differences in performance remain.

There has been rapid growth in European Union (EU) countries outside the eurozone, a pattern that will continue in 2015-2016. The improved economic performance in the new EU member states in central Europe has been driven by the new dynamism in the euro area, stronger domestic demand, and the use of EU structural funds.

Countries with economies in transition have fared worse, with structural factors holding back the recovery in southern and eastern Europe. The falling price of oil was the main factor affecting economic performance in the Russian Federation in 2014 and early 2015, but economic sanctions imposed by Europe and the US in 2014 increased the cost of financing and undermined confidence. Diminished economic prospects in the Russian Federation, which is the largest economy in the CIS, had a negative impact on other countries in that subregion through reduced trade, investment and remittances. In the Ukraine, the conflict in the east and contractionary policies are severely depressing economic activity. As a result of these

[2] www.unece.org/forests/fpamr2015-annex
[3] www.unece.org/forests/fpm/onlinedata

negative influences, output in the CIS overall will contract in 2015, and there will be only a limited recovery in 2016.

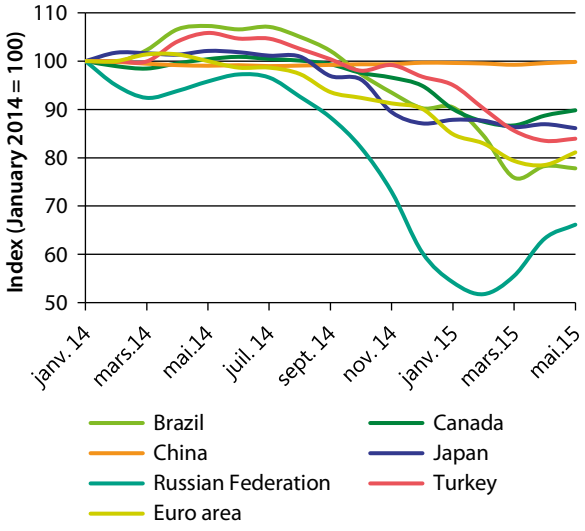
Employment growth has accelerated in advanced economies, particularly the US. Unemployment remains elevated in many countries, however, particularly in the eurozone, where the pace of employment creation resulting from still modest output growth is insufficient to reverse the job destruction that took place during the global financial crisis. Unemployment is expected to remain high, which will limit income growth, although an improvement in labour dynamics is having a positive impact on confidence and consumption. Wage growth, which has been muted, is expected to accelerate. In the US, where labour market developments are more favourable, residential investment is projected to pick up. In contrast, labour market conditions have deteriorated in countries with economies in transition and are expected to improve only moderately in 2016.

Construction spending in the US bottomed out in 2011 and has climbed since, although it is still well below levels seen before the global financial crisis. The decline of the construction sector was deeper and more protracted in the EU, but the sector began to recover in 2014, making a positive contribution to employment growth for the first time since the crisis. Housing prices have been growing well above inflation in many countries in the UNECE region. In both the US and the euro area, however, real residential property prices are still well below the levels observed in 2007.

Divergent expectations for the future path of interest rates and the impact of the new asset-buying programme of the European Central Bank led to the depreciation of the euro vis-à-vis the US dollar in 2014, and a weaker currency contributed to the improved outlook in the euro area (graph 1.2.1). In a number of advanced European countries, including those in the euro area, monetary authorities introduced negative interest rates in 2014 to address deflationary pressures. Inflation has already bottomed out in some countries but is expected to remain moderate in 2016. In contrast, currencies in the CIS weakened sharply in late 2014 and early 2015 as a result of lower energy prices, capital outflows and the transmission of geopolitical shocks across this subregion. The weakening of currencies boosted inflationary pressures and prompted interest-rate hikes, despite adverse economic circumstances.

GRAPH 1.2.1

Major currencies used to trade forest products indexed against the US dollar, January 2014-May 2015



Source: IMF, 2015.

Financial conditions remain easy in advanced countries in the UNECE region, despite a recent pick-up in long-term government bond yields since. Financial fragmentation has diminished, but it is still a feature of the post-crisis euro area. The US Federal Reserve is expected to start increasing interest rates in the second half of 2015, which would be the first increase since June 2006, but rapid tightening is not anticipated. Overall, investment has gained little traction in advanced countries, despite accelerating growth and a supportive financial backdrop. The lack of investment depresses current demand and undermines long-term growth prospects.

Economic prospects in the UNECE region are mixed. Economic activity is expected to accelerate in the advanced countries, but significant fragilities remain in the aftermath of the global financial crisis, including high unemployment and elevated levels of debt. In the CIS, geopolitical tensions are having a dampening effect on activity, despite a limited recovery in commodity prices.

1.3 POLICY AND REGULATORY DEVELOPMENTS AFFECTING THE FOREST PRODUCTS SECTOR

The use of wood and the management of the forest resource from which it is derived have influence across policies, markets and economies. The EU Forest Strategy, which was adopted on 20 September 2013, responds to the challenges facing the forest sector and to key policy developments in the EU. The EU Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan has been in force for 12 years (as of 2015), and six exporting countries have voluntary partnership agreements (as of May 2014). The EU Timber Regulation has been in effect since March 2013, and a recent assessment concluded that its implementation remains challenging and inconsistent across EU member states.

The Transatlantic Trade and Investment Partnership trade agreement between the EU and the US is still under negotiation. Negotiations began in July 2013 and are expected to continue through 2015. A separate agreement between the EU and Canada was published in September 2014.

Wood and wood products were in the media and policy spotlight in early 2015 in Belarus, Bulgaria, Romania and Ukraine.

Wood export bans were a common topic of discussion, and those countries are considering implementing, or have already implemented, such bans.

As of May 2015, the area of certified forest worldwide was about 439 million hectares, which is 10.9% of the global forest area. The growth of certified forest area is slowing, and it may be time for diversification and new approaches to certification, including through opportunities to address regulatory needs for monitoring and to provide accountability benefits.

1.4 INSTITUTIONAL FORESTLAND OWNERSHIP

Worldwide, financial investors hold close to 24 million hectares of timberland, at an estimated value of close to $100 billion. This group of forest owners represents a growing share of the world's industrial timber supply. Financial investors have changed the way in which the forest industry operates; forest industries in the US no longer control their raw-material sources, and the same is happening in other regions. Financial investors have high targets for returns on forest management; simultaneously they have brought diverse management.

The institutional ownership of forestland is still limited in Europe, where state ownership and small-scale private ownership (family forestry) are the dominant ownership types.

There are four basic types of financial investment in forestry:

- **Timberland investment management organizations (TIMOs)** – companies that acquire and manage forests on behalf of institutional investors.
- **Real estate investment trusts (REITs)** – companies in the US that pass at least 90% of their income to investors, and which earn at least 75% of their income from the sale of raw materials.
- **Direct investment by institutional investors** – which can take several forms.
- **"Retail" investment companies** – which offer individual investors the opportunity to invest in forests at a very small scale.

Forests have several characteristics that distinguish them from other asset classes, and analyses of return drivers for forestry investments show that 65-75% of returns are derived from biological growth. A second distinguishing factor affecting returns on forest investments is variation in timber prices, typically ranging between 25% and 30% of the total return. Finally, changes in forestland prices contribute 2-5% of overall investment returns. It is logical to argue, therefore, that forests grow and produce returns even if economic and market circumstances are challenging, as they have been in the last few years.

The impacts of timberland investment on forest product markets vary by region and type of forest. In general, financial investors in North America adjust their harvest levels in response to market demand, so the overall level of timber supply may not be significantly different to what it would be if those forests were owned by wood-processing companies. A high level of timberland ownership among financial investors reduces the tendency of some integrated companies to continue harvesting and processing timber, even in weak markets, and the misallocation of logs (e.g. sawlogs being processed in integrated company pulpmills) is mostly avoided. In general, this tends to make the overall industry more efficient, but discerning the impact of a high level of ownership by financial investors on timber pricing and overall supply levels is difficult.

Source: UNECE/FAO, 2015.

1.5 SUMMARY OF REGIONAL AND SUBREGIONAL MARKETS

The general condition of forest product markets in the UNECE region continued to improve in North America and Europe in 2014, which is substantiated by overall positive economic developments, upward trends in housing and construction, and increasing consumption of roundwood (raw materials) and wood products (table 1.5.1).

There were mixed results in consumption in the CIS in 2014, with increases in the consumption of industrial roundwood and pulp and paper but decreases of more than 4% in the consumption of both sawnwood and panels. Production increased in the CIS, however, for all major product categories, and exports also increased, supported by a much-weakened Russian rouble.

Currency fluctuations are affecting the trade of forest products across the UNECE region. The US dollar and Chinese renminbi are strong compared with the Russian rouble, the Canadian dollar, the Brazilian real and the euro and are influencing – and will continue to influence – trade flows.

Structural changes in the pulp and paper sector are likely to have wide-reaching ramifications. People are changing the ways in which they correspond, read media and books, and pay bills, with profound effects on the sector. The consumption of paper and paperboard has fallen by about 10% in North America and by 5% in Europe in the last four years.

TABLE 1.5.1

Apparent consumption of industrial roundwood, sawnwood, wood-based panels and paper and paperboard in UNECE region, 2010-2014

	Thousand	2010	2011	2012	2013	2014	Change (volume) 2013-2014	Change (%) 2013-2014	Change (%) 2010-2014
Europe									
Industrial roundwood	m³	385,050	385,483	376,214	380,561	391,307	10,747	2.8	1.6
Sawnwood	m³	103,066	102,184	97,198	96,452	99,291	2,839	2.9	-3.7
Wood-based panels	m³	65,863	66,919	65,039	66,311	69,435	3,124	4.7	5.4
Paper and paperboard	m.t.	94,755	93,219	89,880	88,802	89,936	1,134	1.3	-5.1
CIS									
Industrial roundwood	m³	151,790	166,846	173,690	175,136	181,678	6,542	3.7	19.7
Sawnwood	m³	17,045	19,024	19,717	20,381	19,534	-846	-4.2	14.6
Wood-based panels	m³	12,568	16,046	16,970	18,903	18,069	-833	-4.4	43.8
Paper and paperboard	m.t.	7,418	9,716	9,357	9,230	9,427	197	2.1	27.1
North America									
Industrial roundwood	m³	466,839	491,561	479,216	486,764	490,718	3,955	0.8	5.1
Sawnwood	m³	89,332	89,811	95,562	101,188	105,336	4,148	4.1	17.9
Wood-based panels	m³	46,737	45,771	46,391	47,968	50,360	2,391	5.0	7.8
Paper and paperboard	m.t.	83,266	79,721	78,026	75,966	75,060	-906	-1.2	-9.9
UNECE region									
Industrial roundwood	m³	1,003,678	1,043,890	1,029,120	1,042,460	1,063,704	21,243	2.0	6.0
Sawnwood	m³	209,442	211,019	212,478	218,021	224,161	6,140	2.8	7.0
Wood-based panels	m³	125,168	128,737	128,399	133,182	137,864	4,682	3.5	10.1
Paper and paperboard	m.t.	185,438	182,656	177,262	173,998	174,423	425	0.2	-5.9

Note: Sawnwood does not include sleepers.

Source: UNECE/FAO, 2015

1.5.1 Wood raw materials

Of the total roundwood removals in the UNECE region in 2014, approximately 16% (201 million m³) was used for fuel. Data on roundwood removals from forests for fuel are highly unreliable, but it is clear that a fairly large share of forest removals is used for energy.

The total consumption of roundwood in the UNECE region continued its upward trend in 2014, reaching 1.26 billion m³, up by 1.1% compared with 2013 and more than 5% higher than in 2010. The biggest relative increase was in the CIS.

The CIS used 182 million m³ of roundwood in 2014, which was almost 20% higher than in 2010.

Source: UNECE/FAO, 2015.

In Europe, total log consumption (including industrial roundwood and woodfuel) was up by 2.4% in 2014 compared with 2013, the largest percentage increase being in hardwood logs.

Of the three UNECE subregions, log consumption increased least (by only 0.7%) in North America in 2014. The main reasons for the relatively low growth in North America were a decline in log use by the US pulp industry, and only steady demand for sawlogs in Canada's sawnwood sector.

The global trade of softwood roundwood was almost unchanged in 2014 compared with 2013, at about 84 million m^3. Trade slowed, however, towards the end of 2014 and through the first five months of 2015. The biggest declines in imports in the first half of 2015 were in China (down by 23% compared with the same period in 2014) and Japan (down by 30%).

The UNECE region is a major net exporter of logs, mainly to Asia. The net export volume of softwood logs to destinations outside the UNECE region was 28 million m^3 in 2014, while the net export of hardwood logs was nearly 2 million m^3. Globally, the four biggest trade flows of softwood logs are all to China from (in descending order, by volume) New Zealand, the Russian Federation, the US and Canada.

1.5.2 Sawn softwood

In 2014, sawn softwood consumption increased in North America by 4.6%, to 85.6 million m^3, and in Europe by 2.5%, to 86.4 million m^3, but it declined in the CIS by 3.7%, to 17.63 million m^3. Volatile currency exchange rates affected countries differently, but all subregions posted gains in production: North America, 3.5%; Europe, 3.0%; and the CIS, 0.9%.

The Nordic countries, and particularly Sweden, contributed more than half (1.2 million m^3) of the net increase in European apparent consumption. Strong domestic and export markets enabled European production to grow by 3% in 2014, to 100.9 million m^3, the highest level since 2011. Prices (in euros) for European sawn softwood increased in some overseas markets but dropped in Japan and were stable in Europe. Prices increased somewhat in Middle Eastern and North African markets.

Source: UNECE/FAO, 2015.

In 2014, sawn softwood production increased in the CIS by 0.9% over 2013, to 36.1 million m^3. The dramatic devaluation of the rouble in early 2015 made Russian exports of sawn softwood extremely attractive. China is still the Russian Federation's largest export market for sawn softwood: Russian sawn softwood shipments to China totalled 8.4 million m^3 in 2014, up by 11% compared with 2013. Aided by a weakening rouble, Russian producers enjoyed a weighted average price increase of 24% (in roubles per m^3) in 2014.

The slow and steady improvement in new residential housing starts and repair and remodelling activity in North America continued in 2014. US apparent sawn softwood consumption was up by 6.4%, to 72 million m^3, while Canada's apparent consumption decreased for the second straight year, to 14.4 million m^3 (down by 3.6%). US sawn softwood production grew by 5.4% in 2014, to 53.8 million m^3, while Canadian production gained 1.1%, to 41.9 million m^3. Production gains outpaced growth in demand in domestic and export markets, and prices declined for most products. Currency swings favoured Canadian producers.

Despite a difficult first quarter in 2015, there is optimism in most UNECE countries that market conditions will improve in the second half of the year.

1.5.3 Sawn hardwood

Total apparent consumption of sawn hardwood in the UNECE region increased to 34.4 million m^3 in 2014, a 3.3% rise compared with 2013. This was the second consecutive year of increase, a sign that the upward trend may be sustainable.

Sawn hardwood production in the UNECE region increased by 5.8% in 2014, to 39.1 million m^3. Production had increased in the CIS and North America in 2013 and declined in Europe, but it increased in all three subregions in 2014.

The downturn in sawn hardwood imports in the UNECE region in 2012 and 2013 ended in 2014 when imports increased by 7.7%, to 6.7 million m^3. The UNECE region exported 11.4 million m^3 of sawn hardwood in 2014, up by 15.2% over 2013, with exports increasing in all three subregions.

China continued to dominate the global sawn hardwood trade in 2014. Its sawn hardwood imports increased by 32% in 2014, to $4.2 billion, and its share of total global trade value increased from 33% to 39%. The continued rise in Chinese consumption was the major factor driving sawn hardwood supply shortages and price increases in 2014, especially in the first half of the year. There were signs of a slowdown in the growth of demand in China towards the end of 2014. These signs were also evident in the first quarter of 2015.

European oak prices rose in 2014. In addition to strong overall demand, this was driven by price hikes for competing American white oak assortments. French sawn oak prices climbed by

1-13%, depending on specification, in the first seven months of 2014. Prices for European sawn beech also increased in 2014 after stagnating for most of 2013.

Prices for kiln-dried US hardwood increased sharply between October 2013 and June 2014, triggered by strong demand, particularly in Asia and domestically and intensifying due to weather-related shortages in the 2013-2014 winter.

1.5.4 Wood-based panels

Economic growth continued in North America in 2014, driven largely by the US, but Europe and the CIS were stagnant. There was moderately strong growth in the consumption of wood-based panels in both North America (+5.0%) and Europe (+4.7%) in 2014, but consumption declined by 4.4% in the CIS. Plywood consumption increased by just 1.2% across the UNECE region, although it grew by an impressive 3.9% in the EU. Particle board consumption grew by 2.1% across the region: it was up by 8.5% in North America and down by 8.3% in the CIS. The growth in the consumption of OSB (7.6% overall) was strong in all three subregions. The consumption of fibreboard increased in 2014 in North America (by 4.2%) and Europe (by 6.6%) but declined in the CIS (by 1.0%).

Wood-based panel production increased by 3.5% in the UNECE region in 2014 and is projected to grow by another 1.3% in 2015. Production volumes increased for all panel types; the increases were low for plywood (1.0%) and particle board (1.8%) but relatively high for OSB (5.4%) and medium-density fibreboard (MDF) (3.4%). The increase in production volume for plywood, particle board and MDF is expected to be in the range of 1.0-1.3% in 2015. In contrast, the rapidly emerging OSB industry in the Russian Federation is expected to propel growth in OSB production in the UNECE region by 10.1% in 2015.

Both the US and the CIS had trade deficits in wood panels in 2014, while Europe showed a slight trade surplus (although the surplus was much lower than in 2013). The trade deficit in wood-based panels increased by 62% in North America in 2014, but it declined by 39.1% in the CIS. UNECE projections suggest that all three subregions will report trade deficits in 2015.

1.5.5 Paper, paperboard and woodpulp

The pulp, paper and paperboard market was once again in flux in 2014 as large concentrations of graphic paper capacity continued to be rationalized in Europe and North America. This development has persisted for well over a decade. South American expansions of chemical market pulp capacity continued to affect UNECE producers, with tonnage easily absorbed by the tissue and packaging segments and by consumers wanting to reduce their use of higher-cost softwood kraft grades. Southeast Asia remained the favoured target market, despite a marked slowdown in the level of investment in new paper and paperboard installations to serve rapidly growing economies. The ramifications of these and other changes are being felt globally.

Despite significant capacity closures in several graphic paper grades in Europe, Japan and North America in 2014, there is still excess production capacity if measured against falling or static demand; as a result, prices have deteriorated. Apparent consumption in Europe rose in 2014, aided by stronger economic activity, but fell in North America due to the ongoing negative impacts of the growth of electronic media, which has largely affected demand for graphic papers. Graphic paper and chemical woodpulp output fell in both Europe and North America. In the CIS, production and apparent consumption both increased due to ongoing investment in capacity.

Global demand for pulp and paperboard grew in 2014, but graphic paper consumption fell. Electronic communication continued to play a major role in the evolution of the pulp and paper segments, with paperboard benefiting from increased online shopping.

In the pulp sector, the expansion of bleached hardwood kraft capacity in South America was by far the most important factor influencing the market in 2014 and the first half of 2015. In the paper sector, the trend continues of converting to the production of paperboard and packaging grades.

Prices in the pulp sector generally corrected in 2014. Prices for hardwood kraft grades rebounded, reflecting a significant price advantage compared with higher-priced softwood-based pulps. By mid-2015, pulp prices appeared to have stagnated due to low pricing for end-use products – particularly graphic grades – and unfavourable currency plays against the rising US dollar. Weaker currencies have, however, provided export opportunities and improved margins for pulp and paper producers.

1.5.6 Wood energy

Wood energy markets are developing strongly, with wood remaining the single most important source of renewable energy in the UNECE region. The contribution of wood to renewable energy portfolios is decreasing, however, because wind and solar energy are developing faster.

The forest-based industry is the largest consumer of wood energy (43.9%), followed by the residential (35.8%) and power-

Source: UNECE/FAO, 2015.

and-heat (17.3%) sectors. Wood for energy (by volume of wood used) in 2013 was derived mainly from wood-processing co-products (57.8%) and direct (36.4%) sources, including trees in and outside forests.

The wood pellet manufacturing sector is dynamic, undergoing important organizational restructuring in 2014, including downstream expansion into retail and distribution. Per capita wood pellet consumption increased significantly in the UNECE region between 2011 and 2013, from 25.9 kg to 38.8 kg. Standardization is important for the expansion of pellet markets, and the International Organization for Standardization (ISO) issued standards for forest-based solid biofuels under ISO 17225. Expected growth in wood pellet demand, which some estimate will reach about 50 million tonnes by 2024, drives investments in new manufacturing capacity.

Public policy plays an important role in the current use and future expansion (or contraction) of wood energy markets. For example, issues such as legality assurance, minimum combustion efficiency, maximum levels of particulate matter, and net greenhouse-gas emissions are being incorporated into regulatory frameworks at the national and regional levels.

1.5.7 Value-added wood products

The value of global furniture production was estimated at $480 billion in 2014, an increase of almost 10% compared with 2013. The global economic recovery led by the US is fuelling construction demand, which, in turn, is the major driver of increased furniture consumption. Furniture manufacturing is increasingly taking place inside the UNECE region as the benefits of producing furniture in lower-cost countries decline.

Markets for builders' joinery and carpentry (BJC) products are recovering swiftly in Germany and the US, but other markets in Europe are flat. German imports grew by 9.5% in 2014, and the US market experienced a third consecutive year of solid growth. BJC markets are typically local, and manufacturing abroad is not as profitable as it is for wooden furniture. Nevertheless, about one-third of UK and US imports originate in Asia.

Profiled wood markets continue to recover in the US. Import growth increased by 58% from 2010 to 2014, concentrated in a few producer countries with comparative advantages. Profiled wood markets in Europe, which are more local, continued to stagnate in 2014.

Global wood laminate flooring production increased from 925 million m^2 in 2013 to 940 million m^2 in 2014. The largest producers were China, which accounted for 27% of production in 2014, and Germany, which accounted for 25%. Turkey's production is growing in importance, accounting for 10% of global production in 2014, replacing the US as the world's third-largest producer of this product.

The consumption of engineered wood products (I-beams, finger-jointed sawnwood, glue-laminated beams, laminated veneer lumber and CLT) in North America has recovered modestly since the bottoming-out of building construction activity. Data for engineered wood were unavailable for Europe in 2014, except for CLT. About 90% of CLT production worldwide is in Europe, with a total production volume of 560 thousand m^3 in 2014, forecast to increase to about 630 thousand m^3 by the end of 2015. The global distribution of CLT production is likely to change, however, with new capacity planned in Japan and North America. National CLT production volume is not necessarily proportional to national consumption – the central European timber industry is strongly export-oriented, supplying other parts of Europe as well as overseas markets. CLT has become an important material in urban multistorey residential and public buildings.

Source: G. Schickhofer, 2015.

Worldwide, the use of CLT as a building product is expected to grow at rates in the double digits. Within the next decade, CLT could become as important as glue-laminated timber, and it is likely to extend the height limits of tall wooden buildings upwards. The current record-holder is "The Tree" in Bergen, Norway, at 14 storeys.

1.5.8 Housing

Although the housing construction sectors in North America and Europe are improving, they are yet to fully recover from the global financial crisis. The Russian housing sector is improving steadily, with a record number of units built in 2014. The construction sectors of all three UNECE subregions are affected by tepid or declining aggregate economies.

Housing in the Euroconstruct region[4] remains hindered by sluggish economies in several countries and by potential international risk, and all subsectors of housing construction are forecast to remain steady through 2017. Germany, France, Italy, the UK and Spain (in descending order, by market value)

[4] The Euroconstruct region comprises 19 countries. The western area consists of Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the UK. The eastern area comprises the Czech Republic, Hungary, Poland and Slovakia.

are projected to have the largest combined new construction and remodelling markets (value basis) through 2017.

The US housing market is yet to fully recover. Multifamily housing permits and starts in 2014 are above where they have been for the last 20 years, but single-family housing starts are at about 60% of their historical average. New housing sales have increased, but they are still as low as they have been since the early 1980s. Spending on single-family construction increased in 2014, but spending on remodelling and multifamily construction appeared to level off. The US forecast is for incremental improvement through 2016. Canada's housing market was steady in 2014, and projections are for a gradual improvement in starts and sales through 2016.

Housing completions in the Russian Federation reached record levels in 2014, with 1.08 million new residences completed, a year-over-year increase of 20.3%, while residential floor area put in place increased by 18.6%. The number of residences put in place in 2014 and their total floor area were both the highest in Russian history. Moreover, the number of residences put in place from January to May 2015 was nearly 25% higher than inthe same period in 2014.

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2 POLICIES SHAPING FOREST PRODUCTS MARKETS

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HIGHLIGHTS

- The European Commission adopted the European Forest Strategy in September 2013 and, since then, various EU entities have adopted conclusions or opinions on the strategy; these include the Agriculture and Fisheries Council conclusions, the Economic and Social Committee opinion, and the Committee of the Regions opinion.
- Negotiations between the EU and the US on a trade agreement called the Transatlantic Trade and Investment Partnership began in July 2013. In April 2015, the US Congress made progress on the Trade Priorities and Accountability Act, which aims to advance such trade agreements.
- The EU Emissions Trading System dominates world carbon markets, accounting for more than 80% of the volume and 90% of the value, but oversupply and a drop in the carbon price in 2014 affected the market's stability and its ability to reduce emissions. According to the European Commission, the accumulated surplus of unsold carbon in the system exceeded 2.1 billion tonnes in 2014, which is more than a year's supply.
- The oversupply of unsold carbon caused prices to collapse to levels that do not deter coal-burning. This led the EU to tighten supply in the €40 billion ($50 billion) emissions market. The price of emission rights were expected to increase significantly by mid 2015.
- The US Green Building Council approved version 4 of the Leadership in Energy and Environmental Design green building standard in June 2013, but the transition to LEED v4 has been postponed to October 2016.

2.1 INTRODUCTION

Wood is a diverse material that enables great innovation. The use of wood and the management of the forest resource from which it is derived have influence across policies, markets and economies. The growth of the green economy depends on the development of policies and market-based instruments that support further innovation and diversification of forest product markets while also addressing environmental concerns and social needs.

The EU Forest Strategy, which was adopted on 20 September 2013, responds to the challenges facing the forest sector and to key policy developments in the EU. Policy developments include Europe 2020 (a strategy for growth and jobs); the Resource Efficiency Roadmap; the Rural Development Policy; the Industrial Policy; the Climate and Energy Package (with its 2020 targets); the Plant Health and Reproductive Materials Strategy; and the Biodiversity and Bioeconomy strategies (European Commission, 2013). Various bodies have adopted conclusions or opinions on the EU Forest Strategy since its initial adoption, including the Agriculture and Fisheries Council's conclusions, the Economic and Social Committee's opinion, and the Committee of the Regions' opinion (European Commission, 2015a).

2.2 TRADE-RELATED

2.2.1 Transatlantic free trade

The EU and Canada concluded negotiations on the Comprehensive Economic and Trade Agreement in September 2014. The text of this agreement will now undergo a legal review followed by a translation into all official languages of the EU. At a later stage, the agreement will need to be approved by the Council and the European Parliament (European Commission, 2015e).

The Transatlantic Trade and Investment Partnership (TTIP) trade agreement between the EU and the US is still under negotiation. The goal of the TTIP is to remove trade barriers from a wide range of economic sectors and to make it easier to trade goods and services between the two parties. Negotiations began in July 2013 and are expected to continue through 2015. In April 2015, the US Congress made progress on the Trade Priorities and Accountability Act, which aims to advance trade agreements like the TTIP and the Trans-Pacific Partnership (Council on Foreign Relations, 2015).

2.2.2 US and Canada forest trade and policy

The Softwood Lumber Agreement (SLA) between Canada and the US is set to expire on 12 October 2015. The SLA has been in place since 2006 and addresses tariffs on lumber traded between the two countries. With the recent recovery in the US housing market, there is increased potential for conflict over the agreement as demand for softwood lumber grows. Although the SLA will expire, it allows up to two years for the two nations to establish a revised policy. In 2014 and the first quarter of 2015, the effective SLA export tax on western Canadian shipments to the US was zero; however, an export tax of 5% was imposed in April and May 2015 for the first time since October 2013 (Random Lengths, 2015).

Also related to Canada's forest policy is the Canadian Boreal Forest Agreement (CBFA), which addresses sustainable forest management and applies to more than 73 million hectares of forestland. The CBFA encompasses seven conservation organizations, 19 forest companies and 51% of the forests in Canada's boreal region (CBFA, 2015). A report on ecosystem-based management (EBM) released by the CBFA in August 2014 (Van Damme et al., 2014) concluded, among other things, that several policy gaps remain that limit the full implementation of EBM. These include weak links to EBM in operations; a lack of clear standards for including EBM in forest management practices; few examples of integrated land-use planning and assessment capacity; and the poor quality of input data to support effective EBM.

2.2.3 CIS forest trade and policy

There have been changes in more than 40 forest policy regulations in the Russian Federation in the last two years. The most important of these is the development of a system for monitoring harvested timber, EGAIS, which was launched in 2014. As of July 2014, all freight traffic of harvested timber must have supporting documentation establishing its origin (Rossiyskaya Gazeta, 2014). After July 2015, forest users will register transactions via an electronic form; administrative responsibility for violation of the rules of the Federal Law will come into force in January 2016.

The 72nd Session of the UNECE Committee on Forests and the Forest Industry was held in Kazan in November 2014, which was a significant event for Russian forestry. The key themes of the session were the contributions of forests to a green economy; domestic and international markets for timber products; and sustainable forest management as a way of addressing climate change (UNECE, 2014).

The World Bank approved a $40.71 million loan to Belarus in March 2015 for a new forestry development project designed

Source: UNECE/FAO, 2014.

to enhance silvicultural management, reforestation and afforestation, increase the use of felling residues, and increase the overall contribution of forests to sustainable development. The project is also financed by a grant of $2.74 million from the Global Environment Facility (World Bank, 2015).

The Russian Government and the World Bank began implementing a new joint project on forest fire prevention and management in February 2014. Efforts have centred on policy development, institutional strengthening, information and land-use planning systems, and strengthening regional forest inventory and pest management organizations. The project's development objectives are to improve forest fire prevention and suppression efforts in select forest ecosystems, including targeted protected areas, and to enhance forest management in pilot regions. Forest policy, legislation and silviculture play important roles in the likelihood, extent and severity of forest fire (World Bank, 2014; Rosleshoz, 2014).

The Russian Government increased stumpage prices by 5% in 2015, and similar changes are planned for 2016 and 2017 (Rossiyskaya Gazeta, 2014). The percentage increase is much lower than the real inflation in the economy and should not have a significant impact on forest businesses.

2.2.4 Due diligence and legal wood supply

2.2.4.1 EU Forest Law Enforcement, Governance and Trade

As of 2015, the EU Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan has been in force for 12 years (figure 2.2.1). A key output of the FLEGT Action Plan is the signing of voluntary partnership agreements (VPAs) between the EU and tropical timber-supplying countries. As of May 2014, six exporting countries had signed VPAs – Cameroon, the Central African Republic, the Congo, Ghana, Indonesia and Liberia; this number was unchanged as of May 2015. Nine other countries are in negotiation with the EU on VPAs, and 11 countries have expressed interest (EU FLEGT Facility, 2015).

VPAs engage partner countries in the development of legality assurance systems for timber exported to the EU. Technical and political challenges, particularly linked to ensuring wide stakeholder acceptance and equitable market access by small and medium-sized enterprises (SMEs), continue to delay the issuance of the first licences. Indonesia is expected to deliver the first FLEGT-licensed timber to the EU in early 2016, followed by Ghana later in the same year. A five-year ITTO project was launched in March 2014 with EU financial support to establish the FLEGT Independent Market Monitoring (IMM) mechanism with the aim of regularly assessing the market influence of the FLEGT process.

The EU Timber Regulation (EUTR) has been in effect for two years (figure 2.2.1). By 31 May 2015, 23 of the 28 EU member states had fulfilled their legal obligations to establish "EUTR competent authorities" and sanctions regimes and to begin checks on EU operators. The remaining five member states (Greece, Hungary, Poland, Romania and Spain) were still in the fulfilment process. Significant efforts have been made to increase the coverage of EUTR monitoring organizations, which reduce the cost of EUTR compliance for small operators by providing group due-diligence systems. The number of EUTR monitoring organizations formally recognized by the EU increased from three in January 2014 to 11 in May 2015. The EU's first biennial review of EUTR implementation, including a stakeholder consultation process, is underway (European Commission, 2015b). An analysis of EU trade flows for the biennial review did not identify any step-change in trade resulting from the EUTR, but it did note that the regulation is reinforcing existing trends, for example in reducing speculative purchasing and focusing EU imports on a more limited range of operators able to offer reliable legality assurances (IMM, 2015).

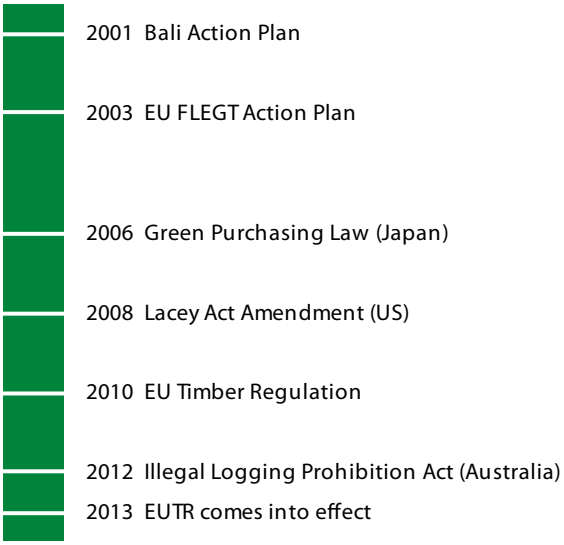
A recent assessment (Jonsson et al., 2015) reviewed the effectiveness of the FLEGT Action Plan and the EUTR to date and made the following major findings:

- The FLEGT/VPA process has resulted in forest governance improvements and could be more successful if it went beyond legality to include socioeconomic development objectives.
- Imports of illegal timber products may have been reduced due to these policies, and prices for legal imports from the same countries of origin have trended higher.
- Stakeholder awareness of illegal logging concerns has increased.
- More research is needed to verify whether illegal logging has been reduced as a result of the policies.
- The assessment further concluded that the implementation of the EUTR remains challenging and inconsistent across EU member states; cooperation with industry is needed for effective implementation;
- China, Japan and the US are notable key partners in the success of the EUTR; and support is needed for broader sustainability considerations beyond legality and to enable SMEs to participate in market opportunities.

The Global Timber Forum held its first annual summit in Shanghai, China, in June 2015. The key focus of the summit was on valuing the timber and forestry resource, with delegates considering how the wood industry worldwide could maximize the commercial potential of legal and sustainable forestry and timber production. Chinese speakers highlighted the need for closer and more consistent international guidance, rules and codes of conduct on legality, due diligence and forest certification, particularly stressing the challenges to SMEs in following the latest international developments. Australian, European and North American delegates indicated that the importing and retailing industries are willing to work with Chinese and other overseas producers to ensure their conformance with the new regulations.

Those delegates also stressed the importance of transparency and legal compliance as pre-requisites for building trust with consumers, and for exploiting high-value market opportunities, such as those arising in green building (GTF, 2015b).

FIGURE 2.2.1
Timeline of major actions to fight illegal logging



Source: Jonsson et al., 2015.

2.2.4.2 Lacey Act

The US Lacey Act, which was passed into law in 1900, addresses trafficking in wildlife, fish and plants that have been illegally taken, possessed, transported or sold. After a series of amendments in 2008, the Act now requires that import declarations accompany certain plants and plant products, including a wide range of wood and forest products (USDA, 2012). Under the amendments, businesses are required to exercise increased due diligence in sourcing and selling wood and wood products (Beveridge and Diamond, 2009).

Following the resolution of the Gibson Guitar case in 2012 (US Department of Justice, 2012), a new dispute arose affecting the company Lumber Liquidators. Offices of Lumber Liquidators were raided in September 2013, based on allegations of links to illegal logging activities. In April 2015 it was announced that the US Justice Department was seeking criminal charges against the company under the Lacey Act (AP, 2015).

2.2.5 Wood high in national agendas

Wood and wood products were in the media and policy spotlight in Belarus, Bulgaria, Romania and Ukraine in early 2015. Wood export bans were a common topic of discussion, and those countries are considering implementing, or have already implemented, such bans.

Bulgaria's Parliament approved a three-month moratorium on log exports in March 2015. The objective was to secure time for legal amendments to the new forest act aimed at reducing illegal felling (Focus, 2015).

In April 2015 the Ukrainian Parliament approved a legislative proposal banning exports of unprocessed roundwood for ten years. The purposes of the proposed law are to prevent illegal deforestation, minimize corruption in the industry, and encourage the development of the domestic wood-processing industry. The ban will enter into force on 1 January 2016 for all species except pine. The ban on pine will be applicable from 1 January 2017 (Canadian Forest Industries, 2015).

Romania's Chamber of Deputies passed a new Forestry Code in May 2015, introducing a maximum threshold on the amount of each individual wood type harvested in Romanian forests that may be processed by a single company. The code also provides for pre-emptive rights for furniture producers when buying wood (GTF, 2015a). In response to concerns about illegal logging, the Romanian Government announced plans in May 2015 to introduce an emergency temporary ban on exports of unprocessed roundwood (IHB, 2015a).

Exporting roundwood from Belarus is also likely to become more difficult. The Belarusian President, Alexander Lukashenko, signed decree No. 211 on 20 May 2015, the objective of which is to increase the share of wood processed within the country. The decree restricts export sales of pulpwood, veneer logs and sawlogs effective 1 January 2016, unless otherwise authorized by the Belarus President (IHB, 2015b).

2.3 ENERGY-RELATED

2.3.1 Ethanol and liquid fuels

The EU 2009 Renewable Energy Directive (RED) established an overall target for renewable energy in the transport sector of 10% by 2020. This affects the forest products sector in two ways: 1) indirectly through increased demand for agricultural crops, which could increase land use change; and 2) directly by creating demand for second-generation liquid biofuels from lignocellulosic biomass, including woody crops and wood waste. RED requires that biofuels achieve a minimum 35% net reduction in greenhouse-gas (GHG) emissions compared with fossil fuels. The minimum GHG reduction increases to 50% by 2017 and to 60% for new installations from 2018. A European Commission review of progress towards the 10% target found that the projected share of renewable energy in the transport sector across the EU was 5.7% in 2014, with some EU countries making good progress and the EU dedicating 3% of total cropland to biofuel production. The review concluded that the target is challenging but feasible (European Commission, 2015c). The European Parliament voted on 28 April 2015 to approve the indirect land use change (ILUC) Directive, which imposes a cap of 7% on the contribution of biofuels produced from food crops and establishes an indicative target that at least 0.5% of transport is fuelled by second-generation biofuels (European Parliament, 2015).

While biofuel industry associations welcomed the new directive for reducing regulatory uncertainty, they suggested that 0.5% was insufficiently ambitious to foster the wide-scale deployment of second-generation biofuels in the EU (EBTP, 2015).

2.3.2 Biomass

EU member states are collectively under a legal obligation by the RED to more than double total renewable energy

generation above 2005 levels by 2020 (European Commission, 2014a). The consumption of biomass for heating and electricity in the EU has grown significantly since 2005. According to the data provided in the National Renewable Energy Action Plans (NREAPs) prepared by individual EU countries, biomass consumption for heating and electricity is expected to increase from 86.5 million tonnes of oil equivalent (Mtoe) in 2012 to 110.5 Mtoe in 2020. NREAPs forecasts that forest-based biomass supply will grow from 71 Mtoe in 2012 to 73.6 Mtoe in 2020, although its relative share of overall biomass supply will decline from 74% to 56%. NREAPs also foresee a mobilization of an additional 95 million m^3 of wood fibre for energy use by 2020 compared with 2006. While most of the EU's solid biomass consumption will still be met by domestic supplies, a supply gap of about 21.4 Mtoe is projected for 2020. This is likely to be met by imports, mainly from the US and Canada, followed by the Russian Federation, Ukraine and Belarus, largely in the form of wood pellets and, to a lesser extent, wood chips.

The EU has not introduced binding criteria for the sustainability of biomass or solid and gaseous biomass used for electricity, heating and cooling and instead relies on non-binding recommendations to member states on national sustainability requirements. Belgium, Hungary, the Netherlands and the UK have introduced specific sustainable forest management criteria for forest biomass as well as land criteria for agricultural biomass. Belgium, Italy, the Netherlands and the UK have also adopted GHG-saving criteria for biomass used in electricity/heating.

A number of major European utilities that use biomass in large thermal power plants, mostly in the form of wood pellets, have established the Sustainable Biomass Partnership as an industry-led project to develop sustainability standards and processes (Sustainable Biomass Partnership, 2015).

A recent review of 59 published studies (Buckholz et al., 2015) concluded that the inclusion of wildfire dynamics was highly influential in determining carbon balances in forest bioenergy sources. According to the review, biomass may provide immediate carbon benefits when sourced from fire-prone regions, where the open burning of residues is common practice, and natural disturbances had greater influence on study results than factors such as feedstock type, baseline and leakage. The review recommended the prioritization of accounting principles that provide consistent consideration of natural disturbance regimes, temporal scales, and system boundaries.

Source: UNECE/FAO, 2015.

Environmental groups continue to highlight the potential negative consequences of an increased reliance on biomass and to argue that biomass has only a limited role to play in reducing carbon emissions (FERN, 2015). In contrast, an extensive study of the status and future potential of global bioenergy resources, systems and markets (SCOPE, 2015) suggested that as much as 30% of the world's fuel supply could be bio-based by 2050, although it also found that the implementation of successful bioenergy production systems will require clear sustainability metrics and monitoring programmes, stable land tenure, and effective local and national governance, conditions not yet established in many countries.

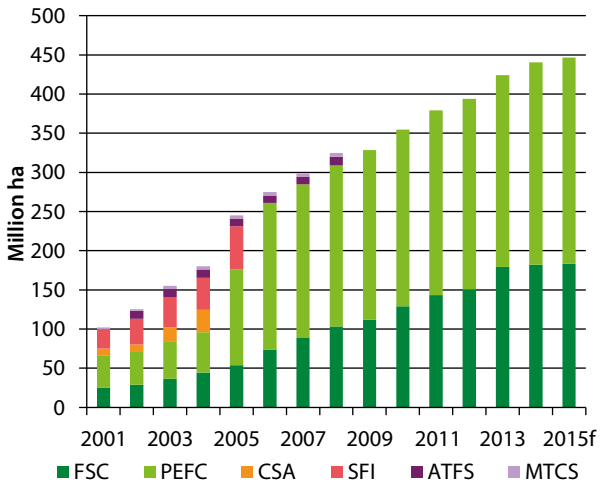
2.4 ENVIRONMENT-RELATED

2.4.1 Certified forest products

The major certification schemes, the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC), reported a global total of 446.5 million hectares of forestlands certified against their standards (includes an estimated 7.5 million hectares certified under both schemes) as of May 2015 (graph 2.4.1). This was an increase of 6.2 million hectares (1.4%) over the previous 12 months, although the increase was about 10 million hectares less than that seen in the preceding 12-month period.

GRAPH 2.4.1

Cumulative forest area certified by major certification schemes, 2001-2015



Notes: FSC data as of May 2015; PEFC data up to and including December 2014. Data for systems endorsed by the PEFC (the American Tree Farm System – ATFS, the Canadian Standards Association – CSA, the Malaysian Timber Certification Scheme – MTCS, and the Sustainable Forestry Initiative – SFI) are included in the PEFC data after the date of endorsement. The data shown do not take into account an estimated overlap of 7.5 million hectares (as of May 2015). f = forecast.

Sources: FAO, 2010; FSC, 2015a; PEFC, 2014; PEFC, 2015d; WWF, 2015.

The global area certified under the FSC was up by 1.1 million hectares (0.6%) compared with the previous 12 months, and the global area certified under PEFC was up by 5.1 million hectares (2%). In the case of the PEFC, data are reported to December 2014, and more forest may have been certified to May 2015. The PEFC reported a total of 263.2 million hectares in 31 countries (three countries more than in the previous survey); the FSC reported 183.3 million hectares in the same 81 countries as for the previous 12 months.

The estimated overlap of 7.5 million hectares due to double certification (i.e. forest certified under both the FSC and the PEFC) was the same as reported in the previous 12 months. More than 80% of the double certification is in Europe (3.5 million hectares) and North America (2.6 million hectares). Taking this double certification into account, the world's total certified forest area as of May 2015 was about 439 million hectares, which is 10.9% of the total global forest area (4.033 billion hectares).

Although the growth of certified forest area is slowing, there are possibilities for increases in the vast forest areas of the Russian Federation, the tropics and the Southern Hemisphere. Nevertheless, substantial growth in these regions seems far away, and it may be time for diversification and new approaches to certification. For example, a monitoring tool for REDD+ is under discussion; the drivers and incentives of certification could be enhanced if certification schemes could be used simultaneously to ensure sustainable forest management, monitor illegal logging, and deliver other accountability benefits.

2.4.1.1 Internal developments in certification schemes

The process of developing the FSC's international generic indicators (IGIs) has moved forward, with FSC International's board of directors approving the IGIs in March 2015. The IGIs are now available to be used in the development of national or subregional FSC standards (FSC, 2015b).

FSC International's board decided in February 2015 to disassociate itself from the Dalhoff Larsen and Horneman (DLH) Group. This resulted in the immediate termination of DLH's FSC membership, while the suspension of its FSC certificates was to take effect within three months. As of May 2015, the DLH Group holds FSC chain-of-custody and controlled-wood certificates for broker activities and has registered offices in Denmark, Hong Kong and Viet Nam (FSC, 2015f). The decision to disassociate was based on evidence that DLH had been involved in illegal timber trade in Liberia (FSC, 2015d). In January 2015, the FSC also confirmed the suspension of operations at its Polish national office, effective on 30 December 2014. The suspension was based on a failure of the office to implement the required governance structure and to address stakeholder concerns. Existing Polish FSC certificates are unaffected, and responsibility for the FSC Polish National Standard has been transferred to FSC headquarters in Germany (FSC, 2015e).

In North America, the Sustainable Forestry Initiative (SFI) completed a five-year standards review cycle in 2014 and launched the new 2015-2019 standard in January 2015 (SFI, 2015a). Revisions to the SFI standard include establishing separate standards for forest management, fibre sourcing and chain of custody. Revisions to the SFI Forest Management Standard include additional requirements addressing prohibitions on forest conversion and limits on chemical use. Standards were also improved or clarified to address comprehensive water-quality protections, the conservation of biological diversity, indigenous peoples' rights, and forest tree biotechnology. The forest area certified to the SFI Forest Management Standard now exceeds 250 million acres (100 million hectares) (SFI, 2015b).

Canada's National Standard on Sustainable Forest Management, CAN/CSA-Z809, is undergoing a revision process, which is expected to be completed by April 2016 (CSA, 2015).

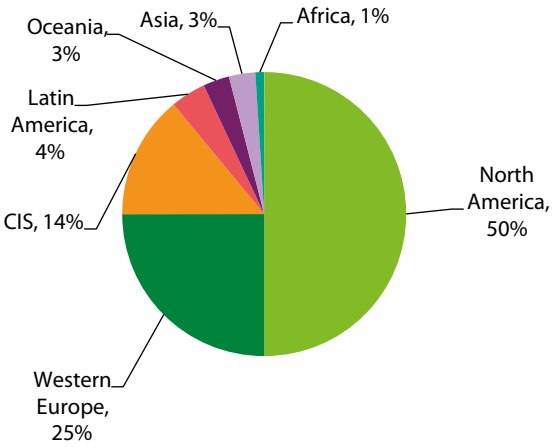
In March 2015, the PEFC announced the launch of a process to develop a forest certification system in India; China, Indonesia and Malaysia had previously established PEFC-endorsed systems in Asia (PEFC, 2015a). The process to develop a standard in Cameroon has progressed to the public consultation phase, one of the final steps before a standard is submitted for PEFC endorsement (PEFC, 2015b). The PEFC continues to work to expand forest certification opportunities in South America, including by convening a PEFC regional conference and workshop in Uruguay in April 2015 to bring together South American PEFC members, national system experts and stakeholders with other countries in the region who are interested in developing their own certification systems (PEFC, 2015c).

2.4.1.2 Regional aspects

Slightly less than 90% of the globally certified area is in the Northern Hemisphere (graph 2.4.2). Graph 2.4.3 shows the change in certified forest area under the FSC and the PEFC in North America, Europe and the CIS in the period 2013-2015.

GRAPH 2.4.2

Area of forest management certification, by region, 2014-2015

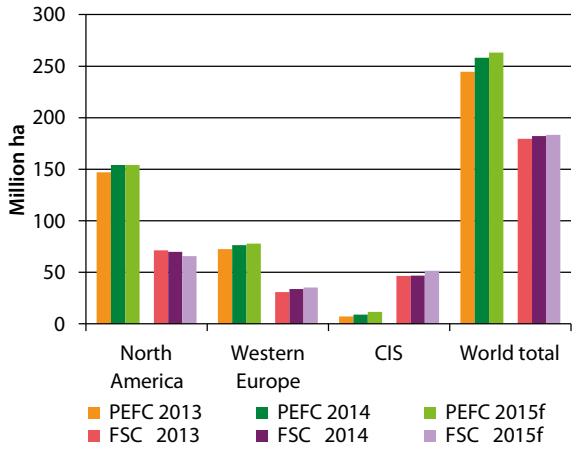


Notes: Data for systems endorsed by the PEFC (the American Tree Farm System – ATFS, the Canadian Standards Association – CSA, the Malaysian Timber Certification Scheme – MTCS, and the Sustainable Forestry Initiative – SFI) are included in the PEFC data after the date of endorsement. The data shown take into account an estimated overlap of 7.5 million hectares (as of May 2015). FSC data are as of May 2015; PEFC data are as of December 2014.

Sources: FAO, 2010; FSC, 2015a; PEFC, 2014; PEFC, 2015d; WWF, 2015.

GRAPH 2.4.3

Certified forest area by region and certification scheme,2013-2015



Notes: Data for systems endorsed by the PEFC (the American Tree Farm System – ATFS, the Canadian Standards Association – CSA, the Malaysian Timber Certification Scheme – MTCS, and the Sustainable Forestry Initiative – SFI) are included in the PEFC data after the date of endorsement. The data shown take into account an estimated overlap of 7.5 million hectares (as of May 2015). FSC data are as of May 2015; PEFC data are as of December 2014. f = forecast.

Sources: FAO, 2010; FSC, 2015a; PEFC, 2014; PEFC, 2015d; WWF, 2015.

2.4.1.3 Certified forest timber production.

The forest area certified under the PEFC in North America is more than double the area certified under that scheme in western Europe; smaller areas are certified under the PEFC in Asia, the CIS, Oceania and Latin America. To date, no forest area is certified under the PEFC in Africa. In contrast to previous years, the PEFC reported increases in the area of certified forest in all its regions of activity in 2014.

The CIS and European subregions were growth areas for FSC certification in 2014-2015, while Africa stagnated. The area of FSC-certified forest area declined in other regions, notably North America, although that subregion still holds the largest share of FSC-certified forests, followed by the CIS and then western Europe.

Even though the industrial roundwood production from certified forest is estimated to have increased annually for some years, table 2.4.1 shows that this trend has slowed, due partly to a decline in the area of certified forest in North America of about 4 million hectares. In 2015, for the second year in a row, production in certified forests in western Europe is estimated to have exceeded the production in certified forests in North America. Certified production increased slightly in the CIS in 2015 and decreased in Asia.

2.4.1.4 Chain-of-custody certification

The number of chain-of-custody (CoC) certificates grew by 12% in the period 2012-2013, by 6% in 2013-2014 and by 4.7% in 2014-2015, to a total of 39,609 active CoC certificates in May 2015. In the 12 months to May 2015, the number of CoC certificates increased by 1,258 for the FSC and by 513 for the PEFC (graph 2.4.4).

The International Organization for Standardization (ISO) recently announced that development of the ISO 38001 standard for wood and wood-based product CoC, led by ISO project committee ISO/PC 287, has reached the first consultation phase. ISO members have until October 2015 to comment on the draft standard, which is expected to be published in May 2017 (ISO, 2015).

TABLE 2.4.1

Potential global and regional supply of roundwood from certified resources, 2013-2015

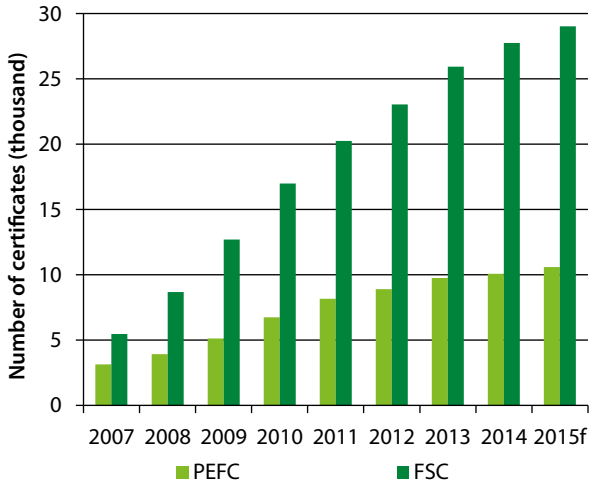
	Total forest area (million ha)	*Certified forest area (million ha)*			*Certified forest area (%)*			*Estimated industrial roundwood from certified forests (million m³)*			*Estimated proportion of total roundwood production from certified forests (%)*		
		2013	*2014*	*2015*	*2013*	*2014*	*2015*	*2013*	*2014*	*2015*	*2013*	*2014*	*2015*
North America	614.2	215.8	221.3	217.3	35.1	36.0	35.4	244.2	250.5	245.9	13.8	14.1	13.9
Western Europe	168.1	100.2	106.6	109.6	59.6	63.4	65.2	236.1	251.1	258.1	13.3	14.2	14.6
CIS	836.9	53.4	55.5	62.9	6.4	6.6	7.5	10.2	10.6	12.0	0.6	0.6	0.7
Oceania	191.4	11.9	12.6	12.5	6.2	6.6	6.5	3.4	3.6	3.6	0.2	0.2	0.2
Africa	674.4	7.5	6.4	6.5	1.1	1.0	1.0	2.2	1.9	2.0	0.1	0.1	0.1
Latin America	955.6	15.7	16.3	17.1	1.5	1.7	1.8	1.2	1.2	1.3	0.1	0.1	0.1
Asia	592.5	12.5	14.1	13.1	1.6	2.4	2.2	4.0	4.5	4.2	0.2	0.3	0.2
World total	4,033.1	417.0	432.8	439.0	10.3	10.7	10.9	501.3	523.4	527.1	28.3	29.6	29.8

Notes: Estimates of forest area (excluding "other wooded land") and industrial roundwood production from certified forests are based on data in FAO (2010). The annual roundwood production in "forests available for wood supply" in a given region or subregion is multiplied by the percentage of that region or subregion's certified forest area (i.e. it is assumed that the removals of industrial roundwood from each hectare of certified forest is the same as the average for all forest available for wood supply). Not all certified roundwood is sold with a label. "2015" covers May 2014 to May 2015, and 2013 and 2014 are also from May to May. "World" is not a simple total of the regions and subregions.

Sources: Canadian Sustainable Forestry Certification Coalition, 2015, and authors' compilation. Information valid as of May 2015. FSC data are as of May 2015; PEFC data are as of December 2014.

GRAPH 2.4.4

Number of chain-of-custody certificates issued globally by the FSC and the PEFC, 2007-2015



Notes: Numbers denote CoC certificates irrespective of the size of the individual companies or of production or trade volume. FSC data are as of May 2015; PEFC data are as of December 2014. f = forecast.

Sources: FAO, 2010; FSC, 2015a; PEFC 2014; PEFC 2015d; WWF 2015.

2.5 CARBON-RELATE

2.5.1 Climate change and carbon markets

The 20th Conference of the Parties of the United Nations Framework Convention on Climate Change (UNFCCC) was held in Lima, Peru, in 2014. It was the third part of a four-part round of negotiations to be completed in Paris in 2015; there, Parties to the UNFCCC are to adopt the "Paris Protocol" to replace the Kyoto Protocol (Center for Climate and Energy Solutions, 2014).

Twenty-four additional Clean Development Mechanism (CDM) projects were registered in February 2015, bringing the total number of registered active CDM projects to 7,722. An additional 1,002 projects are undergoing validation and 11 have requested registration. The monthly issuance in March 2015 comprised 3.9 million certified emission reductions (MCERs), bringing the total issuance to 1,545 MCERs. The voluntary cancellations of CERs in the central registry now total 2.9 MCERs (Fenhann and Antonsen, 2015).

Projects focusing on afforestation and reforestation represent 1% of CDM projects globally, while those focusing on biomass energy account for 8.8%. Israel has the most registered CDM projects in the UNECE region, with 37, followed by Albania (11) and Cyprus and the Republic of Moldova (ten each). Albania is the only country in the UNECE region with a significant number of projects (five) on reforestation.

The EU and its member states have committed to a binding minimum target of a 40% domestic reduction in green house gas (GHG) emissions from 1990 levels by 2030. EU Decision 529/2013 on land use, land-use change and forestry is in the second commitment period of the Kyoto Protocol. The European Commission will submit legislative proposals for implementing the 2030 climate and energy framework to the Council and European Parliament in 2015-2016, covering both traded and non-traded emissions. Switzerland has committed to an emissions reduction target of 50% by 2030 relative to 1990 levels (UNFCCC, 2015a). Emissions or removals from forestland are not considered in the base year, according to the commitment (UNFCCC, 2015b). Norway has proposed to cut its emissions by at least 40% compared with 1990 levels by 2030. Emissions reduction targets are supposed to be developed into emissions budgets from 2021 to 2030 (UNFCCC, 2015c).

The EU Emissions Trading System dominates world carbon markets, accounting for more than 80% of the volume and 90% of the value (Climate News Network, 2014), but oversupply and a drop in the carbon price in 2014 affected the market's stability and its ability to reduce emissions. According to the European Commission, the accumulated surplus of unsold carbon in the system in 2014 exceeded 2.1 billion tonnes, which is more than a year's supply, causing prices to collapse to levels that do not deter coal-burning. In response, the EU tightened the supply in the €40 billion ($50 billion) emissions market, and the price of emission rights was expected to rise by 61% by 30 June 2015 (Carr, 2014). In early 2014 the European Commission published its legislative proposal for a market stability reserve in the EU Emissions Trading System. This measure would enable the Commission to add or remove carbon allowances from the system according to pre-set rules (Yougova, 2015).

In the US, the Forest Policy Forum, comprising US-based forest industry and trade groups, developed (with the counsel of conservation organizations) a set of principles for ensuring that the forest sector – from landowners to manufacturers – can contribute meaningfully to mitigating climate change. The principles focus on the positive carbon contributions of managed forests; the steps the sector can take to maintain and grow productive and managed forests in the US to sustain forest carbon; understanding public policy and market mechanisms and their effects on forests; and supporting innovation in the forest products sector that provides long-term benefits in addressing the carbon challenge (Forest Policy Forum, 2015).

The International Council of Forest and Paper Associations (ICFPA) released a progress report on sustainability within the sector in May 2015, its fifth such report since leadership commitments were made in 2006 (ICFPA, 2015). The ICFPA includes forest and paper associations from 33 countries and represents more than 90% of the world's paper production. Members from Australia, Brazil, Canada, Chile, China, Europe, Japan, New Zealand, South Africa and the US contributed data for the report. This found that ICFPA members had reduced GHG emissions intensity by 5% since the previous report and increased the share of bioenergy used. Members had also commenced reporting on a new indicator of "total onsite energy intensity". The report highlighted the sector's contributions to the green economy through resource efficiency, carbon sequestration and bio-based products and recognized the need for a policy framework that reduces regulatory risks for investments and innovation.

2.5.2 Green building

Legislative measures are now in place across the EU with the aim of increasing the energy performance of buildings, notably the 2010 Energy Performance of Buildings Directive 2010/31/EU (EPBD) and the 2012 Energy Efficiency Directive 2012/27/EU (EED). The EED requires member states to establish long-term strategies for mobilizing investment in the renewal of national building stocks. The pace of introduction of these measures varies widely across the EU, but overall the market for energy-efficient buildings is growing rapidly. Annual spending on energy-efficient buildings in Europe – including products and services – is forecast to grow from €41.4 billion ($56 billion) in 2014 to €80.8 billion ($109 billion) in 2023 (Navigant Research, 2014).

A UNECE review of public policies to promote sustainable building materials in Europe concluded that there is widespread awareness of the environmental impacts of the construction sector and of the mitigation role of wood. Some European countries have established minimum consumption targets for wood use in new buildings, but these policies can be problematic, both for designers, who may feel compelled to use wood products in suboptimal situations, and for non-wood product manufacturers, who may perceive unfair procurement practices. Rather than identifying specific materials for special treatment, a more constructive approach would be to encourage policies based on life-cycle assessment, which is gradually becoming used more widely in the EU (UNECE, 2015).

The European Commission's Communication on Resource Efficiency Opportunities in the Building Sector, which was published in July 2014, identified a continuing lack of reliable, comparable and affordable data, methods and tools with which operators in the supply chain can analyse and benchmark environmental performance. To overcome this, the European Commission will collaborate with stakeholders to develop a framework of core indicators, including their underlying methods, to be used in assessing the environmental performance of EU buildings throughout their life cycles (European Commission, 2014b).

LEED ("Leadership in Energy and Environmental Design") is a building rating and certification programme developed by the US Green Building Council (USGBC). USGBC members approved version 4 (v4) of LEED in June 2013. This moves away from a prescriptive basis for green building and toward a performance basis, with greater emphasis on the end use of systematic life-cycle assessment-based tools and information. Although the changes in LEED v4 are potentially significant and may benefit wood products, the USGBC announced in October 2014 that projects will be able to continue to be registered under the current LEED 2009 standard until 31 October 2016. More than 57 thousand commercial projects participate in the LEED programme; as of October 2014, 253 projects were registered under LEED v4, and nine LEED v4 projects had been certified (Kaplow, 2014).

Research continues to support the carbon and climate benefits associated with the expanded use of wood building systems. In the US, the majority of homes are built primarily of wood, and the current inventory of wood structures in the US is estimated to store 1.5 billion metric tonnes of carbon (equivalent to 5.4 billion metric tonnes of carbon dioxide). Maximizing the use of wood in multi-family housing, low-rise residential construction and remodelling in the US could result in a carbon storage benefit of about 21 million metric tonnes of carbon dioxide annually, which is equivalent to taking 4.4 million automobiles off the road (Howe et al., 2015).

Source: APA, 2013.

2.5.3 Environmental product declarations

The ECO Platform, which is supported by 25 providers of environmental product declarations (EPDs) from 17 European countries, provides a common framework for construction-sector EPDs in Europe. The ECO Platform is working to harmonize national EPD systems based on the ISO 14025 standard for environmental declarations and the EN 15804 standard for construction-sector EPDs. The first ECO Platform EPDs aligned to the harmonized procedures were issued in October 2014. More than 180 ECO Platform EPDs had been issued by June 2015, including several for wood-panel and veneer products.

As part of the EU's "Single Market for Green Products" initiative, the European Commission has developed a harmonized methodology for product environmental footprints (PEF) based on the International Reference Life Cycle Data System Handbook as well as other existing standards and guides (including ISO 14040-44, PAS 2050, BP X30, WRI/WBCSD GHG protocol, Sustainability Consortium, and ISO 14025). The methodology is being tested in a range of product sectors, although only one ("intermediate paper product") is related to forest products. A key part of the pilot phase is to engage industry interests in developing product environmental footprint category rules to provide specific guidance for calculating and reporting on the life-cycle environmental impacts of products (European Commission, 2015d).

Concerns have been raised by the European building industry that the PEF methodology[5], which is not based on EN 15804, may duplicate work already carried out to develop EPD standards and that efforts should be made to ensure that the

[5] The Product Environmental Footprint (PEF) is a multi-criteria measure of the environmental performance of a good or service throughout its life cycle.

two systems are mutually compatible in the construction sector (Piasecki, 2014).

In August 2014, the US Department of Agriculture announced the inclusion of more wood products in the BioPreferred programme, which previously had excluded products with mature markets. With this change in policy, diverse paper and wood products will be eligible to participate in the programme and to apply for BioPreferred labelling (USDA, 2014). A number of paper, tissue, packaging, lumber and other wood-product companies have either qualified for federal purchasing or are certified through the voluntary labelling initiative (USDA, 2015).

2.6 CONCLUSION

The use of wood and the management of the forest resource from which it is derived have influence across policies, markets and economies. The transition towards a green economy depends on the development of policies and market-based instruments that support further innovation and diversification in forest products markets. The EU Forest Strategy, international trade agreements and timber regulations can have significant influence, along with non-regulatory systems such as voluntary certification programmes, markets for ecosystem services, research findings, and green building innovations.

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3 INSTITUTIONAL FORESTLAND OWNERSHIP AND ITS EFFECTS ON FOREST PRODUCTS MARKETS

Authors: ***Robert Flynn and Tapani Pahkasalo***

HIGHLIGHTS

- Timberland investment by institutional investors began in the early 1980s in the US, when forestry companies needed to divest less-productive assets on their balance sheets and took advantage of a change in the law favouring the institutional ownership of real assets.
- Timberland investments have performed well and have many benefits for investors, including hedging against inflation and diversification, the latter because the drivers of returns on timberland investments and the drivers of returns on other asset types, such as stocks, are largely uncorrelated.
- Worldwide, financial investors hold close to 24 million hectares of timberland, at an estimated value of close to $100 billion.
- The majority of timberland investments are in the US, where financial investors own 16.6 million hectares of forest.
- Timberland markets in the US have matured, and consequently returns have fallen. Institutional investors are now turning to Africa, Asia and Latin America in search of new opportunities and higher returns.
- Worldwide, the top 30 timberland investors had about $57 billion of forest assets under management in 2014, covering 15 million hectares. Large investors have consolidated recently, while new companies are emerging as timberland investments spread beyond the US.
- Very few financial investors own industrial wood-processing facilities; they focus on growing and selling the raw material. This has brought a change in the forest products industry, and the separation of tree-growing from processing has resulted in higher prices for raw materials and lower forest investment, including in genetic research.

3.1 INTRODUCTION

Worldwide, financial investors hold close to 24 million hectares of timberland, at an estimated value of close to $100 billion (RISI, 2014). With such sizable holdings of productive, actively managed timberlands, this group of forest owners represents a growing share of the world's industrial timber supply. Financial investors have changed the way in which the forest industry operates; forest industries in the US no longer control their raw material sources, and the same is happening in other regions. Financial investors have high targets for returns on forest management; simultaneously they have brought diverse management objectives and are ready to sell forests to conservation groups and real estate developers where this is the best investment option for management.

There are four basic types of financial investment in forestry:

- **Timberland investment management organizations (TIMOs)** – companies that acquire and manage forests on behalf of institutional investors (such as pension funds and university endowments). In some cases (e.g. Brookfield Timberlands Management and BTG Pactual), TIMOs co-invest in the timber funds they set up, but in most cases they act only as managers and do not own forests in their own names. TIMO funds may be "commingled funds", pooling assets from several investors, or they may be "separate accounts", set up to acquire and manage forest for a particular client. There are also "funds of funds", such as the International Woodland Company and Stafford Timberlands, which manage portfolios for institutional investors by placing the funds into timber properties through TIMOs.
- **Real estate investment trusts (REITs)** – companies in the US that pass at least 90% of their income to investors, and which earn at least 75% of their income from the sale of timber (as opposed to the sale of forest products like sawnwood or pulp). While some small private timber REITs exist, the five publicly listed REITs in the US include some of the world's largest forest owners – Weyerhaeuser, Plum Creek and Rayonier.
- **Direct investment by institutional investors** – which can take several forms. Some investors, such as the Harvard Management Company, have set up forest-owning companies in various countries, which acquire timberlands directly and hire local forest consultants to manage the properties. In other cases, pension funds invest through a listed company structure; for example, the former Stora Enso forests are now majority-owned by pension funds through Tornator and Bergvik Skog.[6] The direct-investment model also includes much smaller listed structures, such as the "fideicomisos" in Argentina and Uruguay, which are set up to establish a targeted area of forest plantations. Pension funds may also own forest companies directly; for example, the Canadian timber company TimberWest, which was a listed unit trust (similar to a timber REIT in the US), was acquired and taken private by two large Canadian pension funds.
- **"Retail" investment companies** – which offer individual investors the opportunity to invest in forests at a very small scale, often just 1 hectare or less. Typically, these companies target high-value plantation species such as teak in Central and South America and agarwood in Southeast Asia. The scale of these companies is so small, in total, that their impact on global markets is minor. They are not discussed further in this chapter because they commonly do not form part of the professional forest investment world.

Source: UNECE/FAO, 2015.

3.2 HISTORY OF TIMBERLANLD INVESTMENT

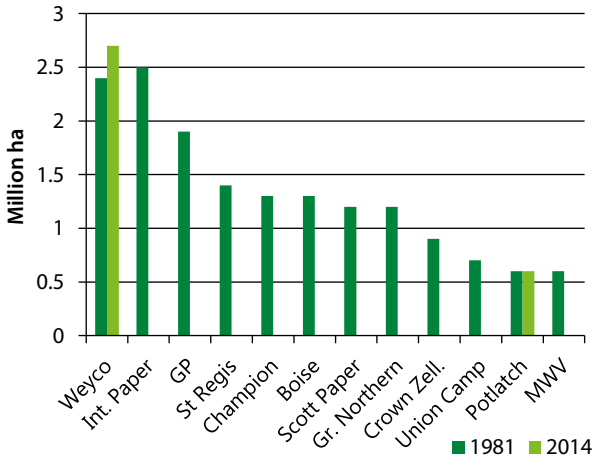
Timberland investment by institutional investors began in the US in the early 1980s. The initial stimulus was the enactment of the Employee Retirement Income Security Act in 1974, which encouraged institutional investors to diversify away from traditional fixed-income securities towards stocks and then other assets, such as commercial real estate. Timberland ownership, with relatively stable returns and low risks, provided another opportunity for diversification and allowed institutional investors to fulfil their legal requirements (Hancock Timber Resource Group, 2015). In the early 1980s, most large-scale forests in the US were owned by listed integrated forest product companies like International Paper and Georgia Pacific. The severe recession of the early 1980s put these companies under financial pressure, and they were strongly motivated to divest forest assets when, in 1986, they lost the benefit of treating timber-harvest revenues as capital gains. Until Plum Creek received approval to form the first listed timber REIT in 1999, the primary opportunity for investors was through TIMOs.

Graph 3.2.1 shows how extensive the transformation of forest ownership has been in the US since the early 1980s. Of the 12 integrated companies shown in the graph, all of which had mills and forestlands in 1981, only two still have both.

[6] Stora Enso remains the single-largest investor but is not a majority shareholder in either company.

GRAPH 3.2.1

US forest ownership by companies, 1981 and 2014



Notes: Gr. Northern = Great Northern Paper Company; Int. Paper = International Paper; GP = Georgia Pacific; MWV = MeadWestvaco.

Source: RISI, 2014.

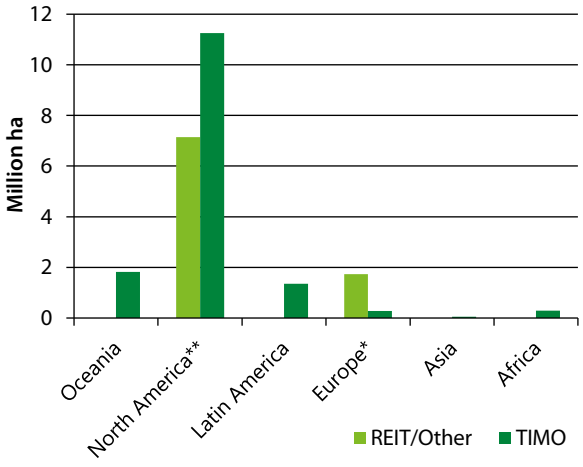
These large companies each owned millions of acres of forests, in addition to dominating the production of wood products and pulp and paper. Today, those large integrated companies have changed dramatically and the forests are held either by REITs like Weyerhaeuser and Plum Creek or by TIMOs like the Hancock Timber Resource Group. This separation of the forest from the manufacturing sector represents a profound structural change in the US forest products industry. The large integrated forest product companies that dominated the industry in 1981 have either sold their forest or converted to REIT status (examples of the latter are Weyerhaeuser, Rayonier and Potlatch).

Of the 24 million hectares owned by financial investors, about 77% of this area is in North America, including 69% in the US alone (RISI, 2014). Institutional investment in forestland began in some other regions in the early 1990s; the major stimulus for this was the sale of 500 thousand hectares of government-owned forest plantations in New Zealand, although some TIMOs, such as Global Forest Partners (then Resource Investments Inc.), began investing in Latin America at about the same time. By 2014, approximately 8.4% of the global forest area owned by financial investors was in Europe, 7.6% was in Oceania (Australia and New Zealand) and 5.6% was in Latin America (graph 3.2.2). Africa accounted for only 1.2% and Asia for just 0.2%.

Financial investors (REITs plus TIMOs) own about 16.6 million hectares in the US. Graph 3.2.3 shows the next ten-largest areas of forest owned by financial investors, by country; Canada has the second-largest area, at nearly 1.8 million hectares. No country from Africa, Asia or Central America has attracted enough financial investment in forests to be included in the graph.

GRAPH 3.2.2

Global forest ownership by financial investors, 2014



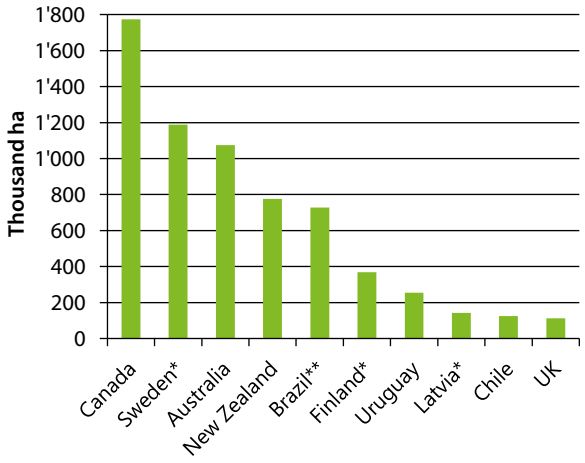
Notes: * "REIT/Other" in Europe includes the portion of Bergvik Skog and Tornator owned by pension funds. ** "REIT/Other" in North America comprises REITs plus Deltic Timber.

Source: RISI, 2014.

Source: UNECE/FAO, 2015.

GRAPH 3.2.3

Ownership of forests by financial investors, by country, 2014



Notes: The US has by far the largest area of forest owned by financial investors but is not shown in this graph, which shows the next ten-largest such areas. * Includes only the shares owned by pension funds in Tornator and Bergvik Skog. ** Includes ownership of Fibria lands by Brookfield in 2014.

Source: RISI, 2014.

Any future expansion of the area of timberland owned by financial investors in North America will have to be achieved mostly through sales of large family-held properties (for example, the family-owned Menasha forest was sold to the Campbell Group in 2007) or the consolidation of smaller private holdings. This is because all the large industrial forest companies have either sold all their forests or converted to REITs. Because of this limitation, and the expectation that the purchase of forests will produce relatively low returns, financial investors have increasingly been looking beyond North America for alternative investment regions. Likely locations include:

- Australia, where one or two large government-owned plantation forests are likely to be privatized in the next few years.
- Latin America, where the pursuit of timberland deals by financial investors has moved beyond the focus on Brazil and Uruguay in the last year or so to include countries such as Colombia, Ecuador, Panama and Paraguay. In recent years, sizeable timberland transactions have taken place in Chile, signalling a willingness (or need) of forest companies there to free up cash from less-productive assets.
- Europe, where some forest companies (such as UPM Kymmene in Finland) are selling non-core forest areas in allotments of sufficient size to interest forest investors. In the Baltic countries, smaller TIMOs are buying forestlands from the fragmented private-owner market and forming larger properties: timberland holdings of investable size will be sold to other investors (or back to industrial operators) when forestland consolidation is more advanced. Ireland and the UK, where sizable properties already exist, are also attracting financial investors.
- Africa, where the modest levels of investment to date have primarily targeted South Africa and East African countries like Mozambique and the United Republic of Tanzania. Interest could spread to other countries with stable governments and growing economies; Africa is often referred to as the "last unexplored frontier" of timberland investment.
- Asia, although, to date, investment in China (e.g. Sino-Forest) has been problematic. Forest investment in Asia has been slow to get started for a variety of reasons, including, in many countries, large-scale government ownership and the social and environmental risks associated with large-scale private land ownership in the region.

3.3 INVESTMENT MARKETS FOR FOREST OWNERSHIP FUNDS

3.3.1 Attractions of timberland investment

A significant amount of academic and private research has been conducted into timberland investment. Forests have several characteristics that distinguish them from other asset classes, and analyses of return drivers for forestry investments show that 65-75% of returns are derived from biological growth. A second distinguishing factor affecting returns on forest investments is variation in timber prices, typically ranging between 25% and 30% of the total return. Finally, changes in forestland prices contribute 2-5% of overall investment returns. It is logical to argue, therefore, that forests grow and produce returns even if economic and market circumstances are challenging, as they have been in the last few years.

Well-diversified timberland investment provides investment portfolios with three distinct and well-researched benefits:

1) diversification arising because the drivers of returns on timberland investments and the drivers of returns on other asset types, such as stocks, are largely uncorrelated (although they have become more correlated since the global financial crisis);
2) an inherent inflation hedge because forest product prices increase with inflation; and
3) the compelling relative performance of timberland investments.

Note that the capacity of individual timberland assets to provide a hedge against inflation (i.e. benefit 2 above) depends on the region and time horizon. Note also that an element of the inflation hedge arises because a large proportion of the total costs associated with an existing forest asset may be considered sunk costs (i.e. costs incurred well into the past, when the plantation was established). This contrasts with service businesses and even many manufacturers, for which a much larger proportion of the cost of goods sold in any period will have been incurred at current prices.

3.3.2 Timberland investment returns and transactions

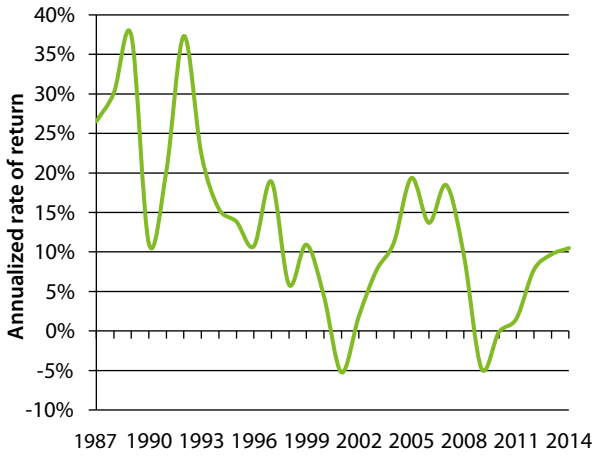
Only two indices of timberland investment returns are reported continuously: the National Council of Real Estate Investment Fiduciaries (NCREIF) Timber Index, and the Investment Property Databank (IPD) UK Annual Forestry Index. Both these indices are calculated on samples of private-sector reporting information; the UK index concentrates on coniferous plantations of predominantly Sitka spruce on the UK mainland, and the US index focuses on coniferous forests in several US regions – the South, West and North (including North-central and Northeast).

The NCREIF Timberland Index is a quarterly time series composite return measure of investment performance of a large pool of individual timber properties acquired in the private market for investment purposes only. Returns were extraordinary high (12-15%) in the period from the start of timberland investments until the end of the 1990s (graph 3.3.1) due to a "first-time opportunity" benefit and by exceptional timber price development. In some cases, too, opportunities arose for the sale of properties with real-estate potential at much higher prices than average timberlands. The returns reported by timberland investors decreased over

time. Nevertheless, they were still at 8-10% in real terms in the early-to-mid 2000s, surpassing the S&P index; such high returns were often due to opportunities in the real-estate market and "highest and best use" opportunities in forestland development. Thereafter, returns in the US gradually decreased and stabilized at 2-5% in real terms, reflecting actual biological growth and timber price development. Similar patterns were observed from the 1990s in New Zealand and to some extent Australia, and, from the 2000s, in southern Brazil and Uruguay. In these markets, however, returns have remained higher in real terms than in the US timberland markets. In search of new opportunities and higher returns, institutional investors in timberlands have turned to new frontiers in Africa, Asia and Latin America. The reported historical returns in these emerging countries vary depending on the earning logic and risk-mitigation strategies of investors.

GRAPH 3.3.1

NCREIF Timberland Index, 1987-2014



Source: NCREIF, 2015.

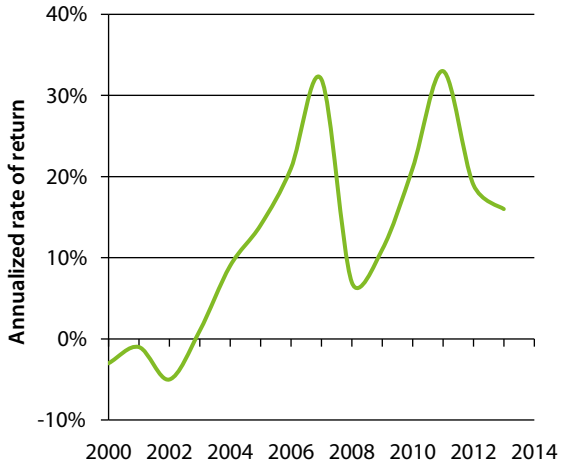
Returns in the Nordic countries and some other European countries, such as the UK and Ireland, where transactions increased after the liberalization of ownership, have been comparable with those in the early years in the US (graph 3.3.2).

In the Baltic countries, Romania and some other eastern European countries, the restitution of private forestlands, which had been appropriated during the communist era, started in the 1990s. This has created high expectations for timberland investors, but markets are only now opening up for professional forestry investors.

An impact of the declining returns from timberlands in the US is that some investors seem to be reducing their allocations in the sector. For example, the California Public Employees' Retirement System, Calpers, one of the earliest and largest institutional investors in timberlands, announced in May 2015 that it was selling 300 thousand acres of timberland in Louisiana, which is more than one-fifth of the roughly 1.3 million acres of forests owned by Calpers in the US; the reason given for selling was that returns have been low compared with other (non-timberland) segments of Calpers' portfolio.

GRAPH 3.3.2

IPD UK Annual Forestry Index, 2000-2014

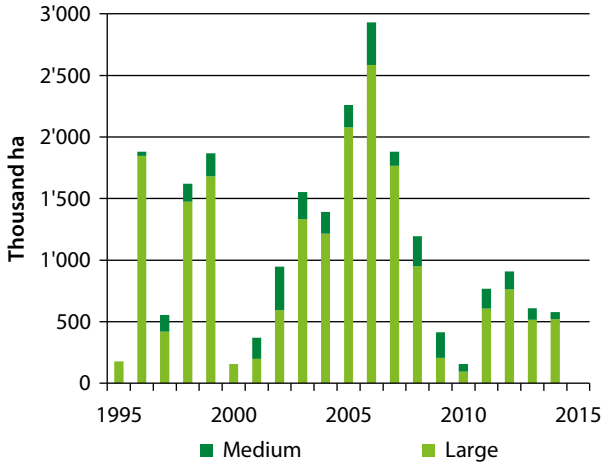


Source: IPD, 2015.

Graph 3.3.3 shows the trend of transactions for medium-sized (20,000-40,000 hectares) and large (>40,000 hectares) areas of timberland in the US. Transactions peaked in 2006, when International Paper divested its timberlands, and fell to relatively low levels thereafter. TIMOs and REITs sold an average of 2.2 million acres of North American timberlands per year between 2011 and 2014, which was 5% of their total holdings. Most TIMOs acquire forests for 8-12 years; therefore, large blocks of forest are likely to come onto the market in the US between 2016 and 2018. In the past, transactions were from integrated companies to TIMOs; now, transactions are primarily from TIMO to TIMO and from TIMO to REIT.

GRAPH 3.3.3

US timberland transactions, large and medium-sized sales, 1995-2014



Source: RISI, 2014.

3.4 MAJOR TIMBERLAND INVESTORS

The top 30 TIMOs in the world (those that are TIMOs only, not REITs or direct investments by pension funds) had forest assets under management of about $57 billion in 2014, covering 15 million hectares. The top five TIMOs (in terms of assets under management) accounted for 54% (7.2 million hectares) of this total, and the top ten accounted for 77% (11.2 million hectares). Table 3.4.1 shows the broad regions in which the ten largest TIMOs manage forest assets. Nine own forests in North America, eight own forests in Latin America, and six own forests in Oceania. The other three regions (Africa, Asia and Europe) have attracted relatively little investment from the major TIMOs.[7]

Source: UNECE/FAO, 2015.

TABLE 3.4.1

Top ten TIMOs and regions of investment

TIMO	*North America*	*Latin America*	*Oceania*	*Africa*	*Asia*	*Europe*
Hancock Timber	X	X	X			
Campell Global	X		X			
RMS	X	X	X			
FIA	X	X				
Brookfield	X	X				
Global Forest Partners	X	X	X		X	
BTG Pactual	X	X		X		X
NewForests			X		X	
The Forestland Group	X	X				
GMO	X	X	X			

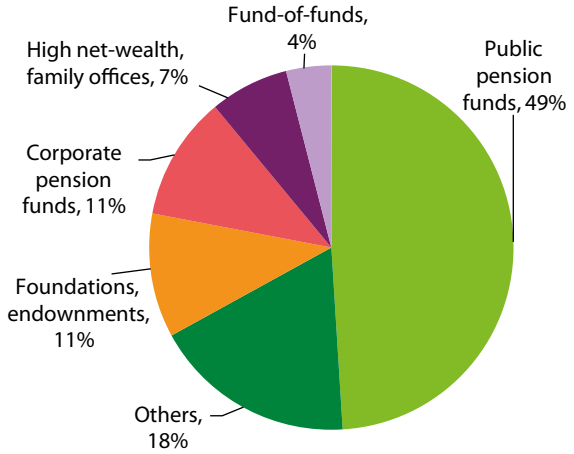
Source: RISI, 2014.

[7] Europe has attracted substantial investments in timberland from pension funds, but this is primarily direct (e.g. partial ownership of Bergvik Skog and Tornator) rather than through TIMOs.

The US-based company TimberLink LLC conducts the most comprehensive annual survey of timberland investors. According to the most recently available Timberlink survey (as of end 2013), nearly half of all timberland assets under management by financial investors were owned by public pension funds, making this class of investor by far the largest institutional investor in timberlands (graph 3.4.1). Note that this survey does not encompass assets managed by REITs; in total, it accounts for about $45 billion in timberland assets globally.

GRAPH 3.4.1

Timberland assets under management, by type of investor



Source: Timberlink, 2015.

3.5 MANAGEMENT OBJECTIVES OF FINANCIAL TIMBERLAND INVESTORS

With the exception of timber REITs, very few financial investors own industrial facilities, focusing on growing and selling timber rather than on processing it into products. Even in the case of timber REITs, the sale of timber is mostly separate from the forest products side of the business. This has been a key change in the industry, with several implications:

- The primary objective of timberland investors is to maximize total returns from their forests during the 8-12-year period over which they typically hold these assets. This does not imply a tendency to over-harvest or the implementation of any other management activity (or lack of activity) that would reduce the long-term value of the property, because TIMOs must always consider the value of the asset at the time it is re-sold (its "exit value"). Activities that can incrementally improve the value of the asset over the ownership period (e.g. tree fertilization) may be approved by TIMOs. However, management activities that cannot show clear returns that meet investors' hurdle rates before the planned asset disposal are unlikely to be approved.
- The separation of forests from processing has forced wood-processing industries to pay market prices for their

raw materials. This need for competitive performance may explain some of the plant closures that have occurred in the last two decades.

- Although most timberlands acquired by TIMOs and REITs continue to be managed to produce timber, a portion has been sold to conservation groups, and some "higher and better use" lands have been sold for real-estate development, thus removing lands from the commercial timberland base. Because the harvest of timber from commercial forests has been much less than biological growth in the past eight years or so, it is impossible to say whether such land sales for non-timber-producing uses has reduced the available timber supply, but this may become a factor in the long term.
- The large integrated forest product companies in the US were key supporters of forestry research aimed at improving long-term forest growth and yield. Universities report that funding is much more difficult to obtain from the current forest owners, especially for long-term research.
- More critically, the separation of forest ownership and industry means that tree breeding and genetic tree improvement is no longer tied closely to the needs of industry. Pulp producers in Brazil may be fine-tuning their trees to produce fibre that increases the efficiency of their mills, but this is not possible in regions where financial investors now own the large industrial forests. Unless constrained by long-term supply agreements, the new owners of forests formerly held by pulp producers are more likely to maximize sawlog production than pulpwood production, with potential impacts on the long-term availability of pulpwood.

3.6 MARKET SHARE HELD BY TIMBERLAND INVESTORS

The 16.6 million hectares of timberland owned and managed by TIMOs and REITs in the US represent 7.9% of the total timberland in the country and 11.4% of private timberland. Forests owned by financial investors are among the most productive private forests and are likely to account for 20% or more of the total industrial roundwood production nationally and even higher proportions in some local areas. Thus, this forest ownership group exerts sufficient influence on timber supply to affect market prices in the US. Financial owners tend to reduce timber harvests when prices are low and to increase them aggressively in strong market periods. In theory, this should smooth out timber price cycles, but it is difficult to prove this impact conclusively: if the forests were owned by the forest industry instead of by financial investors, would the same decisions on timber harvesting be made? Housing construction in the US fell sharply in 2007 (before the global financial crisis hit), and financial investors and other private landowners reduced their timber harvests in the South; today, therefore, there is a large surplus (estimated by RISI at well over 200 million m^3) of softwood timber in that region. It is clear that the decision on whether to harvest is influenced by anticipated timber prices, which, in turn, are driven by demand for end-use products.

The extent of financial ownership in some other countries is also large enough to affect prices. TIMOs own more than 50% of the planted forests in Australia and well over 40% of planted forests in New Zealand (including direct ownership by pension funds). There are indications that financial ownership may be resulting in a larger timber harvest than might be the case if the forests were owned by local wood-processing companies. In recent years in New Zealand, more than half the wood harvest has been exported as unprocessed sawlogs to China, the Republic of Korea and other countries because of the relatively high prices obtainable for sawlogs. In Australia, exports of pine logs have also become more important in recent years as forest ownership by TIMOs has increased. Much of the eucalypt plantation estate established in Australia in the last 15 years was planted by "managed investment scheme" companies similar to TIMOs, which have changed the face of forest management in Australia.

The institutional ownership of forestlands is still limited in Europe, where state ownership and small-scale private ownership (family forestry) are the dominant ownership types. Some forestry companies own large forest areas, but they have generally been unwilling to sell, preferring instead to secure their wood supplies and play roles in local wood markets. Some forestry investors have ventured into the Russian Federation, but the current investment climate there does not support large-scale foreign investment or ownership (or, more accurately, forest leases, because all land in the Russian Federation is owned by the federal government).

3.7 MARKET IMPACTS

The impacts of timberland investment vary by region and the type of forests acquired. In general, financial investors in North America adjust their harvest levels in response to market demand, so the overall level of timber supply may not be significantly different to what it would be if those forests were owned by wood-processing companies. A high level of timberland ownership among financial investors reduces the tendency of some integrated companies to continue harvesting and processing timber, even in weak markets, and the misallocation of logs (e.g. sawlogs being processed in integrated company pulpmills) is mostly avoided. In general, this tends to make the overall industry more efficient, but discerning the impact of a high level of ownership by financial investors on timber pricing and overall supply levels is difficult.

In other countries, the impacts of financial investment in timberlands are similar to those in North America when the acquired timberlands are existing forests. But financial investors make decisions on whether to replant after harvesting based purely on financial calculations rather than on a desire to maintain log supply at a given mill (unless the purchase of the plantations was tied to a long-term wood-supply agreement).

In some cases, such as the acquisition of eucalypt plantations by TIMOs in Australia, financial decisions have already dictated that some of the lower-grade plantations will be converted to agriculture after harvest, a fate that may apply to perhaps as much as one-third of Australia's eucalypt plantations in this ownership class. Note that this does not imply the conversion of forestland to non-forest uses: during the period of tax-driven plantation expansion in Australia, eucalypt plantations were established on already cleared land that had been used for agriculture and, in many cases; these lands simply did not have suitable soils or rainfall to produce timber crops at a profit. However, where greenfield plantations are the focus of timberland investments, such as in Uruguay, there will be a net increase in the country's overall wood supply. The point is, it is impossible to generalize about whether an increase in forest ownership by institutional investors will, of itself, have a positive or negative impact on timber supply and prices, except in localized situations.

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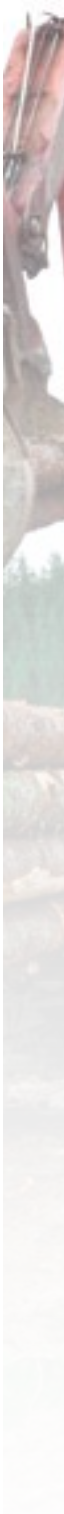


4 WOOD RAW MATERIAL

Lead author: ***Håkan Ekström***

HIGHLIGHTS

- The consumption of roundwood continued to increase in all three UNECE subregions in 2014 and, overall, was 7% higher than in 2010.
- Removals of industrial roundwood in the CIS have increased for five consecutive years, reaching the highest level in more than ten years in 2014.
- The harvest of softwood species has risen in Europe by almost 5% in two years.
- The UNECE region is a major net exporter of softwood logs to Asia. The major trade flows are to China from (in descending order) New Zealand, the Russian Federation, the US and Canada.
- Turkey has rapidly expanded its production of medium-density fibreboard and particle board and, as a consequence, domestic softwood harvests have more than doubled since 2003.
- Net imports of hardwood logs to Europe increased from 4.6 million m3 in 2009 to 7.6 million m3 in 2014, the major destinations being Finland, Portugal and Sweden.
- Timber removals reached their highest levels in at least ten years in 2014 in the three major forest-rich countries in the CIS – Belarus, the Russian Federation and Ukraine.
- In just a few years, Ukraine has become Europe's largest exporter of softwood logs and the fifth-largest exporter of softwood logs worldwide.
- North American removals of industrial roundwood increased by 7% from 2010 to 2014. Log exports from this subregion increased by 55% in the five years to 2014, to just over 21 million m3.
- Sawlog prices fell in 2014 and during the first half of 2015 in almost all markets worldwide, with the biggest declines in northern and central Europe.
- Wood-fibre costs for the global pulp industry fell in the 12 months to March 2015, the biggest declines being in Brazil, France, Germany, the Nordic countries and the Russian Federation.

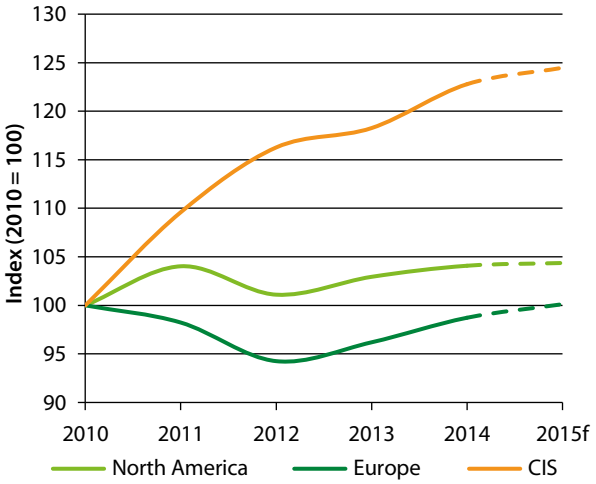
4.1 INTRODUCTION

Of the total roundwood removals in the UNECE region in 2014, approximately 16% (201 million m^3) was used for fuel. This woodfuel was consumed predominantly in Europe, which accounted for almost 60% of total woodfuel consumption in the UNECE region. Data on roundwood removals from forests for fuel are unreliable because few countries have consistent methods for collecting information on this increasingly important end-use; nevertheless, it is clear that a fairly large share of forest removals is used for energy. Unless otherwise stated, this chapter provides data for industrial roundwood rather than total roundwood (which would include woodfuel). Chapter 9 provides insights into trends for raw materials in the wood energy sector.

The total apparent consumption of industrial roundwood in the UNECE region continued its upward trend in 2014, reaching 1.06 billion m^3, up by 2% compared with 2013 and 6% higher than in 2010. The use of softwood industrial roundwood increased to 788.3 m^3 (up by 2.1% over 2013 and 4.4% over 2010) and hardwood industrial roundwood increased to 275.5 million m^3 in 2014 (up by 1.9% over 2013 and 10.7% over 2010) (graphs 4.1.1 and 4.1.2).

GRAPH 4.1.1

Apparent consumption of softwood industrial roundwood in the UNECE region, by subregion, 2010-2015



Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

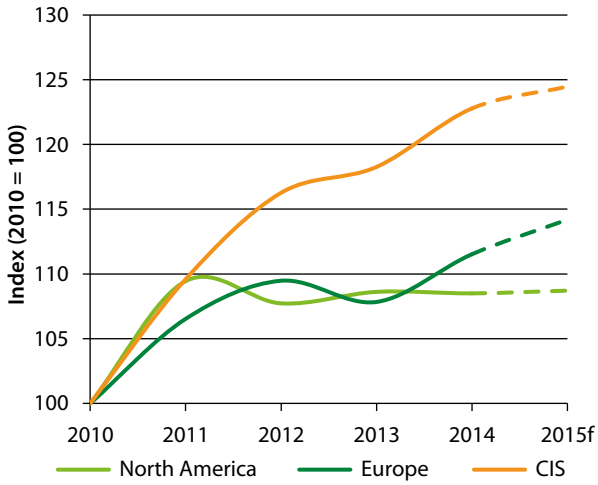
The CIS consumed 182 million m^3 of industrial roundwood in 2014, which was almost 20% higher than in 2010.

In Europe, total log consumption (including industrial roundwood and woodfuel) was up by 2.4% in 2014 compared with 2013, the largest percentage increase being in hardwood logs. About 77% of the total harvest was classified as industrial roundwood, with the remaining 23% fuelwood.

Of the three UNECE subregions, log consumption increased least in North America (by only 0.7%) in 2014. The main reasons for this were a decline in log use by the US pulp industry and only steady demand for sawlogs in Canada's sawnwood sector.

GRAPH 4.1.2

Apparent consumption of hardwood industrial roundwood in the UNECE region, by subregion, 2010-2015



Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

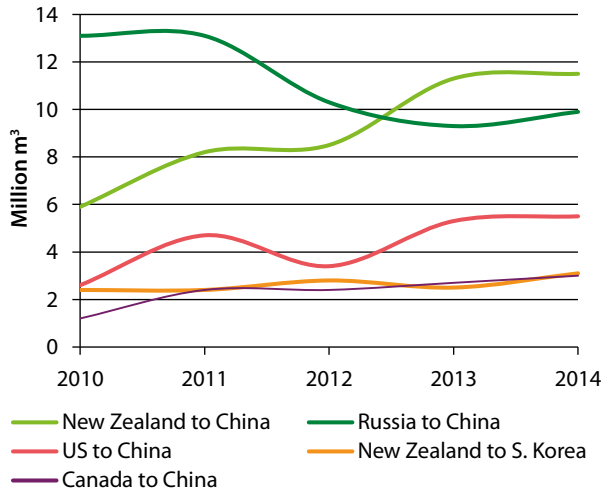
The global trade of softwood roundwood was almost unchanged in 2014 compared with 2013, at about 84 million m^3 (Wood Resources International, 2015a). Trade slowed, however, towards the end of 2014 and through the first five months of 2015. The biggest declines in imports in the first half of 2015 were in China (down by 23% compared with the same period in 2014) and Japan (down by 30%).

Source: UNECE/FAO, 2015.

The UNECE region is a major net exporter of logs, mainly to Asia. The net export volume of softwood logs to destinations outside the UNECE region was 28 million m^3 in 2014, while the net export of hardwood logs was nearly 2 million m^3. Globally, the four biggest trade flows of softwood logs are all to China from (in descending order, by volume) New Zealand, the Russian Federation, the US and Canada; the fifth-largest trade flow of softwood logs is from New Zealand to the Republic of Korea (graph 4.1.3).

GRAPH 4.1.3

Top five global trade flows of softwood roundwood, 2010-2014



Source: Wood Resources International, 2015a.

4.2 EUROPE SUBREGION

4.2.1 Industrial roundwood markets

Europe's forest industry consumed slightly more than 390 million m³ of industrial roundwood in 2014 (table 4.2.1), the largest volume since the global recession in 2008. Approximately 60% of this consumption was in just five countries: Finland, France, Germany, Poland and Sweden. Consumption increased by about 4% in 2013-2014, mainly as a result of higher production in the subregion's sawmills.

Industrial roundwood removals in 2014 amounted to 378.6 million m³, of which 76% (288.9 million m³) was softwood. Softwood removals were up by 3.1% in 2014 compared with 2013 (when they were 280.2 million m³). Of the ten-largest log-producing countries, the biggest year-over-year increases in softwood log production in 2014 were in Norway (8.9%), Turkey (8.1%), France (5.6%), Poland (5.6%) and the Czech Republic (2.9%). Of the major forest nations in Europe, Austria is the only one in which the timber harvest has dropped in recent years: softwood removals there declined by 13.4% from 2011 to 2014, to their lowest level since 2002.

Perhaps the most interesting development in the last ten years has been in Turkey, where a rapidly expanding medium-density fibreboard and particle board industry has increased demand for both domestic and imported wood raw material. As a consequence, Turkey's domestic softwood harvests have more than doubled since 2003, and Turkey was the sixth-largest roundwood producer in Europe in 2014.

Hardwood roundwood removals in Europe have increased steadily in the last five years, reaching their highest level in more than ten years in 2014. Most of the increase was in (in descending order, by volume) Turkey, France, Slovenia, Latvia and Germany, mainly because of a rise in demand for wood fibre in the wood-based panel and pellet industries.

TABLE 4.2.1

Industrial roundwood balance, Europe, 2013-2015

(thousand m³)

	2013	*2014*	*2015f*	*Change (%) 2013-2014*
Removals	367,545	378,551	384,347	3.0
Imports	56,385	57,380	58,377	1.8
Exports	43,369	44,624	44,953	2.9
Apparent consumption	380,561	391,307	397,771	2.8

Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

4.2.2 Trade of roundwood and wood chips

Net imports of roundwood and wood chips to the Europe subregion were 12.8 million m³ in 2014. The biggest increases between 2012 and 2014 were in Germany (up by 1.8 million m³, mostly softwood logs from the Czech Republic, Estonia and Norway), Sweden (up by 1.3 million m³, mostly softwood logs from Norway and the Russian Federation) and Portugal (up by 840 thousand m³, mostly hardwood logs from Spain).

Europe's net hardwood log imports amounted to 7.6 million m³ in 2014. The imbalance between hardwood log production and demand has increased steadily since 2009, when net imports were 4.6 million m³. Most of the flow of imported hardwood logs has been to pulp mills in Finland, Portugal and Sweden.

Almost all major lumber-producing countries in Europe imported lower volumes of softwood logs in the first four months of 2015 than in the same period in 2014, with the biggest declines in Austria, Belgium, Finland, Italy and Sweden; imports increased only in Latvia, Poland and Turkey. The main reason for the reduced trade was a decline in lumber demand in many of the key markets in Europe.

Pulp mills and sawmills in Finland and Sweden have a long tradition of buying wood raw materials in the Baltic states when market conditions have been advantageous. Multiple factors have affected the shipping of wood raw material across the Baltic Sea over the years, resulting in substantial fluctuations in wood volumes; these factors include changes in market prices for lumber and pulp, exchange rates, freight costs, the availability and price of domestically sourced logs in the Nordic countries, and the cost of logs in competing markets such as Norway and the Russian Federation. The total flow of softwood logs from the Baltic states to Finland and Sweden was 1.6 million m³ in 2009, and shipments peaked in 2011, at 2.9 million m³. Roundwood trade from the Baltic states to the Nordic countries declined by 36% in the three years to 2014, however, to about 2 million m³.

4.2.3 Consumption of wood fibre by the pulp industry

The pulp and paper industry in Europe consumed almost the same volume of wood fibre in 2014 as in 2013, continuing a five-year trend of only small changes in Europe's total usage of pulpwood. The industry used almost 147 million m^3 of wood chips and roundwood in 2014 (CEPI, 2015).

Softwood roundwood is the major source of virgin wood fibre in Europe; it contributed 49.4% of the total in 2014, which was slightly below the five-year average. The biggest change in the sourcing of wood fibre was in hardwood roundwood, which was estimated at 28.1% in 2014, up from 26.6% in 2010. In addition to roundwood, the pulp industry sourced 22.5% of its wood fibre from sawmilling by-products in 2014.

Imported wood fibre, in the form of wood chips and logs, continues to be important in many pulp mills in Europe. This is particularly true for hardwood-consuming pulp manufacturers, which met about one-third of its hardwood roundwood needs from imports in 2014; the major importing countries of hardwood chips and logs in that year were (in descending order by volume) Finland, Sweden, Portugal and Spain.

4.3 CIS SUBREGION

4.3.1 Industrial roundwood markets

The timber harvest in the CIS has increased for five consecutive years, reaching 208 million m^3 in 2014 (table 4.3.1). In the three major forest-rich countries of Belarus, the Russian Federation and Ukraine, timber removals reached their highest level in at least ten years in 2014, with softwood species accounting for about two-thirds of the total harvest.

The growth in removals of industrial roundwood in 2014 was higher in the Russian Federation than in Belarus and Ukraine. On the other hand, domestic log consumption rose at a slower rate in the Russian Federation, where log exports increased by almost 10%.

The accuracy of Russian harvest data remains uncertain. In addition to official estimates, the Russian Government has acknowledged that there is also "undocumented" timber harvesting, although estimates of the volume of timber harvested without permission vary substantially. According to the Russian Federal Forestry Agency, the estimated illegally logged volume was 1.2-1.8 million m^3 in 2011, but the World Wildlife Fund and the World Bank put the figure at 35 million-40 million m^3 for the same period (FAO, 2012).

The real income of households in the Russian Federation is expected to decline in 2015 for the first time in more than 15 years, which is likely to lead to serious belt-tightening throughout the country. Lower disposable incomes, declining investments in construction and infrastructure, and a pessimistic outlook for economic growth for the next few years are all factors that have had a negative impact on the domestic consumption of wood products. The consumption of logs for domestically consumed forest products fell in the second half of 2014 and is expected to continue to decline through 2015 and 2016. On the other hand, total log consumption has increased steadily in the last five years thanks to the increased production of softwood lumber for export. Log consumption reached 167 million m^3 in 2014, which was 19% higher than in 2010.

TABLE 4.3.1

Industrial roundwood balance, CIS, 2013-2015

(thousand m^3)

	2013	*2014*	*2015f*	*Change (%) 2013-2014*
Removals	199,661	208,077	213,222	4.2
Imports	633	613	613	-3.1
Exports	25,158	27,012	28,983	7.4
Apparent consumption	175,136	181,678	184,852	3.7

Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

4.3.2 Trade of roundwood

Two major events in the Russian Federation in 2014 changed the outlook for the production and export of forest products. One was the involvement of the Russian Federation in the Ukraine, which led to the imposition of sanctions by governments in Europe and in North America. The other, which occurred later in 2014, was a decline in world market oil prices of more than 50%, which had major ramifications for the Russian Federation because oil is the country's major export commodity. Together, these two events shook Russian financial institutions and will likely result in a 3-5% contraction in Russian GDP in 2015.

The devaluation of the rouble by almost 50% in 2014 reduced demand for wood products domestically and made Russian goods cheaper in export markets. This encouraged forest product manufacturers to explore opportunities to increase their exports of logs and lumber in 2015.

The export price of Russian softwood logs, hardwood logs and softwood lumber increased by over 50% in rouble terms from August to December 2014, while the price in US dollar terms was practically unchanged for logs and even declined for lumber. Despite the prospect of substantially higher profits in the export market, there has not yet been a surge in export volumes of forest products from eastern Russian Federation to the major market, China, or from the northwest of the Russian Federation to consumers in Europe. Rather, shipments of softwood roundwood were 20% lower in the first four months of 2015 than in the same period in 2014, and 2015 export volumes are on track to be the lowest since 1996. Many logging companies, sawmillers and log exporters have failed to take advantage of improved export markets due to factors such as a lack of capacity to promptly increase timber harvests when opportunities arise, limited manufacturing capacity, a lack of

loggers and truckers, and logistical bottlenecks in the entire supply chain, from forests to ports.

In just a few years, Ukraine has become Europe's largest exporter of softwood logs and the fifth-largest exporter of softwood logs worldwide. Its export volume more than doubled from 2009 to 2014, reaching a record high of 3.1 million m^3, which was 38% of the country's official timber harvest.

The outward flow of logs has not increased the harvest (at least not the legal harvest) in Ukraine; rather, it has resulted in a reduction in log consumption by the domestic forest industry. In an attempt to reduce illegal logging, minimize corruption, boost employment and encourage an increase in the manufacture of processed and higher-value products, the Government of Ukraine passed a law in April 2015 banning log exports. The law will take effect on 1 January 2016 for all species except pine, which will be banned from export from 1 January 2017. The law will be in place for ten years.

China is the number-one destination for Ukrainian softwood logs, followed by Romania and Turkey; all three countries are likely to be affected by Ukraine's log export ban. Ukraine is the fifth-largest supplier of logs to China, accounting for about 4% of that country's total import volume in 2014.

4.4 NORTH AMERICA SUBREGION

4.4.1 Industrial roundwood markets

The production and consumption of industrial roundwood in North America have both trended upward in the last five years. An estimated 507 million m^3 (table 4.4.1) of industrial logs were harvested in 2014, which was almost 7% more than in 2010, with the biggest increase occurring in Canada.

Canada harvested an estimated 150 million m^3 of industrial roundwood in 2014, up by 1.5% compared with 2013 and by 8.0% compared with 2010. A large majority (84%) of the 2014 harvest in Canada comprised softwood sawlogs for sawmills in the provinces of Alberta, British Columbia and Quebec. A large share of the hardwood harvest comprises small-diameter logs used by pulp mills and oriented strandboard (OSB) manufacturers in Alberta and the eastern provinces. The biggest changes in log use in Canada in the last five years have been the increased use of softwood sawlogs for lumber production and the increased consumption of hardwood logs by the OSB industry.

Source: UNECE/FAO, 2015.

Timber harvests increased in the US from 336 million m^3 in 2010 to 357 million m^3 in 2014. Almost 344 million m^3 was consumed domestically in 2014 and about 14 million m^3 was exported, mainly to Canada, China and Japan. Softwood accounted for about 73% of the US harvest in 2014, a slightly higher percentage than in 2010. The pulp industry consumes a majority of the harvested roundwood, although usage by both the softwood and hardwood lumber sectors has increased substantially in the last five years as the lumber market in the US has improved.

TABLE 4.4.1

Industrial roundwood balance, North America, 2013-2015

(thousand m^3)

	2013	*2014*	*2015f*	*Change (%) 2013-2014*
Removals	502,688	506,746	508,062	0.8
Imports	5,798	5,170	5,232	-10.8
Exports	21,723	21,197	21,340	-2.4
Apparent consumption	486,764	490,718	491,954	0.8

Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

4.4.2 Trade of roundwood

North American log exports increased by 55% during the five years prior to 2014, to just more than 21 million m^3. The US exports more logs than Canada, but Canada has increased its shipments relative to the US since 2012. Practically all log exports to overseas markets are from the US northwest and British Columbia.

Total US softwood log exports were down by 8.3% in 2014 compared with the 17-year high achieved in 2013. The US exported almost 11.8 million m^3 of softwood logs in 2014, of which 72% was to Asian markets (the share was less than 50% in 2005).

US softwood log export volumes to Asia doubled in just six years, from 4.2 million m^3 in 2009 to 8.5 million m^3 in 2014. However, US shipments to China plummeted by 34% in the second half of 2014 compared with the first half of the year, to their lowest level since 2012. Two major factors influenced this decline: decreased demand for wood in China, and high log inventories in China. The decline in log exports from North America continued in the first five months of 2015, with US and Canadian shipments down by 28% and 14%, respectively, compared with the same period in 2014.

The increase in log exports from the US between 2009 and 2014, while impressive, was not as spectacular as the increase in log exports from Canada (mostly British Columbia) to China. In 2007, Canada exported only 100 thousand m^3 of logs to China. By 2014, the volume had soared to almost 4 million m^3 of mostly hemlock logs.

4.4.3 Woody biomass markets

With more than 20 export-oriented pellet plants under construction or with credible plans to begin operations in the next two years in the southern states of the US, further significant growth in North American pellet exports can be expected. A majority of pellet plants in the US South rely heavily on roundwood for their raw materials, which has put upward price pressure on small-diameter logs in those states with pellet plants.

Canada's overseas pellet exports fell by 13% in the first quarter of 2015 compared with the last quarter of 2014. The entire decline was in exports to Europe, with shipments to Asia virtually unchanged. Pellet exports from western Canada will likely continue to flow steadily until new production capacity is added in late 2015, when they should increase substantially. The potential for increased pellet exports to Japan and the Republic of Korea remains high, although specific agreements are yet to materialize. Pellet manufacturers in British Columbia continue to consume predominantly sawdust for their fibre furnish. With a reduction in lumber production likely in coming years, however, pellet companies will increasingly have to rely on roundwood.

4.5 EXTRA-REGIONAL INFLUENCES AFFECTING THE UNECE REGION

China continued to dominate the global log trade in 2014, setting a new record high for its consumption of imported softwood logs. The seemingly endless increase in demand for wood raw materials from Chinese wood-product manufacturers has resulted in year-over-year import increases in eight of the past ten years. The value of logs imported into China surged from $2.2 billion in 2009 to $5.4 billion in 2014 (Wood Resources International, 2015b).

The volume of logs unloaded at Chinese ports has almost doubled in the last five years. The majority of those logs are from New Zealand, the Russian Federation and the US, although the number of countries supplying significant volumes has expanded. In 2009, logs from the "big three" countries accounted for 93% of all softwood logs imported by China. In 2014, this share was down to 76%, with log-sellers in Australia, Canada and Ukraine increasing their contributions to the world's largest log import market. Australia alone shipped almost 2.2 million m^3 in 2014, compared with 1.1 million m^3 in 2011.

China reduced its log imports towards the end of 2014 and into 2015 because of high log inventories and lower demand, with the volume of imports reaching its lowest level in years in the first quarter of 2015. The biggest year-over-year declines were in imports from Canada and the US, while the falls were more modest for New Zealand and the Russian Federation.

The price of imported logs also declined; they were 12% lower in the first quarter of 2015 than in the same period in 2014. Prices for radiata pine from New Zealand and hemlock from the US were down by more than 12%, year-over-year, in the first quarter of 2015, while the price for logs from the Russian Federation were down by 5%. Australia, New Zealand and the Russian Federation remain the lowest-cost softwood log suppliers to China.

4.6 WOOD RAW-MATERIAL COSTS

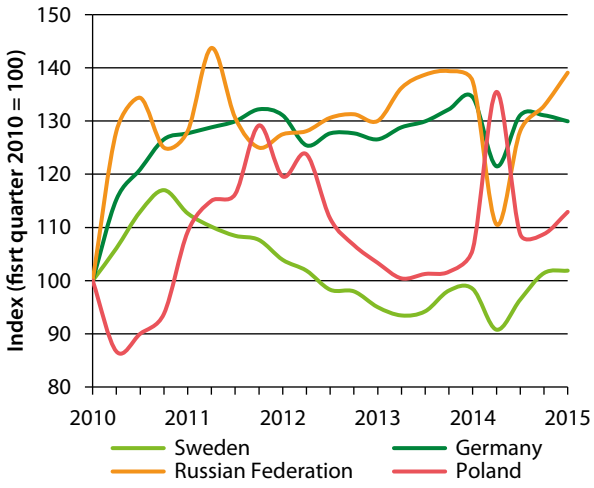
Wood raw-material costs typically account for 50-70% of the cost of pulp and lumber production. On a worldwide basis, wood costs generally trended down (in US dollar terms) in 2014 and the first half of 2015 for both sawmills and pulp mills.

4.6.1 Sawlog prices

Sawlog prices inched up in the local currencies of most major softwood log-consuming countries in 2014 and early 2015 (graph 4.6.1) (Wood Resources International, 2015b). The US dollar strengthened (by 4-24%) against key currencies, however, meaning that log prices fell in US dollar terms in almost all markets worldwide. The Global Sawlog Price Index (GSPI), which is based on sawlog prices in 20 regions and subregions around the world, was 14.3% lower in the first quarter of 2015 than in the same period in 2014 (graph 4.6.2). The GSPI has trended downward for a number of years, and in early 2015 it was at its lowest level since 2009.

GRAPH 4.6.1

Softwood sawlog price indices in selected countries, 2010-2015

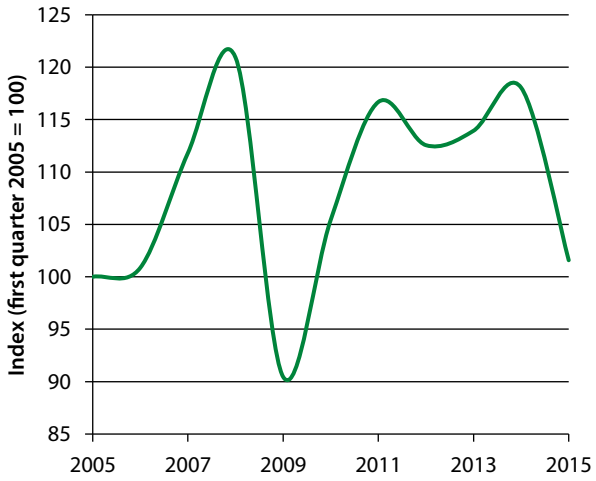


Note: Price indices based on delivered log price per m^3 in local currencies.

Source: Wood Resources International, 2015b.

GRAPH 4.6.2

Global Sawlog Price Index, softwoods, 2005-2015



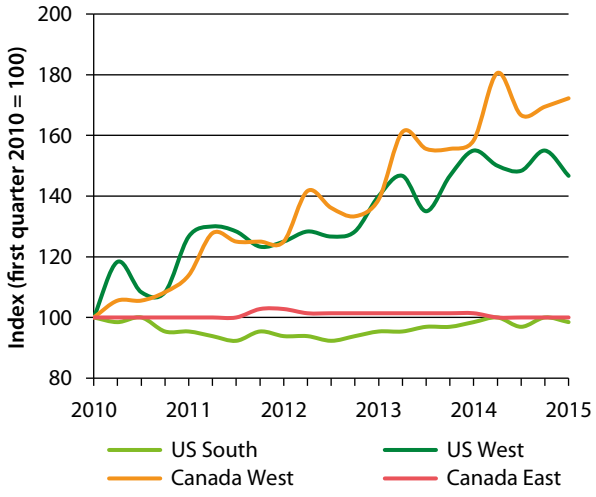
Note: Price index based on delivered sawlog prices in 20 key regions and subregions worldwide.

Source: Wood Resources International, 2015b.

Sawlog prices have fallen in US dollar terms in most northern and central European countries in the last year, predominantly as a result of a weakening euro. Domestic log prices have also declined in Latin America and Oceania. The only region or subregion in which prices did not fall was North America, where healthy US domestic lumber demand and respectable export volumes in both Canada and the US kept log consumption high in 2014 and early 2015 (graph 4.6.3).

GRAPH 4.6.3

Softwood sawlog price indices in North America, 2010-2015



Note: Price indices based on delivered log price per m^3 in local currencies. "US South" indicates prices for pine; "US West" indicates prices for hemlock; "Canada West" and "Canada East" indicate prices for mixed conifers.

Source: Wood Resources International, 2015c and 2015b.

Log and lumber exports to China have increased substantially in the last few years from British Columbia, the west coast of the US, and New Zealand; these suppliers also had the highest sawlog prices in the first quarter of 2015 compared with their respective ten-year averages. There has been a steady increase in log prices in the northwest of the US since 2009, and prices for Douglas fir and hemlock sawlogs in the first quarter of 2015 were 23% higher than their ten-year averages.

At the other end of the spectrum are Brazil and the Russian Federation, where sawlog prices are substantially lower than their ten-year averages. In both countries, prices have fallen because of the appreciation of the US dollar; in the local currencies, current prices are actually higher than the average price over the last decade.

4.6.2 Pulpwood prices

The stronger US dollar, together with insubstantial downward price adjustments of both wood chips and pulplogs in local currencies, resulted in lower wood-fibre costs in US dollar terms in almost all major wood markets worldwide in early 2015 (Wood Resources International, 2015b). The Softwood Fiber Price Index (SFPI), which is based on wood-chip and pulplog prices in 17 pulp-producing regions, fell to $92.40 per oven-dry metric tonne in the first quarter of 2015, which was a decline of 3.5% over the previous quarter and 7.1% lower than in the first quarter of 2014. The current SFPI is at its lowest level since 2009 (graph 4.6.4). The biggest price declines for wood fibre in 2014 and early 2015 were in Brazil, France, Germany, the Russian Federation and the Nordic countries.

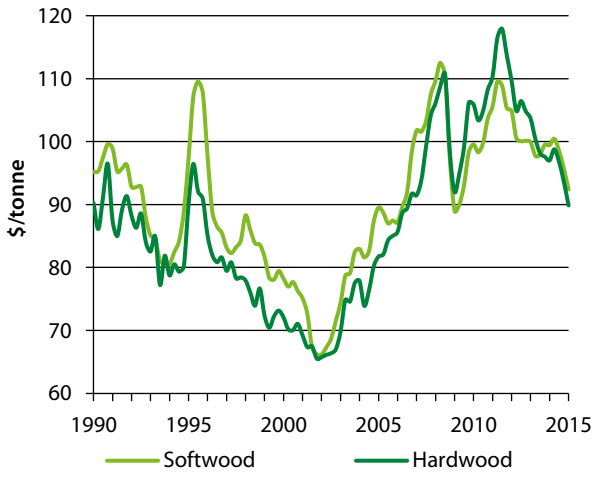
The Hardwood Fiber Price Index declined by 4.0% from the fourth quarter of 2014 to the first quarter of 2015, reaching a nine-year low of $89.86 per oven-dry metric tonne (graph 4.6.4). Prices for wood fibre fell in almost all regions outside the US, with the biggest declines occurring in Australia, Germany, the Russian Federation, Spain and the Nordic countries.

The local currencies in Europe continued to weaken against the US dollar in early 2015, resulting in further reductions in wood-fibre costs in US dollar terms for European pulp producers. Prices have been falling in many major pulp-producing countries in Europe for more than four years; nevertheless, the decline in pulpwood prices in the 12-month period from early 2014 to early 2015 was particularly dramatic, falling by about 20% in the Nordic countries and by 25-30% in central Europe. Despite declining wood-fibre costs, pulp mills in Europe continue to have some of the highest wood-fibre costs in the world.

Although wood-fibre prices did not change much in most states in the US in late 2014 and early 2015, wood-fibre costs for US pulp mills have increased substantially since 2013 and were 10-27% higher (depending on region and species) in the first quarter of 2015 than in early 2013. The biggest price increases were for softwood pulplogs (+27%) and softwood chips (+22%) in the western US; prices for pulplogs and wood chips in the southern states were up by 5-20%.

GRAPH 4.6.4

The global Softwood Fiber Price Index and Hardwood Fiber Price Index, 1990-2015



Note: Price indices based on delivered log price per oven-dry tonne in US dollars.

Source: Wood Resources International, 2015b.

Note: The statistical annex of the Forest Products Annual Market Review 2014-2015 is available at: www.unece.org/forests/fpamr2015-annex

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5 SAWN SOFTWOOD

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HIGHLIGHTS

- Apparent sawn softwood consumption rose by 4.2% in North America in 2014 and by 2.7% in Europe. However, demand dropped in the CIS, by 3.7%.
- The reversal of the negative trend in European consumption was due mainly to positive developments in the Nordic countries and the UK, but the European market is still not stable, with consumption falling in some EU countries.
- Growing demand in Europe and in overseas markets pushed European sawn softwood production up by 3% in 2014, reaching over 100 million m3 for the first time in three years. Exports were up by 5.0%, with the overseas markets (mainly in Asia and North Africa) increasing their demand – Egypt, the main importer from Europe, increased imports 33% to 3.5 million m3.
- European producers were assisted by the weakening of the euro against the currencies of many of the countries importing European sawn softwood (although not Japan); this improved returns on most exports, while returns from product sales in the eurozone were steady.
- Aided by a dramatic weakening of the rouble and by healthy market demand, CIS exports of sawn softwood increased by 4.9% in 2014. Russian producers of sawn softwood enjoyed a 24% price appreciation (in devalued rouble terms) in 2014.
- Sawn softwood production in Canada and the US grew by 1.1% and 5.4%, respectively, in 2014, and prices were stable.
- Poor winter weather in eastern North America in the first quarter of 2015, coupled with an economic slowdown in China, caused supply to outpace demand, resulting in dramatic decreases (for example 14.8% in the second quarter, year over year) in benchmark prices for sawn softwood in the US market.
- North American exports to China and Japan declined substantially in 2014 due to the Chinese construction slowdown and an increase in Japan's consumption tax.

5.1 INTRODUCTION

As in 2013, 2014 saw generally "improving but unsettled" global economic trends. The recovery in North America continued, and Europe had its first increase in consumption in four years. The CIS countries suffered a setback in 2014 as economic conditions and depreciating currencies had a negative impact on sawn softwood demand.

Sawn softwood consumption increased in North America (by 4.2%) and Europe (by 2.7%) in 2014 but declined in the CIS (by 3.7%) (table 5.1.1). Volatile exchange rates affected countries differently as the US dollar strengthened against most currencies in late 2014 and the first quarter of 2015. Production increased in North America by 3.5%, in Europe by 3.2% and in the CIS by 0.9%.

TABLE 5.1.1

Apparent consumption of sawn softwood in the UNECE region, by subregion, 2013-2014

(thousand m³)

	2013	*2014*	*m3/ capita (2014)*	*Change (%) 2013-2014*	*Change (%) 2010-2014*
Europe	84,233	86,526	0.140	2.7	-3.7
CIS	18,307	17,629	0.064	-3.7	19.8
North America	82,181	85,598	0.246	4.2	18.4
Total	184,721	189,753	0.152	2.7	7.3

Source: UNECE/FAO, 2015.

5.2 EUROPE

5.2.1 Consumption

As in 2013, the European market had a wide variety of results in 2014, with some markets clearly underperforming and others experiencing dramatic growth. Total apparent consumption increased by 2.7% in 2014, to 86.5 million m³ (table 5.2.1), which was the best result in three years but still low compared with historical levels.

TABLE 5.2.1

Sawn softwood balance, Europe, 2013-2015

(thousand m³)

	2013	*2014*	*2015f*	*Change (%) 2013-2014*
Production	97,929	101,098	103,750	3.2
Imports	31,575	32,945	33,526	4.3
Exports	45,271	47,517	48,618	5.0
Apparent consumption	84,233	86,526	88,658	2.7

Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

The Nordic countries (Finland, Norway and Sweden) contributed more than half (1.2 million m³) of the increase in European apparent consumption, with growth in Sweden especially high (up by 17%, or 0.8 million m³). Growth in Finland and Norway was 4.9% and 7.8%, respectively, and Estonia, Lithuania, Poland, Turkey and the UK also reported growth rates well above the subregional average. Estonia now has the highest sawn softwood consumption per capita in the subregion due to a rapidly growing remanufacturing sector.

Three years of decline in the apparent consumption of sawn softwood in Austria and France have removed 2.6 million m³ from Europe's total apparent consumption. Consumption has also declined in the smaller markets of Latvia, Portugal, Romania and Slovenia, although it is still within the five-year averages for all those countries except Portugal, where consumption in 2014 was less than half what it was in 2010.

There have been minor changes in the market structure in Europe in recent years. Germany is still the largest consumer of sawn softwood, followed by the UK and France. Sweden overtook Austria and Turkey in 2014 as the fourth-largest consumer of sawn softwood in the subregion.

5.2.2 Production and capacity change

Sawn softwood production in Europe exceeded 100 million m³ in 2014, the first time it has done so since 2011. Demand increased in Europe as well as in overseas markets, and production in Europe grew by 3.2%, to 101.1 million m³. The increase occurred mainly in Finland, Germany and Sweden, which collectively added 2.3 million m³ to total production. Sweden alone accounted for half the growth in the subregion, increasing its production by 9% due to remarkable increases in consumption by the domestic construction and remanufacturing sectors as well as to steadily growing export demand and a build-up in stocks. Growth in Finland was also driven by domestic and export demand, whereas production increased in Germany mainly because of growing exports. Some of the smaller producer countries (e.g., Lithuania, 38.4%; Norway, 9.1%; Poland, 7.1%; and the UK, 5.1%) reported production increases of more than 5%, with a combined increase of 0.9 million m³ in 2014. On the other hand, production decreased in Austria, France and the Czech Republic for the third year in a row as these countries struggled with declining domestic demand.

No major structural changes occurred in Europe in 2014 and the first half of 2015. Some smaller mills closed, mainly in central Europe, and the industry is focusing on replacement investments rather than on adding capacity. Existing latent capacity in the industry could be used by adding shifts and increasing kiln-drying capacity.

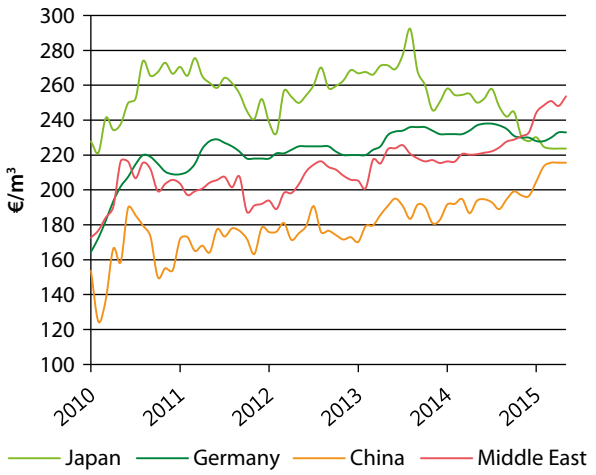
5.2.3 Prices

Prices for European sawn softwood varied among the markets. They were relatively stable in Germany, with a nominal increase of 1.3% (in euros per m³) in 2014. In the Middle East, cost, insurance and freight (CIF) prices increased by 3.2% compared with 2013.

Prices for sawn softwood targeted at the Japanese market decreased by 7.2% compared with 2013 due to lower demand for some types of sawnwood and in different segments of the Japanese market. The free-on-board (FOB) price in the Chinese market developed in a similar way to CIF prices in the Middle East, which increased due to strong demand and currency gains (graph 5.2.1).

GRAPH 5.2.1

European sawn softwood prices in China, Germany, Japan and the Middle East, 2010-2015



Notes: Data to June 2015. Japan: Finnish whitewood KD Genban, grade #5&Btr, FOB. Germany: roof framing lumber, delivered. Middle East: Scandinavian/Baltic whitewood and red pine, sixths, CIF.

Sources: EUWID Wood Products and Panels, 2010-2015; Japan Lumber Report, 2012-2015; Wood Markets Monthly, 2015.

Prices in the first quarter of 2015 followed similar trends, increasing in the Middle East and China, declining in Japan and remaining steady in Europe. Global price development has been in favour of Nordic sawmillers, who traditionally export large quantities to North Africa and the Middle East, whereas central European sawmills are more focused on Europe, where prices have stagnated. Eroding demand in Japan is causing concerns in European sawmills that focus on that market.

5.2.4 Trade

5.2.4.1 Imports

European sawn softwood production continued to grow faster than consumption, which limits the need for imports from outside the subregion. Europe imported 32.9 million m³ of sawn softwood in 2014, up by 4.3% over 2013, but the clear majority of these imports were intra-subregional. The EU countries imported about 6.2 million m³ of sawn softwood from outside the area in 2014, up by 11% over 2013, mainly from Belarus, the Russian Federation and Ukraine. EU countries imports from the Russian Federation were stable, but volumes from Belarus and Ukraine increased by 25% and 94%, respectively. Imports from North America doubled, reaching 0.5 million m³ in 2014.

5.2.4.2 Exports

European sawn softwood exports increased by 5.0% in 2014, to 47.5 million m³. The trend of increasing overseas exports continued, with more than 21 million m³ (up by 17%) exported mainly to Asia and North Africa. Overseas markets accounted for 45% of total European trade in 2014.

Egypt reclaimed the number one position from Japan in 2014 as Europe's largest overseas export market, with a volume of 3.5 million m³ (up by 33%). Exports to Japan dropped significantly – by 18% – compared with 2013. Two other important markets, Saudi Arabia and Morocco, were relatively stable in 2014 at 1.5 million m³ and 1.3 million m³, respectively. Exports to Algeria continued to increase, reaching 2.2 million m³ in 2014. Growth in Chinese imports from the Europe slowed, although the increase was still significant at 0.4 million m³, representing year-over-year growth of 33%; total import volume was 1.7 million m³ in 2014. European exports to the Republic of Korea and Australia have grown rapidly; both countries imported more than 0.6 million m³ of European sawn softwood in 2014.

Data for the first quarter of 2015 indicate that Sweden's exports are declining to Egypt but increasing to other major North African and Middle Eastern countries. Exports to China and the US were up by 24% and 31%, respectively, in the quarter, but exports to Japan were down by 21%.

5.3 CIS, WITH A FOCUS ON THE RUSSIAN FEDERATION

5.3.1 Consumption

Apparent sawn softwood consumption decreased in the CIS region in 2014 by 3.7% (to 17.63 million m³) (table 5.3.1).

5.3.2 Production/capacity change

The production of sawn softwood in the CIS was estimated at 36.11 million m³ in 2014, up by 0.9% from 2013.

Economic and political changes in the Russian Federation in 2014 and early 2015 were the main drivers of developments in the sawmill industry. The dramatic weakening of the rouble in December 2014 and January 2015 made Russian sawn softwood exports extremely attractive. The devaluation contributed to an increase in exports of softwood logs to China; this, in turn, led to an increase in rouble prices in the domestic market, making it difficult for companies to procure raw materials for their sawmills. Nevertheless, prices in the domestic market grew more slowly than the rouble weakened, and prices started to adjust in early 2015.

TABLE 5.3.1

Sawn softwood balance, CIS, 2013-2015

(thousand m³)

	2013	2014	2015f	Change (%) 2013-2014
Production	35,801	36,113	36,633	0.9
Imports	5,041	5,161	5,161	2.4
Exports	22,535	23,645	23,980	4.9
Apparent consumption	18,307	17,629	17,814	-3.7

Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

Sawmills moved to full production capacity in 2014, fuelled by strong export demand, with the volume of sawn softwood production increasing by 1.0%, to 31.5 million m³.

Kraslesinvest JSC, in the Krasnoyarsk region, launched a new sawing and sorting line in September 2014, with an annual capacity of 440 thousand m³ of sawn softwood. The enterprise has had problems with processing, however, and additional capital investment is required.

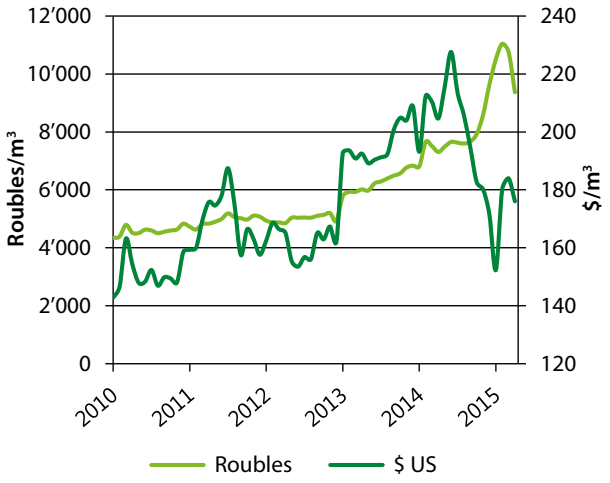
RusForest (a Swedish-registered company operating in the Russian Federation) sold its forest assets in the Arkhangelsk and Krasnoyarsk regions. Sawmill 25, part of the Titan group of companies (the fourth-largest logging company in the Russian Federation), purchased the Archangelsk asset (Arkhangelsk LDK-3), in so doing raising the prospect of becoming one of the country's largest sawmill companies.

5.3.3 Prices

According to estimates by Rosstat (2015), the weighted average price for Russian sawnwood prices in 2014 was 7,789 roubles per m³ (approximately $205 per m³). This was 24% higher than in 2013 (graph 5.3.1).

GRAPH 5.3.1

Sawn softwood prices, Russian Federation, 2010-2015



Note: Data to April 2015.
Source: Rosstat, 2015.

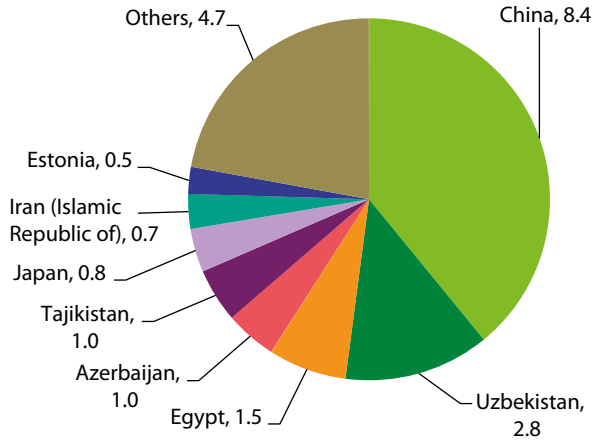
5.3.4 Trade

China remained the Russian Federation's largest export market in 2014 (graph 5.3.2), but the rate of growth declined. Russian sawn softwood shipments to China rose by 11% in 2014, to 8.4 million m³; their customs value at the Russian Federation-China border was $1.06 billion (an average of $127 per m³). Other key export markets for Russian sawn softwood included:

- Uzbekistan (up by 4%, to 2.78 million m3).
- Egypt (up by 9%, to 1.49 million m3).
- Tajikistan (up by 8%, to 1.03 million m3);
- Azerbaijan (down by 3%, to 984 thousand m3).
- Japan (down by 12%, to 832 thousand m3).

GRAPH 5.3.2

Russian Federation sawn softwood exports by market, 2014 (million m³)



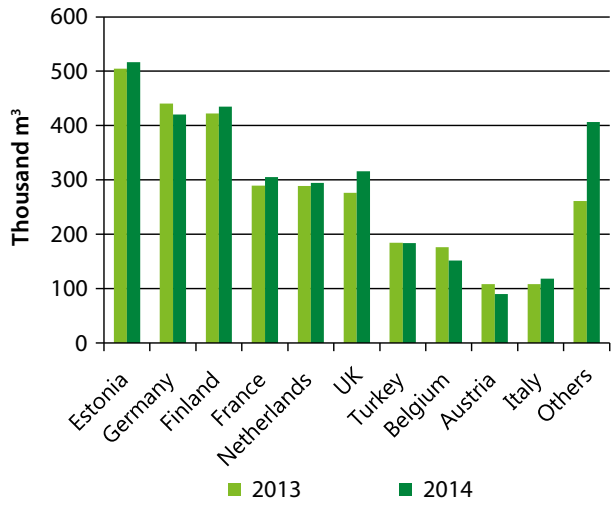
Source: WhatWood, 2015.

Source: R. Vlosky, 2014.

Russian exports of sawn softwood to Europe increased by 6% in 2014, to 3.24 million m³. The largest growth was in the UK, where imports were up by 14%, to 316 thousand m³, while Estonia's imports increased by 2%, to 517 thousand m³. On the other hand, Russian exports to Belgium fell by 14%, to 152 thousand m³, and those to Austria dropped by 17%, to 90 thousand m³ (graph 5.3.3).

GRAPH 5.3.3

Russian Federation sawn softwood exports to Europe, 2013 and 2014



Source: WhatWood, 2015.

5.4 NORTH AMERICA

5.4.1 Consumption

In the face of forecasts indicating improvements in North American sawn softwood markets, 2014 and particularly the first half of 2015 produced mixed results. The primary driver of consumption, US housing starts, recovered to 1.03 million units in 2014, cracking the million mark for the first time since 2007 (US Department of Census, 2015). Although housing starts proceeded at a very slow pace in the first four months of 2015, the outlook indicates 1.1 million to 1.15 million starts for the year. The single-family component grew by only 5% in 2014, but multi-family starts maintained a strong pace, rising by 16% in 2014 on top of substantial gains each year since 2010 to the highest number of multi-family starts in any year since 1989. Notably, multi-family construction consumes approximately 65% less sawn softwood and wood-based panels per family unit than do traditional single-family units. Industry promotional efforts, including the Softwood Lumber Board initiative to increase wood use in taller/larger apartment buildings, should lead to further increases in North American wood consumption.

US GDP grew by 2.4% in 2014; although it contracted by an annual rate of 0.2% in the first quarter of 2015 (US Bureau of Economic Analysis, 2015), this was a marked improvement over the same quarter in 2014. The flattening of the national unemployment rate at 5.5% (US Bureau of Labour, 2015) drove positive contributions from personal consumption expenditure, private inventory investment, and residential fixed investment.

Growth in residential housing starts and continued strength in repair and remodelling activity, as well as gains in the non-residential sector, drove a 4.2% increase in North American apparent sawn softwood consumption in 2014, to 85.6 million m³. Of this, 72.0 million m³ (up by 6.4%) was in the US and 13.6 million m³ (down by 6.4%, the second consecutive year of decline) was in Canada.

TABLE 5.4.1

Sawn softwood balance, North America, 2013-2015

(thousand m³)

	2013	*2014*	*2015f*	*Change (%) 2013-2014*
Production	92,475	95,695	97,125	3.5
Imports	20,385	21,888	22,116	7.4
Exports	30,680	31,984	33,433	4.3
Apparent consumption	82,181	85,598	85,809	4.2

Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

5.4.2 Production/capacity change

US sawn softwood output in 2014 was 53.80 million m³, an increase of 5.4% over 2013. Production gains were highest in the South (up by 6.9%), followed by the Inland (5.2%) and Coast (2.9%) regions. Access to low-cost timber, investment in new and upgraded capacity, and healthy demand driven by a strong housing sector has put the South in a leading position among US producing regions. Steady demand throughout 2014 (but less so in early 2015) enabled mills to maintain or increase production.

Canadian sawn softwood production gains trailed those of US mills. Output was 41. 9 million m³ in 2014, up by 1.1% over 2013. The British Columbia Interior, Canada's leading region for sawn softwood production (46% of Canada's total production in 2014), posted a 1.4% reduction in output in 2014 (18.8 million m³, versus 19.1 million m³ in 2013). Despite favourable demand drivers, the mountain pine beetle epidemic in the province's interior reduced the quality and availability of economically viable fibre. Mills shut down in the first half of 2015 in an effort to balance supply with US demand, which has been lacklustre in the face of weak prices and hikes in export duties on shipments to the US. Investments in existing mills in Alberta, Saskatchewan and Manitoba led to an increase in output in those three provinces of 1.3% in 2014, to 6.70 million m³.

Source: UNECE/FAO, 2015.

Eastern Canada (dominated by New Brunswick, Nova Scotia, Ontario and Quebec was once again able to increase its sawn softwood output in 2014, with production up by 1.1% to its highest level since 2008 (Statistics Canada, 2015). This was notable in the face of difficult operating environments in the region due to ever-declining demand for sawmill residuals from higher-cost, low-margin pulp, paper and newsprint mills as well as the restricted availability of sawlogs on public timberlands as a direct result of government forest policy.

For the last three years (i.e. 2013, 2014 and 2015), the start of the year has been marked by severe weather in the eastern half of North America as well as in the large consuming regions in the south, slowing overall demand. In anticipation of an expected surge in consumption, however, most mills continued at normal operating levels. Logistical issues, which hampered distribution in 2013, were mostly resolved in 2014, although waterfront work interruption on the US west coast continued to delay export shipments from there.

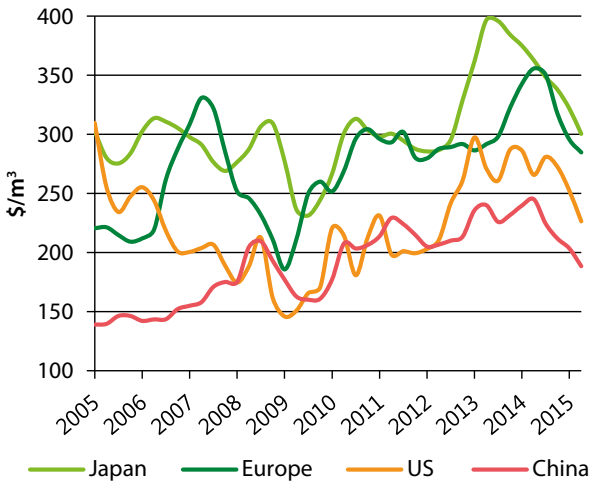
5.4.3 Prices

Prices began to erode rapidly in most major product categories as inventories began to build and downstream receivers slowed the inflow of materials due to slowing demand. The reality of a much slower-than-expected expansion in demand and consumption in North America became evident in the first quarter of 2014. The compounding effect of subdued Chinese demand and increasing fibre self-sufficiency in Japan left producers with few export market options. The bellwether structural framing lumber composite price (Random Lengths, 2015) fell by 6% in the first quarter of 2014 and by a further 10% in the first quarter of 2015, quarter over quarter. The price drop in the first quarter of 2015 was the largest quarterly fall since the inception of the index in 1995, triggering, in April 2015, the imposition of export taxes on Canadian shipments to the US for the first time since October 2013. Moderate price and demand forecasts in the US for the rest of 2015 suggest that Canadian duties on US-bound exports may continue until October, when the seven-year Softwood Lumber Agreement is set to expire.

Beginning late in the fourth quarter of 2014, the exchange rate swung in favour of Canadian exporters, and Canadian mills were better placed than US mills to absorb the lower prices in the first half of 2015. Log prices in the US West softened due to muted export and domestic demand, but sawmill margins were still squeezed to near breakeven levels on both sides of the border. The exception was in the US South, where depressed log prices afforded moderate margins to sawmills. Sawn softwood supply balances and overall demand improvements are expected for the rest of 2015, and there is an expectation of improved prices.

GRAPH 5.4.1

Quarterly prices for sawn softwood in China, Europe, Japan and the US, 2005-2015



Notes: Data to June 2015, delivered-to-market prices. Japan: BC W-SPF 2x4, J-grade, C&F; Europe: Swedish spruce 47x100, C&F; US: W-SPF grade #2&Btr, 2x4, delivered to Chicago; China: SPF/Hem-Fir, green, grade #3&Btr 1-7/8x4-12, C&F.

Sources: Wood Markets Monthly, 2005-2015; Wood Markets China Bulletin, 2005-2015.

5.4.4 Trade

With slowing conditions in most export markets, both US and Canadian producers have had to rely more heavily on wood-product demand in North America. In addition to the decreasing consumption of sawn softwood in key export markets, the progressive strengthening of the US dollar weakened the purchasing power of offshore importers of wood products. Conversely, the relatively weaker currency of other exporting regions has increased the competitiveness of those regions. After enjoying an upswing in 2013, North American sawn softwood exporters lost ground in 2014, with the largest drops in export volumes occurring in the Chinese and Japanese markets. In the case of China, the reduction in Canadian and US sawn softwood exports was attributed to a slowdown in China's construction market, coupled with a rise in Russian log and sawn softwood exports due to the devaluation of the rouble. Overall, sawn softwood exports to China grew by 4.3% in 2014, to 17.6 million m^3, with the Russian Federation leading the growth and becoming the single-largest supplier. Much of the decline in Japan's sawn softwood imports can be attributed to an increase in that country's consumption tax and the rise of domestic sawn softwood output using domestically produced logs. Sawn softwood imports to Japan from all countries shrank by 17.6% in 2014, to 2.4 million m^3. Canadian shipments to most offshore export markets were flat in the first four months of 2015 relative to the same period in 2014. US imports continued to rise as a result of increasing domestic demand and a strong US dollar, both of which limit exports and attract imports.

5.4.4.1 Imports

Canada continues to dominate US imports, with a near 97% share in 2014. Canadian shipments to the US were up by 1.94 million m^3 (10.4%) in 2014, to 20.6 million m^3, the highest volume since the global financial crisis.

5.4.4.2 Exports

The US export volume shrank by 70 thousand m^3 (2.3%) in 2014, to 3.0 million m^3. The most significant reductions were to Japan (-29.2%) and China (-14.9%).

Canadian sawn softwood exports to overseas markets declined by 0.71 million m^3 (6.9%) in 2014; the largest decrease was to Japan, with the export volume dropping by 0.51 million m^3 (24.2%) to 1.60 million m^3. The next largest decline, by volume, was to China, down by 0.36 million m^3 (6.2%) to 5.44 million m^3. Despite this drop, China still accounted for 65% of Canada's overseas sawn softwood exports (equivalent to 26% of Canada's shipments to the US) in 2014.

While the first half of 2015 did not see a reversal of 2014 trends for US exporters, the story was different in Canada. Canadian sawn softwood exports to the US were up by 10.3% in the first third of 2015 compared with the corresponding period in 2014, with exports to China and Japan also tracking double-digit increases compared with the same period in 2014 (which was affected by a four-week Vancouver port strike in March 2014).

Positive economic drivers and a balancing of supply and demand provide an optimistic outlook for growth in sawn softwood markets through to the end of 2015. For North American producers, the key metrics to watch are rising US consumption (housing starts) and stable export markets.

5.5 EXTRA-REGIONAL INFLUENCES AFFECTING THE UNECE REGION

China's sawn softwood imports from non-UNECE countries increased by 14% (by volume) in 2014, attributable to structural economic reforms targeted at domestic consumption and the real-estate sector aimed at cushioning the effects of a planned economic slowdown (table 5.5.1). The reforms resulted in sustained growth in demand for raw materials in domestic construction activity, although that activity slowed towards the end of 2014.

TABLE 5.5.1

Major importers and exporters of sawn softwood outside the UNECE region, 2013-2014

(thousand m^3)

	2013	*2014*	*Change (%) 2013-2014*
Major importers			
China	16,910	19,240	13.8
Japan	7,425	6,549	-11.8
Egypt	3,893*	4,175*	7.2
Saudi Arabia	2,052**	1,793**	-12.6
Republic of Korea	1,520	1,792	17.9
Major exporters			
Chile	3,117	3,894	24.9
New Zealand	2,029	1,948	-4.0
Brazil	844	858	1.7
Australia	241	268	11.2
Uruguay	163		

Notes: * Estimate based on sum of reported exports to Egypt by exporting countries. ** Estimate based on sum of reported exports to Saudi Arabia by exporting countries.

Sources: COMTRADE, 2015; Global Trade Atlas, 2015.

China's sawn softwood imports are destined mainly for housing and construction; tropical and temperate hardwoods, on the other hand, are used mainly for furniture and interior decoration. China's imports in 2014 were predominantly from UNECE sources, particularly Canada and the Russian Federation, with Chile and New Zealand the only significant competitors from outside the UNECE region. China's construction market slowed in late 2014, creating an oversupply of sawn softwoods. With decreasing demand and high inventories at the port, prices for sawn softwoods trended downwards in the first half of 2015 (AgriHQ, 2015).

Japan increased its consumption tax in April 2014, which caused a sharper-than-predicted contraction in consumption. The rise in the consumption tax was expected to increase the purchase price of housing for consumers, and the number of completed homes rose in 2013 and January 2014 as home buyers rushed to complete building before the consumption tax increase came into effect. Housing activity is expected to pick up in 2015 in response to rising wages, low interest rates and the introduction of a number of financial support packages for home buyers, such as the re-introduction of the housing eco-point system, which provides subsidies for energy-efficient homes, and a lowering of mortgage interest rates (ITTO, 2015). Japanese import demand was also affected by a weakening yen, which pushed up the cost of imported sawnwood.

North African and Middle Eastern countries – particularly Egypt, Saudi Arabia and the United Arab Emirates – continued to provide major markets for sawn softwoods, with Saudi Arabia's imports increasing substantially (over 50%) in 2013 and staying high in 2014.

The only significant exporters of sawn softwoods outside the UNECE region in 2014 were Brazil, Chile and New Zealand. New Zealand's major markets are in the Asia-Pacific region: Australia, China, the Republic of Korea, Taiwan Province of China, Thailand, the US and Viet Nam. Chile's export markets are more diversified, with significant volumes shipped to Asian, Latin American and Middle Eastern markets. Although the volume of New Zealand's roundwood harvest and log exports have increased dramatically in recent years, sawnwood production and exports have been relatively static: high log demand and log export prices in China until late 2014 led to intense competition for logs among domestic sawmills in New Zealand (and consequently higher prices).

5.6 POLICY AND REGULATORY INFLUENCES ON THE SECTOR

The US-Canada Softwood Lumber Agreement is due to expire in mid-October 2015. If no new agreement is made before then, a one-year "stand-still period" will begin, during which no trade action can be taken. After 17 consecutive months of duty-free exports, weakening prices in the first quarter of 2015 saw the application of export taxes (based on threshold levels) on Canadian shipments to the US in the second quarter.

Efforts continue in North America to promote wood as a building material of choice. The Softwood Lumber Board (SLB) was established in 2011 by the industry for an initial five-year term. It is a mandatory promotion fund, or "check-off", authorized under the US Farm Bill, with the sole goal of increasing the demand for sawn softwood. The SLB operates with an annual budget of approximately $15 million funded by industry, with a tariff of 35 cents per 1,000 board feet (approximately $0.22 per m^3, net size) levied against all suppliers to US markets, including imports, on volumes in excess of 15 million board feet (24,000 m^3) per supplier. The SLB is managed by a 19-member industry board and is overseen by the Agricultural Marketing Service of the US Department of Agriculture. The SLB is subject to a re-vote in 2016.

Note: The statistical annex of the ***Forest Products Annual Market Review 2014-2015*** is available at: www.unece.org/forests/fpamr2015-annex

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6 SAWN HARDWOOD

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HIGHLIGHTS

- Sawn hardwood trade flows between countries in the UNECE region increased again in 2014.
- Growth in sawn hardwood trade flows to countries outside the UNECE region (most notably China and countries in Southeast Asia) slowed in 2014, although it was still stronger than the growth of trade flows between countries in the UNECE region.
- China's sawn hardwood imports increased by 32% in 2014, to $4.2 billion, and its share of total global trade value increased from 33% to 39%.
- The volume of sawn hardwood imports to the UNECE region rose in 2014 after a downturn in 2012 and 2013.
- Signs of recovery strengthened in various EU markets. The UK hardwood market was particularly buoyant in 2014, business in Germany was stable, demand increased in Scandinavia, and the Spanish hardwood market rebounded from a low base.
- Rising production in the CIS in 2014 was encouraged by a sharp rebound in export sales, particularly to China, assisted by weakness in the rouble in the second half of the year.
- North American consumption of sawn hardwood increased in the pallets, furniture, millwork, and cabinets subsectors, but these gains were partly offset by a decline in the consumption of sawn hardwood for flooring, railway ties and board roads.
- There was double-digit percentage growth in US exports in 2014, for the fifth year in a row. Europe's share of US hardwood exports stabilized, while the Chinese market continued to gain importance.
- Prices for US hardwood lumber rose sharply in 2014.
- Oak was the dominant species in European hardwood markets in 2014, with the "rustic" look still popular in the flooring and furniture industry.
- Plant health issues are becoming an increasingly prominent factor in the international hardwood trade, with the trade in ash species particularly affected by efforts to control the spread of the emerald ash borer.
- Laws designed to prohibit trade in illegally harvested timber are yet to have a significant direct impact on markets for sawn hardwood produced in the UNECE region; rather, such laws are primarily affecting the trade in tropical hardwood. The supply base for tropical wood imported into the UNECE region narrowed after importers introduced due-diligence systems.

6.1 INTRODUCTION

Total apparent consumption of sawn hardwood in the UNECE region increased to 34.4 million m^3 in 2014, a 3.3% rise compared with 2013. This was the second consecutive year of increase, a sign that the upward trend may be sustainable.

Sawn hardwood production in the UNECE region increased by 5.8% in 2014, to 39.1 million m^3. Production had increased in the CIS and North America in 2013 and declined in Europe, but it increased in all three subregions in 2014.

The downturn in sawn hardwood imports in the UNECE region in 2012 and 2013 ended in 2014 when imports increased by 7.7%, to 6.7 million m^3. The UNECE region exported 11.4 million m^3 of sawn hardwood in 2014, up by 15.2% over 2013, with exports increasing in all three subregions.

Source: AHEC, 2015.

6.2 EUROPE

6.2.1 Consumption

European consumption of sawn hardwood increased by 4.5% in 2014, to 12.8 million m^3, but it has been volatile in the last four years, with a decline in 2011 followed by slight growth in 2012 and another fall in 2013. The upward trend in 2014 is expected to continue through 2015, although at a slower rate (table 6.2.1).

Several large hardwood-consuming markets in Europe benefited from activity in the renovation sector in 2014 and from a slow recovery in new construction and furniture manufacturing (EUWID, 2014a), but the recovery failed to filter through to all market sectors. The production of "real wood" flooring (not including laminate flooring) in the 17 countries covered by the European Federation of the Parquet Industry (FEP) fell by 6.6% in 2014, following a moderate decline of 1.8% in 2013. Hardwood flooring is under intense competitive pressure from non-wood alternatives, particularly luxury vinyl tiles (Global Flooring Alliance, 2015).

TABLE 6.2.1

Sawn hardwood balance, Europe, 2013-2015

(thousand m^3)

	2013	*2014*	*2015f*	*Change (%) 2013-2014*
Production	12,395	13,414	13,639	8.2
Imports	4,629	4,864	4,965	5.1
Exports	4,805	5,514	5,610	14.8
Apparent consumption	12,219	12,765	12,994	4.5

Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

There was little change in European hardwood fashion trends in 2014, which remain heavily oriented towards oak. Oak now accounts for more than 70% of wood flooring manufactured in Europe; the share of tropical woods continues to decline, and other temperate species account for only a small share of production. The "rustic" look and wide planks remain very popular in hardwood flooring (Global Flooring Alliance, 2015).

French, German and Romanian hardwood sawmills reported strong European demand for sawn oak in 2014. French sawmills were sometimes unable to satisfy all inquiries due to a shortage of oak logs (EUWID, 2014b and 2014c), and sawn oak production in Croatia was also occasionally restricted by log shortages. German sawmills reported continued strong demand for oak in the first half of 2015 (EUWID, 2015a).

In 2014, German sawmills reported weakening demand for beech in the domestic furniture industry and in furniture industry supply businesses, including glulam-board and cut-size manufacturers, but this was offset by good demand for sawn beech among German packaging and pallet producers. Demand for sawn beech rose in some European markets, notably Scandinavia, Spain and the UK. German sawmills reported a recovery in the domestic market for sawn beech in the first half of 2015 and continuing growth in demand in other European markets (EUWID, 2015b). In contrast, Romanian sawmills delivered less sawn beech to European countries and the Middle East in 2014 (EUWID, 2015c).

6.2.2 Production and capacity change

European sawn hardwood production increased sharply in 2014, by 8.2% (to 13.4 million m^3), and EU production climbed by 6.9%, (9.3 million m^3). Despite log shortages in parts of the year, overall sawn hardwood output in Croatia and France was higher in 2014 than in 2013. Romania also produced significantly more sawn hardwood in 2014 than in 2013, while German sawn hardwood production fell slightly.

Source: AHEC, 2015.

The pace of closures and insolvencies in the western European hardwood sawmilling sector started to slow in 2013 and, in Germany, this stabilization continued through 2014. The financial position of German sawmills, especially those targeting the oak market, improved in 2014. Sawmill closures in Germany in 2014 primarily involved smaller mills belonging to parquet or furniture producers. However, the weakness in the domestic market in France meant that the financial position of hardwood sawmills there remained difficult in 2014, with several applying to open insolvency proceedings (EUWID, 2014f and 2015g).

6.2.3 Prices

European oak prices rose in 2014. In addition to strong overall demand, this was driven by price hikes for competing American white oak assortments. French sawn oak prices climbed by 1-13%, depending on specification, in the first seven months of 2014 (EUWID, 2014c). Prices for European sawn beech also increased in 2014 after stagnating for most of 2013. Depending on the specification, German producers were able to achieve price hikes of €5-20 per m^3 between January and October 2014 (EUWID, 2014d).

6.2.4 Trade

6.2.4.1 Imports

Sawn hardwood imports increased in all the largest European markets in 2014, with total imports by European countries growing by 5.1%, to 4.9 million m^3. Due to continuing demand from furniture producers, Italy remained the largest importer, even though its imports grew by only 1.5% in 2014, to 728 thousand m^3. Germany's imports increased by 6.4%, to 450 thousand m^3, making that country the second-largest importer in 2014. Much of the growth in Germany was due to increased imports of lower-grade products from Latvia and Lithuania destined for pallets and other industrial applications.

Imports to the UK increased by 2.8% in 2014, to 448 thousand m^3, driven by rising imports of American and tropical wood for joinery applications. After a sharp fall in 2013, imports by Belgium rebounded by 14.8% in 2014, to 418 thousand m^3. The rebound was due mainly to the recovery of tropical hardwood imports after they had been constrained in 2013 by logistical problems in Cameroon and by the tightening of due-diligence procedures following the introduction of the EU Timber Regulation.

6.2.4.2 Exports

After falling by 3.4% in 2013, sawn hardwood exports by European countries increased 14.7% in 2014, to 5.5 million m^3. A large proportion of this increase was due to Croatia, whose exports increased by 35.4%, to 869 thousand m^3, driven mainly by an increase in shipments to Egypt after a sharp decline in 2013. Romania's exports of sawn hardwood increased by 3.8% in 2014, to 753 thousand m^3; its exports to Egypt, its largest market, declined slightly, but this was offset by rising exports to China and Hong Kong SAR. Germany's exports increased by 7.3% in 2014, to 690 thousand m^3, with significant gains in sales to China, the US and Viet Nam. Exports from countries in the eurozone were boosted in the second half of 2014 by a sharp depreciation in the euro relative to the US dollar.

6.3 THE CIS SUBREGION

The apparent consumption of sawn hardwood in the CIS fell by 8.1% in 2014, to 1.9 million m^3, following a 12.3% increase in 2013 (table 6.3.1). The medium-term trend in sawn hardwood consumption in the CIS has been negative, with consumption down by 18.2% in 2014 compared with 2010.

TABLE 6.3.1

Sawn hardwood balance, CIS, 2013-2015

(thousand m^3)

	2013	*2014*	*2015f*	*Change (%) 2013-2014*
Production	3,119	3,219	3,375	3.2
Imports	92	83	93	-9.7
Exports	1,137	1,397	978	22.8
Apparent consumption	2,074	1,906	2,489	-8.1

Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

Sawn hardwood production in the CIS increased by 3.2% in 2014, to 3.22 million m^3, continuing an upward trend since 2012. Rising production in 2014 was encouraged by growth in export sales, which rebounded by 22.8% in 2014, to 1.39 million m^3, after a decline of 12% in 2013. Sawn hardwood imports fell by 9.7% in 2014, to 83 thousand m^3.

Growth in CIS sawn hardwood production and exports was driven by developments in the Russian Federation. Russian sawn hardwood production was up by 4.3% in 2014, to 2.4 million m^3, and exports showed a strong upward trend. Russian sawn hardwood exports fell by 13% in 2013, due primarily to lower deliveries to China, which is the dominant export market, but they increased sharply in 2014, rising by 22.8% to 911 thousand m^3. The Russian Federation delivered 783 thousand m^3 of sawn hardwood to China in 2014, even more

than the high water mark achieved in 2012 after the introduction of the roundwood export tax (Global Trade Atlas, 2015). Russian sawn hardwood exports to several other CIS countries, including Kazakhstan and Uzbekistan, and to EU countries such as Estonia, Germany, Latvia and Poland, were also higher in 2014. This trend was facilitated by weakness in the Russian rouble in the second half of 2014.

Sawn hardwood consumption in the Russian Federation decreased by 4.1% in 2014, to 1.5 million m^3. The fall in crude oil prices, the collapse of the rouble, and the imposition of international economic sanctions all affected the Russian economy in 2014. The World Bank expects that the economic situation in the Russian Federation will continue to deteriorate in 2015 and that GDP growth will remain negative in 2016 against a background of low consumer confidence, high household debt, and slowing income growth (World Bank, 2015).

Ukraine's exports of sawn hardwood increased by 20.5% in 2014, to 353 thousand m^3. Demand for Ukrainian sawn oak was strong in Asia and in various European markets. The political crisis and military conflict have not had major impacts on sawn hardwood production and deliveries because most sawmills and export companies are in the western part of the country (EUWID, 2014e). Ukrainian production is estimated to have remained stable in 2014, at 455 thousand m^3.

6.4 NORTH AMERICA

6.4.1 Consumption

North American sawn hardwood consumption increased by 3.8% in 2014, to 19.7 million m^3 (table 6.4.1). Consumption is expected to remain largely unchanged in 2015 after a period of substantial growth from 2010 to 2014. The North American domestic market was strong in 2014 due to improved job markets, higher consumer confidence, and rising new home construction (Caldwell, 2015).

TABLE 6.4.1

Sawn hardwood balance, North America, 2013-2015

(thousand m^3)

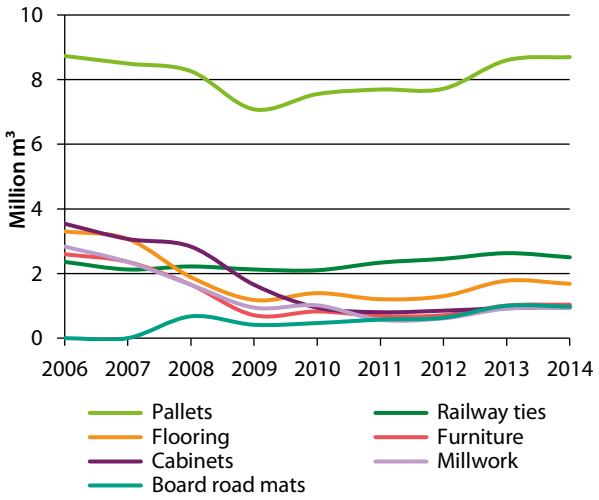
	2013	*2014*	*2015f*	*Change (%) 2013-2014*
Production	21,453	22,460	22,428	4.7
Imports	1,488	1,741	1,766	17.0
Exports	3,933	4,463	4,538	13.5
Apparent consumption	19,008	19,738	19,657	3.8

Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

US sawn hardwood consumption increased by 4.1% in 2014, to 18.1 million m^3. Consumption increased in the pallets, furniture, millwork, and cabinets subsectors, but these gains were partly offset by declining sawn hardwood consumption in subsectors producing flooring, railway ties and board roads (graph 6.4.1).

GRAPH 6.4.1

US sawn hardwood consumption, by subsector, 2006-2014



Source: Caldwell, 2015.

US housing starts increased again in 2014, boosting demand for cabinets and furniture. The value of non-residential construction also continued to rebound from the low in 2011 as demand for new construction grew. Consumer confidence increased in 2014, assisted by declining oil prices, but lower oil prices also reduced demand for sawn hardwood in the board road subsector as the pace of expansion in the shale gas industry slowed.

A severe winter dented US consumption in the first quarter of 2015, but prospects for the rest of the year are good. Consumer spending and house building improved in the second quarter of 2015, although demand was restrained by the limited availability of mortgages for many types of homebuyers.

In Canada, sawn hardwood consumption increased by 0.6% in 2014, to 1.60 million m^3, broadly in line with trends in the Canadian construction sector, which grew by 0.7% in 2014. Despite increases in household debt ratios and the potential for higher interest rates, housing start data show ongoing health, and the outlook for 2015 is stable (CMHC, 2015).

6.4.2 Production and capacity change

US sawn hardwood production increased by 4.7% in 2014, to 21.0 million m^3. Production was 17.6% higher in 2014 than in 2010, increasing on the back of robust domestic demand, continuing growth in exports to Asia, and recovery in business with Europe. Production remains well below historic levels, however; US sawn hardwood production roughly halved between 2005 and 2009 and has increased only slowly since 2012. Production growth in 2014 was restrained by the severe 2013/2014 winter, which reduced log stocks and caused unscheduled production downtime in early 2014.

Consolidation continues in the US hardwood industry, and more small and medium-sized family businesses are expected to disappear in the next few years (NHLA, 2015).

6.4.3 Prices

Prices for US kiln-dried hardwood increased sharply between October 2013 and June 2014, triggered by strong demand, particularly in Asia and domestically and intensifying due to weather-related shortages in the 2013/2014 winter. The benchmark price for Appalachian kiln-dried 4/4 FAS red oak peaked in June 2014 at a level 45% higher than in October 2013. By the end of the year, however, prices had fallen from the peak by around 20% in response to improved supply and slowing demand in China (graph 6.4.2) (Caldwell, 2015).

6.4.4 Trade

6.4.4.1 Imports

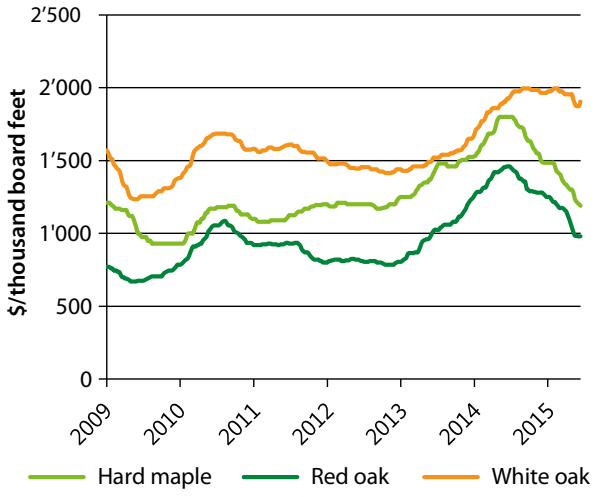
The significant cross-border trade in sawn hardwood between the US and Canada has risen in recent years. The US imported 408 thousand m^3 of sawn hardwood from Canada in 2014, up by 34% compared with 2013 and on the heels of a 23% increase in 2013. Canadian imports from the US increased by 5% in 2014, to 627 thousand m^3 (Global Trade Atlas, 2015).

US imports of temperate sawn hardwood from outside the subregion increased by 15% in 2014, to 181 thousand m^3, driven by a significant rise in imports from Germany (mainly beech), Uruguay (*Eucalyptus grandis*) and Italy. The US imports between 300 thousand m^3 and 400 thousand m^3 of tropical sawn hardwood each year, consisting mainly of decking and flooring from Brazil, Cameroon and Malaysia, and balsa from Ecuador.

Canadian imports of sawn hardwood from outside the subregion increased by 70% in 2014 but, at 64 thousand m^3, this was still only a small share of total consumption. Most of the increase was due to a sharp rise in imports from Ecuador, primarily balsa, and there were less-significant increases in imports from Cameroon and Poland (Global Trade Atlas, 2015).

GRAPH 6.4.2

Prices for selected hardwood species in the US, 2009-2015



Notes: Nominal prices. Data until 5 June 2015.
Source: Weekly Hardwood Review, 2015.

6.4.4.2 Exports

US sawn hardwood exports to countries outside the subregion increased by 15% in 2014, to 3.3 million m^3. This followed a 14% increase in 2013 and was the fifth consecutive year of double-digit growth. With the exception of maple, exports of all species were higher in 2014 than in 2013, and exports to all continents showed growth.

China accounted for 49% (by volume) of US sawn hardwood exports in 2014, North America for 24%, Southeast Asia for 13% and Europe for 10%. US exports to China increased by 19%, to 1.75 million m^3, while exports to Southeast Asia increased by 4%, to 512 thousand m^3. Exports to Europe, which had declined by 13% in 2012 and were stable in 2013, increased by 14% in 2014, to 390 thousand m^3. There was particularly strong growth in exports to the UK, which has overtaken Italy as the US's largest sawn hardwood market in Europe (USDA, 2015).

US sawn hardwood exports could decline in 2015 for the first time since 2009, with the export volume down by 9% in the first five months of the year compared with the same period in 2014. Exports declined in the period to all the major markets in Asia and Europe except Indonesia and Spain (Global Trade Atlas, 2015).

Source: AHEC, 2015.

Canadian producers continued to focus heavily on North American markets in 2014. Canadian exports of sawn hardwood to countries outside the subregion increased by only 3%, to 158 thousand m^3. Canada exported 74 thousand m^3 to China/Hong Kong SAR in 2014, up by 6% compared with 2013, but its exports to the EU declined by 9%, to 35 thousand m^3. Canada's total sawn hardwood exports were down by 5% in the first five months of 2015 compared with the same period in 2014 (Global Trade Atlas, 2015).

6.5 EXTRA-REGIONAL INFLUENCES AFFECTING THE UNECE REGION

China continued to dominate the global sawn hardwood trade in 2014. Its sawn hardwood imports increased by 32% in 2014, to $4.2 billion, and its share of total global trade value increased from 33% to 39%. The continued rise in Chinese consumption was the major factor driving sawn hardwood supply shortages and price increases in 2014, especially in the first half of the year. There were signs of a slowdown in the growth of demand in China towards the end of 2014, and these signs were also evident in the first quarter of 2015 (ITTO MIS, 2015).

The tropical sawn hardwood trade has focused increasingly on Asia, with China and, to a lesser extent, Viet Nam and Thailand the major importers and Malaysia and Thailand the major exporters. China's major suppliers of tropical sawnwood in 2014 were Thailand (48% by volume, mainly consisting of rubberwood), the Philippines (8%), and Indonesia and Malaysia (both 6%). Other significant suppliers in 2014 were (in descending order, by volume) Mozambique, Gabon, the Lao People's Democratic Republic, Viet Nam, Cameroon and Myanmar (Global Trade Atlas, 2015).

Importers in the UNECE region reported strong purchasing competition from Chinese buyers for sawn tropical hardwoods (and also hardwood sawlogs). This has long been a feature of trade in Asian hardwoods, but it is also now extending to other tropical supply regions. For example, there has been a rise in China's sawn hardwood imports from African countries, which formerly concentrated on supplying European markets. African countries supplied 16% of China's tropical sawnwood imports in 2014, compared with 12% in 2013 and less than 3% in 2010 (Global Trade Atlas, 2015).

6.6 POLICY AND REGULATORY INFLUENCES ON THE SECTOR

Plant health issues are an increasingly prominent factor in the international hardwood trade. Trade in American ash remains subject to restrictions in North America aimed at controlling the spread of the emerald ash borer. In October 2014 the EU announced new requirements for the treatment of ash wood imported from countries where the borer is known to be a problem, notably Canada and the US. Despite a subsequent derogation of the rules for one year to give plant health authorities and the industry time to adapt, there have been reports of delayed shipments and increased costs due to the tougher inspection regime. In June 2015 the EU imposed similar measures for imports of beech, birch, maple and poplar (including aspen) to prevent the introduction of the Asian longhorn beetle to the EU (AHEC, 2015).

Requirements for legality assurance are becoming more widespread in major wood-consuming markets. The US introduced a prohibition against trade in illegal timber through the Lacey Act amendment of May 2008, and the EU Timber Regulation introduced a similar prohibition, together with a requirement that operators placing timber on the market must implement due-diligence systems from March 2013. Australia introduced a prohibition on imports of illegal timber in November 2012 and (in November 2014) imposed due-diligence requirements similar to those in the EU. As part of the process of developing the Sistem Verifikasi Legalitas Kayu (SVLK), an Indonesian scheme to assure the international timber market of the legality of its timber products) Indonesia introduced requirements for timber importers to undertake due diligence in February 2015. Japan's government announced in July 2015 that it intends to introduce illegal logging legislation by the end of 2015 (van den Berk, 2015).

Overall, these laws have heightened the sensitivity of the sawn hardwood industry to illegal harvesting and encouraged various measures to demonstrate a negligible risk of wood being derived from illegal sources. To date, the impact on the trade of timber harvested in the UNECE region has been limited, but it has been significant for the trade in tropical hardwoods. The supply base for tropical wood imported into the UNECE region has narrowed following the introduction of due-diligence systems by importers (ITTO, 2015).

The focus on legality verification, combined with financial challenges during the global financial crisis, has reduced emphasis in the UNECE region on the sourcing and marketing of certified sustainable product lines, but efforts are now being made to refocus procurement on sustainability criteria. In July 2015, the European Timber Trade Federation (ETTF) announced projects by national federations in Denmark, France, Germany, Italy and Spain to develop procurement policies favouring certified timber. A survey published by ProBos in July 2015 demonstrated the impact of an equivalent policy already in place in the Netherlands, which found that 87.7% of the 1.8 million m^3 of timber and sheet materials imported by members of the country's timber trade federation, VVNH, were backed by labelling from the Forest Stewardship Council (FSC) or the Programme for the Endorsement of Forest Certification (PEFC) (ETTF, 2015). In practice, such policies can create obstacles for small producers of sawn hardwood in the UNECE region, many of which are still not engaged in FSC or PEFC certification. For example, it is estimated that fewer than 5% of forest operators in the US hardwood sector are certified (AHEC, 2015).

The "hardwood checkoff programme", which was proposed in 2013, is under development in the US; checkoff programmes are industry-funded research and promotion initiatives tailored to specific commodities. The US Department of Agriculture (USDA) proposed changes to the hardwood checkoff programme on 9 June 2015, including the removal of industrial lumber from it and the inclusion of both export and domestic sales as eligible products. Following a public comment period, the USDA is expected to announce an industry referendum to determine whether the hardwood checkoff programme will be implemented (Hardwood Checkoff, 2015).

6.7 INNOVATION IN THE SECTOR

Engineered hardwoods, such as laminated veneer lumber (LVL) and glulam, are coming increasingly to the fore. In Germany, the world's first industrial-scale facility for the manufacture of beech LVL started production in October 2014, with an annual capacity of 180 thousand m^3. Permits for the use of the product in structural applications were granted in Germany in 2014, and the producer has applied for similar permits under building laws in Japan and the US (EUWID, 2014h).

The American Hardwood Export Council (AHEC) provided a demonstration of innovative marketing, material development and environmental profiling through "The Wish List" project. High-profile architects and designers were engaged to design furniture and similar articles using less-fashionable US hardwoods such as cherry and tulipwood, together with new thermally modified hardwood materials, for display at the Victoria and Albert Museum during the London Design Week in the UK in September 2014. For all articles, the fabrication process was subject to environmental life-cycle assessment. The outcome was extensive media coverage, including quotes from internationally renowned trend-setters, who highlighted the technical and environmental benefits of hardwoods, particularly those that are currently underused. The project highlighted the leadership role now being played by the hardwood sector in encouraging transparency in supply chains and promoting comprehensive life-cycle environmental profiling (AHEC, 2015).

Note: The statistical annex of the ***Forest Products Annual Market Review 2014-2015*** is available at: www.unece.org/forests/fpamr2015-annex

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7 WOOD-BASED PANELS

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HIGHLIGHTS

- The general economic situation in Europe is showing slow but steady improvement. Consumer confidence and other indicators are developing positively.
- With the exception of hardboard, markets for all types of wood-based panels are growing, and near-term expectations are cautiously optimistic.
- In the Russian Federation, production growth in 2014 was supported by strong export and domestic demand, and there was impressive revenue growth due to the substantial devaluation of the rouble and the high rate of inflation in the domestic market.
- Volume of exports from the Russian Federation grew by 8.4% for plywood in 2014 and by 25.6% for particle board, while imports of oriented strandboard (OSB) dropped by 22.9% and particle board imports fell by 19.1%.
- The strong US dollar helped expand imports of wood-based panels into the US market in the last half of 2014.
- The overproduction of OSB in North America kept prices low through most of 2014, and a rapid increase in plywood prices in the last half of 2014 enabled OSB to increase its market share.
- Wood products were included in the US Department of Agriculture's expanded BioPreferred programme in 2014, meaning that approved wood products such as wood-based panels can now qualify for preferred procurement by federal agencies.
- The Russian plywood industry has grown strongly in the last five years, becoming one of the most reliable and profitable industries in the timber complex.

7.1 INTRODUCTION

There was moderate economic growth in both Europe and North America in 2014, which translated into moderate growth in the production and consumption of wood-based panels. The CIS showed mixed trends, with production up by 2.3% and consumption down by 4.4%. The plywood sectors in both Europe and the CIS showed good growth in production, but production dropped by almost 2% in North America. Production in the particle board subsector was stagnant in all three subregions. Medium density fibreboard (MDF) production grew by 5.2% in Europe, 2.5% in North America and 1.5% in the CIS. OSB production was down in Europe and up moderately in North America. OSB production in the CIS increased fourfold in 2014 and is projected to triple again in 2015 as newly installed production capacity in the Russian Federation ramps up.

7.2 EUROPE

Consumer confidence and economic factors continued their positive trends in Europe in 2014 (table 7.2.1). The European Panels Federation (EPF)[8] reported that, in general, markets for all types of wood-based panels are growing, and expectations for the near term are cautiously optimistic (EPF, 2015).

TABLE 7.2.1

Wood-based panel balance, Europe, 2013-2015

(thousand m³)

	2013	*2014*	*2015f*	*Change (%) 2013-2014*
Production	68,165	70,021	70,584	2.7
Imports	30,386	31,500	31,823	3.7
Exports	32,239	32,086	31,977	-0.5
Apparent consumption	66,311	69,435	70,430	4.7

Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

MDF and high-density fibreboard (HDF) are easily misclassified in statistics; thus, general trends for fibreboard are presented in this chapter, although MDF is mentioned specifically where appropriate.

[8] The EPF reports information on 27 European countries: Austria, Belgium, Bulgaria, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the UK.

7.2.1 Consumption

Particle board. The apparent consumption of particle board grew by 4.4% in Europe in 2014, to 34.6 million m³, up from 33.2 million m³ in 2013. The top five consuming markets for particle board were (in descending order): Germany, Poland, Turkey, Italy and the UK (UNECE, 2015). Apparent consumption has dropped sharply in Greece since 2011, causing the shutting down of a large part of the production capacity there. The apparent consumption of particle board in Europe is expected to remain stable in 2015 (EPF, 2015). The main application for particle board in Europe is furniture manufacture (68%).

Fibreboard. European apparent consumption of fibreboard rose by 6.6% in 2014, to 20.4 million m³ (UNECE, 2015). Turkey is by far the largest consumer of fibreboard in Europe, consuming 4.8 million m³ in 2014, which was an increase of 7.5% over 2013. Poland became the second-highest consumer in 2014, at 3.3 million m³ (an increase of 31.2% over 2013); third was Germany, where fibreboard consumption fell by 3.2% in 2014, to 3.1 million m³. The UK was the fourth-largest market, consuming 1.5 million m³ (up by 7.7%) in 2014, while consumption fell by 10.4% in France, to 1.2 million m³. In Europe as a whole, consumption is expected to rise slightly (by 0.8%) in 2015 (EPF, 2015). The main uses for fibreboard are furniture (38%), laminate flooring (37%) and building applications such as mouldings (10%).

OSB. Building activity increased slightly in Europe in 2014, although the situation was variable, with some eastern European countries experiencing stronger growth in the housing sector than their western European counterparts. Consequently, total European consumption of OSB increased substantially (by 3.7%) in 2014, to 4.9 million m³ (UNECE/FAO, 2015). Germany remains the dominant market for OSB, consuming 1.2 million m³ in 2014 (up by 2.5% and representing 25% of total European consumption). Poland (485 thousand m³), the UK (452 thousand m³), France (420 thousand m³) and Romania (382 thousand m³) were the four next-largest markets for OSB in Europe.

Plywood. European consumption of plywood rose by 3.9% in 2014, to 7.8 million m³ (UNECE, 2015). The top five consuming nations were the UK (1.3 million m³), Germany (1.2 million m³), Romania (596 thousand m³), Poland (556 thousand m³) and Italy (508 thousand m³), accounting for more than half the consumption of plywood in the subregion. Polish and Italian markets showed the biggest growth (20% and 10%, respectively). The main applications for plywood in Europe are construction (40%) and furniture (24%), while transport and packaging account for 8% each (EPF, 2015).

The consumption of non-coniferous plywood in Europe was 5.0 million m³ in 2014, an increase of 5.7% over 2013. The consumption of coniferous plywood in Europe was 2.9 million m³ in 2014, an increase of 1.3%.

7.2.2 Production and capacity utilization

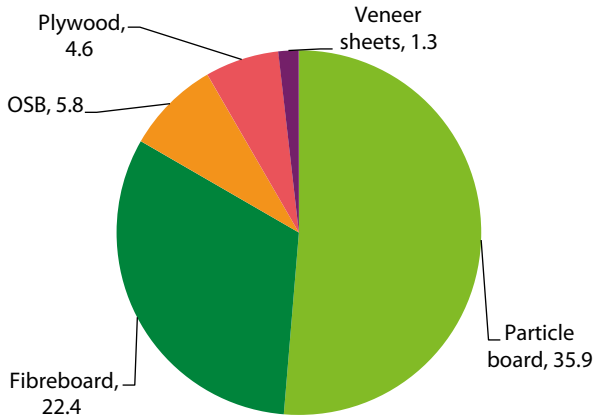
Particle board. Following several years of decline, European particle board production increased by 2.3% in 2014, to 35.9 million m³ (graph 7.2.1). Production increased by 73 thousand m³ (37.8%) in Norway and by 35 thousand m³ (87.5%) in Slovenia. Wood-based panel markets are improving in Portugal and Spain as a result of increased domestic production, consumption and exports. On the other hand, production remained very low in Greece, where a large part of production capacity remained shut down in 2014.

Germany is still the largest particle board-producing country in Europe, producing 5.6 million m³ in 2014, followed by Turkey (4.4 million m³), Poland (4.3 million m³), France (3.6 million m³) and Romania (2.5 million m³). Turkey recorded a strong increase (+4.7%) in production, but France saw a decline (-1.8%) (UNECE/FAO, 2015).

As forecast, European particle board production capacity was relatively stable in 2014, at almost 41.5 million m³. Some restructuring of capacity took place in Belgium and Spain, while projects began to come online in Bulgaria, Hungary and Slovakia. European particle board production capacity is expected to decrease slightly (by 0.4%) in 2015 (EPF, 2015).

GRAPH 7.2.1

Wood-based panel production, Europe, 2014 (million m³)



Notes: Total wood-based panel production in Europe = 70.0 million m³. "Fibreboard" comprises MDF (72%), hardboard (13%) and insulating board (15%).

Source: UNECE/FAO, 2015.

Fibreboard. Production in Europe grew by 4.7% in 2014, to 22.4 million m³, still significantly lower than the peak in 2007. Germany was the largest producer, at 5.2 million m³, followed by Turkey (4.9 million m³), Poland (4.1 million m³), Spain (1.2 million m³) and France (1.0 million m³). The overall capacity utilization rate increased from 74% in 2013 to 77% in 2014.

Hardboard production was steady in Europe in 2014, at just less than 3.0 million m³. The main European producer was Germany, which accounted for more than 75% of European production. The European production of softboard (insulation board and rigid insulation board) increased for the third year in a row; in 2014 it rose by 5.9%, to nearly 3.3 million m³. Rigid softboard accounted for two-thirds of the output and flex softboard for the remaining one-third. The installed production capacity for rigid softboard was 3.75 million m³ in 2014, while the production capacity for flex softboard was 2 million m³. Germany and Poland accounted for more than two-thirds of the production of insulation board (EPF, 2015).

OSB. OSB production fell by 1.7% in Europe in 2014, to 5.8 million m³. Germany and Romania have the largest OSB production capacities in the subregion (UNECE/FAO, 2015).

European OSB production capacity increased slightly in 2014 as a result of an efficiency upgrade in Belgium. If major investments in Bulgaria, the Czech Republic and Poland are confirmed, production capacity could exceed 6 million m³ in 2015 and grow further in 2016 due to investments in Hungary, Ireland and Romania. New projects in Belarus, the Russian Federation and Turkey have also been announced, which could lead to a production surplus (EPF, 2015).

Plywood. The production of plywood in Europe increased by 4.5% in 2014, to 4.6 million m³. A majority of producers are family-owned companies processing beech, birch, okoumé, pine, poplar and spruce logs (EPF, 2015). The majority (55%) of European plywood is made from the broadleaved species birch, poplar and beech. Coniferous species such as pine and spruce represent 39% of production, and tropical wood accounts for 6% (UNECE/FAO, 2015). The top five plywood-producing countries in Europe in 2014 were Finland (1.1 million m³), Romania (670 thousand m³), Poland (485 thousand m³), Spain (275 thousand m³) and Italy (266 thousand m³).

7.2.3 Trade

7.2.3.1 Imports

Particle board. Europe was a net exporter of particle board in 2014 (exporting 1.3 million m³, net). Imports increased by 8.2%, to 10.8 million m³, which was the highest import volume since 2008 but still far below the record of 12.3 million m³ achieved in 2007.

Imports of particle board are expected to continue to grow (by 3%) in 2015 (EPF, 2015).

Fibreboard. European imports of fibreboard from outside the subregion in 2014 came from China (37,204 tonnes), the Russian Federation (15,415 tonnes), Brazil (10,983 tonnes) and Ukraine (10,618 tonnes) (EPF, 2015).

OSB. OSB imports from extra-EU countries in 2014 came mainly from China (49,745 m³) and Belarus (42,462 m³) (EPF, 2015). Other EU imports of OSB came mainly from Canada, Switzerland, the US, Ukraine and Belarus, in order of decreasing volume (EPF, 2015).

Plywood. Europe imported 7.1 million m³ of plywood in 2014, up by 4.3% from 2013. The biggest plywood-importing countries were the UK (1.40 million m³), Germany (1.35 million m³) and Belgium (537 thousand m³).

7.2.3.2 Exports

Particle board. European particle board exports have been very stable in recent years; they increased only slightly (by 1.2%) in 2014, just exceeding 12 million m^3.

Fibreboard. European exports of fibreboard dropped by 3.7% in 2014. Most went to other countries in Europe, but extra-EU exports of MDF increased by 9% compared with 2013, mainly to Africa (up by 22% compared to 2013) and the Middle East (up by 3%). According to provisional Eurostat data, the main extra-EU destinations for European MDF exports in 2014 were Tunisia (166,740 m^3), the Russian Federation (136,392 m^3), Ukraine (87,119 m^3), Egypt (85,088 m^3), Israel (83,748 m^3), the US (79,132 m^3) and Canada (61,067 m^3) (EPF, 2015).

OSB. Most European OSB is traded within Europe. Exports by members of the European Panel Federation (EPF) member countries to the Far East dropped by 29% in 2014. Exports to the Middle East also dropped substantially, while exports to the US and Africa increased. According to provisional Eurostat data, the top extra-EU destinations for European OSB exports in 2014 were (in descending order) the Russian Federation, Ukraine, Japan, Kazakhstan, China and the Republic of Korea (EPF, 2015).

Plywood. European countries exported 3.83 million m^3 of plywood in 2014, up by 3.9% (from 3.68 million m^3) in 2013. In order of importance, the biggest plywood-exporting countries were Finland (998 thousand m^3), Belgium (369 thousand m^3) and Austria (344 thousand m^3).

7.3 CIS SUBREGION, WITH A FOCUS ON THE RUSSIAN FEDERATION

The wood-based panel industry accounted for 42% (150 billion roubles) of the total revenue generated by the woodworking subsector in the Russian Federation in 2014. The plywood industry was the largest segment, followed by particle board and fibreboard. Profit margins showed strong growth in 2014: profits increased from 10.1% to 18.8% for plywood and from 8.5% to 14.6% for fibreboard; on the other hand, the profit on particle board declined from 11.5% to 7.8% (WhatWood, 2015).

7.3.1 Consumption

The apparent consumption of wood-based panels decreased by 4.4% in the CIS in 2014, to 18.7 million m^3 (table 7.3.1). Consumption increased by 1.9% for plywood and by 10.5% for OSB, but it decreased by 1% for fibreboard and by 8.3% for particle board.

TABLE 7.3.1

Wood-based panel balance, CIS, 2013-2015

(thousand m^3)

	2013	*2014*	*2015f*	*Change (%) 2013-2014*
Production	16,654	17,039	17,901	2.3
Imports	7,139	6,556	6,556	-8.2
Exports	4,891	5,525	5,710	13.0
Apparent consumption	18,903	18,069	18,747	-4.4

Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

7.3.2 Production and capacity utilization

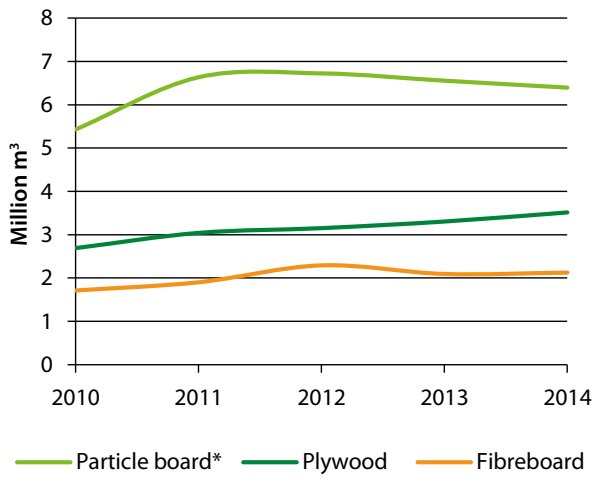
The production of wood-based panels increased by 2.3% in the CIS region in 2014, to 17.9 million m^3. Production growth in the Russian Federation (graph 7.3.1) was supported by growing export and domestic demand and by strong revenue growth in enterprises due to the devaluation of the rouble and a high rate of inflation in the domestic market. Overall, there was a 3.0% increase in the production of wood-based panels in the Russian Federation in 2014, to 13.1 million m^3.

Plywood. About 65 Russian plywood manufacturers produced 3.5 million m^3 of plywood in 2014, up by 6.4% over 2013 (table 7.3.2), and domestic sales of plywood reached 1.6 million m^3. The Russian plywood industry has grown strongly in the last five years, becoming one of the most reliable and profitable industries in the timber complex. The compound annual growth rate of production was 10% in 2009-2014; in 2014, the revenue of all plywood mills combined was 87.7 billion roubles ($2.24 billion), an increase of 34.8%, year over year, constituting a 30% share of the total revenue generated by the entire Russian woodworking industry (WhatWood, 2015). The production of plywood increased by 5.3% in the CIS in 2014, to 4.1 million m^3.

Particle board. Particle board production decreased in the CIS by 1.7% in 2014, to 9.1 million m^3. Russian particle board manufacturers (about 40 producers) decreased their production by 2.4%, to 6.4 million m^3 (graph 7.3.1), but Russian exports of particle board increased by 25.6%. The major production facilities are: Kronospan Egorievsk (Moscow region); Egger Gagarin (Smolensk region); Kronostar (Kostroma region); Ikea Industry Novgorod (Novgorod region); and the Syktyvkar plywood mill (Komi Republic). The contribution of these five mills constituted about 41% of Russian particle board production in 2014.

GRAPH 7.3.1

Plywood, particle board and fibreboard production, Russian Federation, 2010-2014



Note: * Excludes OSB.
Source: UNECE/FAO, 2015.

OSB. Belarus, the Russian Federation and Ukraine are the key producers of OSB in the CIS. Four OSB mills were operating in the Russian Federation in 2014: DOK Kalevala (Petrozavodsk, Karelia); Kronospan Egorievsk (Moscow region); Hillman OSB (Vladimir region); and the Novovyatsky ski mill (Kirov region). These mills produced 413,700 m^3 of OSB in 2014. Apparent OSB consumption (including imports of 842 thousand m^3) in the CIS was 1.2 million m^3, up by 10.5% compared with 2013.

Fibreboard. The production of fibreboard increased modestly (by 1.2%) in the CIS in 2014, to 2.6 million m^3. The Russian Federation contributed more than 80% of this total, at just over 2.1 million m^3 in 2014 (table 7.3.2).

TABLE 7.3.2

Wood-based panel production, Russian Federation, 2010-2014

(thousand m^3)

	2010	*2011*	*2012*	*2013*	*2014*	*Change (%) 2013-2014*
Plywood	2,689	3,040	3,150	3,303	3,513	6.4
Particle board	5,429	6,634	6,723	6,555	6,395	-2.4
Fibreboard	1,710	1,900	2,291	2,092	2,123	1.5

Source: UNECE/FAO, 2015.

Kronospan started its OSB production line at Mogilev, Belarus, in August 2014. When running at full capacity in 2018, the plant will produce 350 thousand m^3 of OSB annually. Also in Belarus, the state enterprise Mozyr DOK began producing insulation fibreboard in October 2014; its annual capacity is 321 thousand m^3.

Uvadrev-Holding (the Udmurtia region, the Russian Federation) launched its production of particle board, with a capacity of 300 thousand m^3 per year, at the end of 2014. In Belarus, Gomeldrev finished building an MDF/HDF plant with a production capacity of 150 thousand m^3 per year in December 2014. Rechitsadrev finished a modernization of its plywood production in 2014; its annual capacity is now 40 thousand m^3.

In September 2014, Turkish Kastamonu Entegre opened a new multi-product panel plant in Alabuga in Tatarstan, the Russian Federation. The new mill, with a total production capacity of 1.8 million m^3 per year for all products, is larger than any other fibreboard plants in the CIS or Europe. The MDF production line, with an annual production capacity of 475 thousand m^3, and the flooring line, with a production capacity of 20 million m^2, are already operating. The particle board line, with an annual production capacity of 925 thousand m^3, is set to start in 2016. An initial OSB line, with an annual production capacity of 575 thousand m^3, is planned for 2017-2018.

PDK Apsheronsk in the Krasnodar region in the Russian Federation began the construction of an integrated MDF and laminated flooring plant in November 2014. The projected MDF production volume of this plant is about 300 thousand m^3 per year, of which about 72 thousand m^3 will be used to produce flooring.

The first stage of a Russian-Chinese woodworking project in the Tomsk region called RosKitInvest was initiated in February 2015. It will produce about 100 thousand m^3 of birch veneer annually and is the first of ten plants scheduled for construction in the Russian-Chinese Timber Park at a projected cost of more than 30 billion roubles ($770 million). The project is implemented within the framework of the Russian-Chinese intergovernmental agreement.[9] The next stages of the project will involve the construction of particle board, MDF, plywood, flooring, sawmilling and furniture factories. The projected annual production capacity of the complex is expected to be 1.7 million m^3 of timber products by 2023.

Egger Drevprodukt Gagarin (Smolensk region, the Russian Federation) opened its first melamine-impregnated decorative paper-coated particle board line in April 2015, which will allow the production of laminated particle board panels. Full capacity is about 120 thousand m^2 of panels per shift. The company plans to install a production line for flooring in 2015-2016, as well as an MDF press, two laminating lines, a second impregnation line and a small thermal power plant, which will use biofuel.

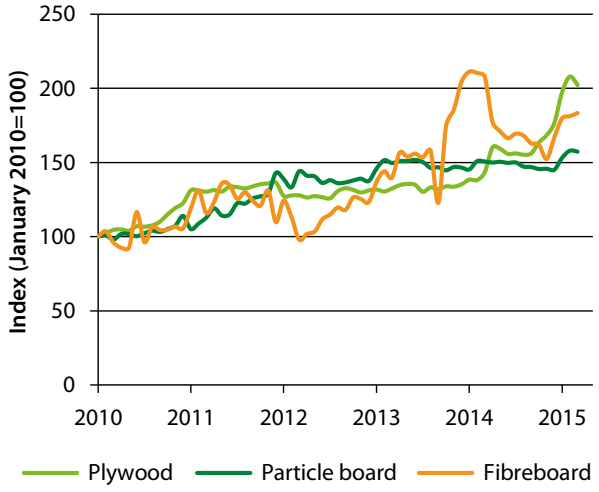
7.3.3 Prices

Plywood. Russian producer prices for plywood (average for all regions) increased by 16.4% in 2014, to 19,514 roubles per m^3 (graph 7.3.2). The strongest growth was in the Urals Federal District, where prices rose by 20.3%, to 21,387 roubles per m^3. The lowest price was in the Siberian Federal District, at just 12,482 roubles per m^3. Increases in raw material prices at the end of 2014 contributed to a sharp increase in producer prices.

[9] http://minpromtorg.gov.ru/press-centre/all/#!v_tomskoy_oblasti_zapushhen_pervyy_zavod_rossiyskokitayskogo_lesopromyshlennogo_proekta

GRAPH 7.3.2

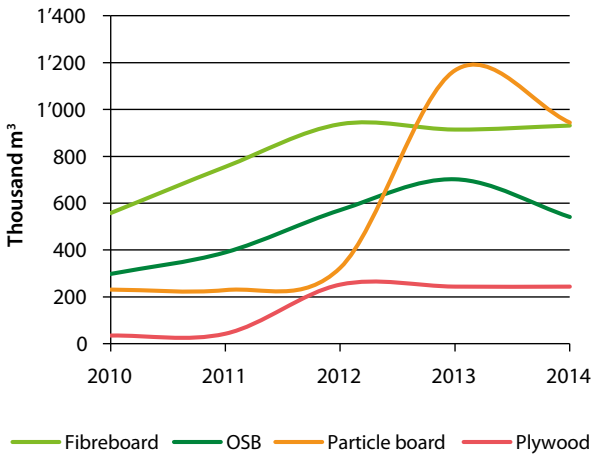
Monthly prices for wood-based panels, Russian Federation, 2010-2015



Source: Rosstat, 2015.

GRAPH 7.3.3

Fibreboard, OSB, particle board and plywood imports, Russian Federation, 2010-2014



Source: UNECE/FAO, 2015.

Particle board. The average price of particle board across the Russian Federation was stable in 2014, at approximately 9,130 roubles per m^3. The most dynamic growth was in the northwest, where prices were up by 6%, to 9,409 roubles per m^3. Particle board prices also increased in Siberia (by 9.2%), to 8,911 roubles per m^3.

Fibreboard. The average price of fibreboard in the Russian Federation rose by 13% in 2014, to 64 roubles per m^2. Prices jumped from 25 to 32 roubles per m^2 in the Urals, from 64 to 73 roubles per m^2 in the northwest, and from 66 to 86 roubles per m^2 in Siberia, but in the Central Federal District they fell from 60 to 49 roubles per m^2.

7.3.4 Trade

7.3.4.1 Imports

Plywood. The volume of plywood imports to the CIS decreased by 1.7% in 2014, to 715 thousand m^3 (graph 7.3.3), with Chinese plywood continuing to dominate Russian imports.

OSB. CIS imports of OSB fell significantly (by 18.7%) in 2014, to 842 thousand m^3, due mainly to currency devaluations in the second half of 2014 and the substitution of imported OSB by domestic production. Canada, Latvia and Romania were the main suppliers of OSB to the Russian Federation in 2014, representing about 80% of the total import volume.

Particle board. CIS imports of particle board decreased by 13.2% in 2014, to 2.7 million m^3. Particle board imports by the Russian Federation decreased by 19.1%, to 944 thousand m^3. About 44% of particle board imports were from Poland, 14% were from China and 9% were from Germany.

Fibreboard. CIS imports of fibreboard increased by 1.2% in 2014, to 2.3 million m^3. Imports by the Russian Federation were steady, at 931 thousand m^3 (up by 1.9% over 2013). China, Germany and Poland were the largest suppliers of fibreboard to the Russian Federation.

7.3.4.2 Exports

Plywood. CIS plywood exports were up by 7.1% in 2014, to just over 2.2 million m^3. Plywood exports from the Russian Federation (graph 7.3.4) grew by 8.4% in 2014, to 1.9 million m^3. For the first time, Egypt was the largest importer of Russian plywood, increasing its intake by 24%, to 258,600 m^3, at a value of $132.9 million. The US was the second-largest importer, at 247,500 m^3 (up by 8%) (WhatWood, 2015).

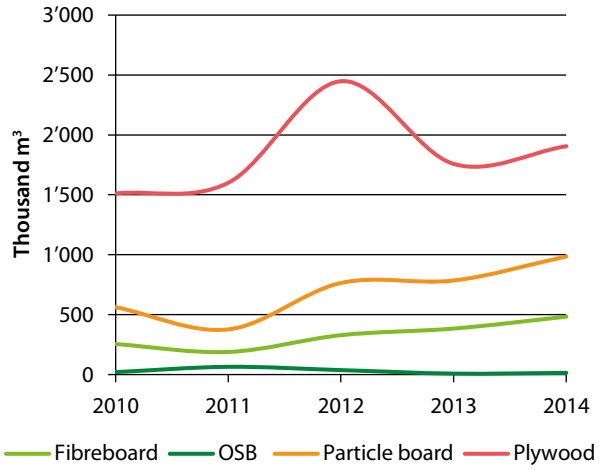
Particle board. CIS exports of particle board increased by 20.7% in 2014, to just less than 1.9 million m^3. Russian exports of particle board grew by 25.6%, to 985 thousand m^3, of which CIS countries imported about 90% (Uzbekistan, for example, accounted for 60.5% of Russian exports of this product).

Fibreboard. Fibreboard exports from the CIS increased by 12.7% in 2014, to 879 thousand m^3, with the Russian Federation exporting 483 thousand m^3. CIS countries continued to be the main consumers of Russian fibreboard; Uzbekistan was the largest importer, with 165 thousand m^3, an 8% increase over 2013. Exports to Azerbaijan decreased by 30.3%, to 15 thousand m^3.

OSB. The CIS exported about 53 thousand m^3 of OSB in 2014. Russian producers accelerated their efforts to expand to full production volumes, but most sales today are in the domestic market, and exports do not yet play a key role.

GRAPH 7.3.4

Fibreboard, OSB, particle board and plywood exports, Russian Federation, 2010-2014



Source: UNECE/FAO, 2015.

7.4 NORTH AMERICA

7.4.1 Consumption

The continued strong growth in Canada and the US in 2014 (GDP grew by 2.5% in Canada and by 2.4% in the US) helped fuel a recovery in the housing sector in North America, with housing starts growing by 7.2% in 2014. As a result, demand for structural wood-based panels in construction, as well as for non-structural wood-based panels in interior products such as cabinets and furniture, increased the demand for and consumption of all wood-based panels combined in North America by 5.0% in 2014 (table 7.4.1).

TABLE 7.4.1

Wood-based panel balance, North America, 2013-2015

(thousand m³)

	2013	*2014*	*2015f*	*Change (%) 2013-2014*
Production	45,144	46,387	46,671	2.8
Imports	11,618	13,268	13,667	14.2
Exports	8,793	9,296	9,543	5.7
Apparent consumption	47,968	50,360	50,795	5.0

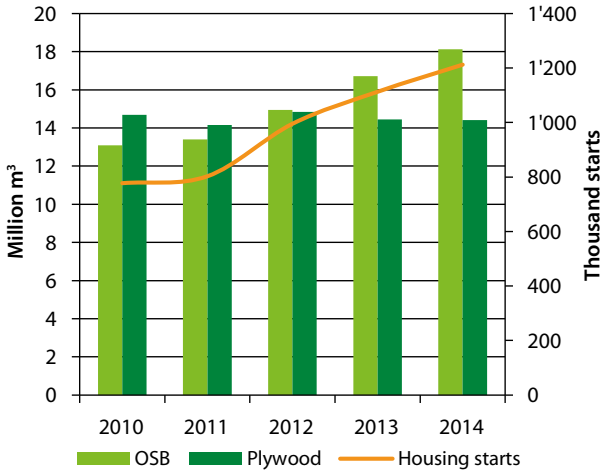
Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

The apparent consumption of structural wood-based panels in North America continued to recover in 2014, (graph 7.4.1). The consumption of OSB was up by 17.8%, offset somewhat by a slight decline (0.3%) in plywood consumption. The consumption of structural wood-based panels recovered in all four of the major end-use markets: residential construction, up by 5%; remodelling, up by 1%; industrial, up by 5%; and the non-residential market, up by 2% (graph 7.4.2).

The residential housing sector is the most significant demand driver of structural wood-based panels (graph 7.4.2). Growth in demand for OSB was strongest there (up by 7.9%) in 2014, while demand for plywood was weak in the industrial and non-residential sectors and negative in the housing and repair and remodelling sectors. North American demand is expected to increase strongly in 2015 – by 10.5% for OSB and by 4% for plywood. The vast majority of this growth in demand is projected to occur in the US (+9%), with demand in Canada to increase much more slowly (+2%) (APA, 2015a,b).

GRAPH 7.4.1

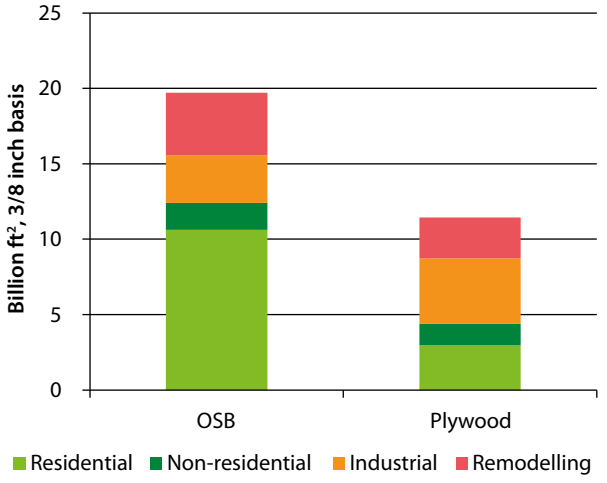
Structural panel consumption and housing starts, North America, 2010-2014



Sources: UNECE/FAO, 2015; US Census Bureau, 2015; CHMC. 2015.

GRAPH 7.4.2

Four main end-use markets for structural wood-based panels, North America, 2014



Note: Residential, non-residential and industrial are new construction.
Source: APA, 2015a.

The consumption of non-structural panels increased in North America in 2014. Particle board consumption increased by 8.5%, and fibreboard consumption grew by 4.2%. With North American housing starts projected to increase in 2015, the production of non-structural wood-based panels is also expected to show moderate growth.

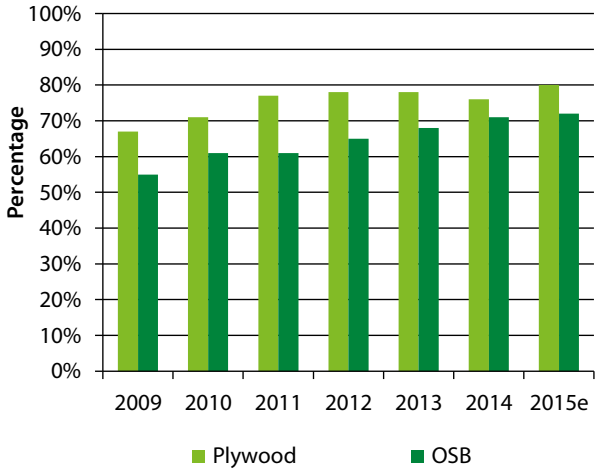
7.4.2 Production and capacity utilization

Production capacity in the North American structural panel subsector increased by 2.2% in 2014, to 37.7 million m^3. One plywood mill opened in 2014 in the US, but fire destroyed a plywood mill in Springfield, Oregon (APA, 2015b). Capacity utilization in the North American structural panel industry was unchanged in 2014, at the relatively low rate of 72%. The capacity utilization rate in the plywood sector declined from 78% in 2013 to 75% in 2014 (76% in the US and 86% in Canada). In contrast, the overall capacity utilization rate in the OSB sector increased from 68% in 2013 to 70% in 2014 (74% in the US and 64% in Canada) (graph 7.4.3).

Production capacity for non-structural panels increased by 6.9% in Canada in 2014, to 3.71 million m^3, and declined by 0.5% in the US, to 9.48 million m^3; overall, North American production capacity increased by 6%, to 13.2 million m^3 (CPA, 2015a). North American production capacity was down by 0.6% in the particle board sector, from 13.7 million m^3 in 2013 to 13.0 million m^3 in 2014; in contrast, production capacity in the MDF sector increased by 5.2%, to 4.71 million m^3. The capacity utilization rate in the particle board sector increased from 65.2% in 2013 to 70.7% in 2014, but it declined in the MDF sector, from 79.2% to 78.8%. Overall, capacity utilization rates in 2014 remained well below pre-housing crisis levels (CPA, 2015b).

GRAPH 7.4.3

Plywood and OSB capacity utilization rates, North America, 2009-2015



Note: e = estimate.
Source: APA, 2015a.

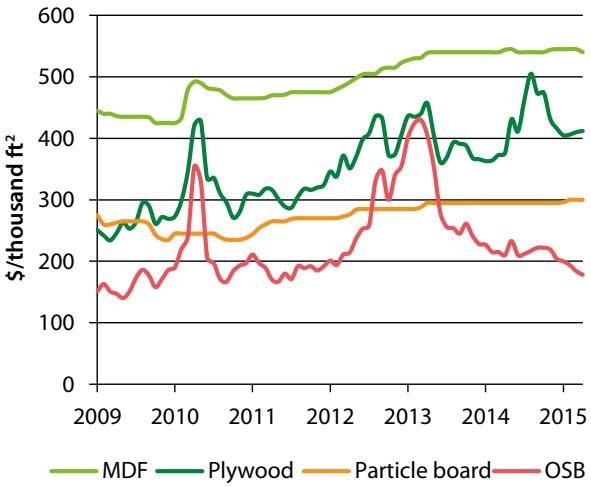
7.4.3 Prices

The increased demand for structural wood-based panels in North America in 2014 had only a marginal effect on capacity utilization rates. As a result, the prices of both MDF and particle board were relatively steady throughout the year (graph 7.4.4). On the other hand, the story for structural wood-based panels was mixed. Prices for western plywood increased strongly (by 39.1%) in the first half of 2014, before dropping sharply towards the end of the year. Overall, plywood prices increased by 14.6% in 2014. The situation was bleak for OSB in 2014, with prices dropping by 10.1% (Random Lengths, 2014).

Source: UNECE/FAO, 2014.

GRAPH 7.4.4

Wood-based panel prices, North America, 2010-2015



Notes: Western plywood (Coast), ½ inch, CD exterior, (3-ply); OSB (North Central), 7/16 inch; MDF (East) 5/8 inch; particle board (West) 5/8 inch industrial.
Source: Random Lengths, 2015.

7.4.4 Trade

7.4.4.1 Imports

North American imports of wood-based panels increased by 4.3% in 2014, to $5.5 billion (table 7.4.2). Imports to the US were up strongly (by 5.1%), while the increase in Canadian imports was modest (0.7%). Plywood had the largest share of imports, by value, to North America (48% of total wood-based panel imports), followed by fibreboard (28%), OSB (18%) and particle board (6%). Imports increased in 2014 for plywood, fibreboard and particle board, but they decreased by 14.8% for OSB.

Two import flows of wood-based panels to North America are of particular interest because of their overall size and structure. One of these is China's domination of plywood imports to the US, with a 54.8% market share in 2014, followed by Canada (10%), Indonesia (8.2%) and the Russian Federation (7%). The other is Canada's role as the almost exclusive source of particle board and OSB imports to the US, supplying over 97% of the $1.2 billion worth of US imports of these two products in 2014, 76.2% of which was for OSB.

TABLE 7.4.2

Value of wood-based panel imports, North America, 2011-2014

($ million)

	2011	*2012*	*2013*	*2014*	*Change (%) 2013-2014*
US					
Plywood	1,357	1,906	2,072	2,314	11.7
Fibreboard	719	833	971	1,081	11.3
OSB	529	772	1,102	936	-15.0
Particle board	181	218	251	289	14.8
US total	2,787	3,729	4,396	4,620	5.1
Canada					
Plywood	313	373	370	354	-4.3
Fibreboard	413	447	439	454	3.4
OSB	30	34	39	36	-7.8
Particle board	47	53	57	67	17.5
Canada total	803	906	905	911	0.7
North America					
Plywood	1,671	2,279	2,442	2,668	9.3
Fibreboard	1,131	1,280	1,411	1,535	8.8
OSB	559	805	1,141	972	-14.8
Particle board	228	271	308	356	15.3
Total	3,590	4,635	5,301	5,531	4.3

Source: UNECE/FAO, 2015.

7.4.4.2 Exports

After four years of growth, the value of exports of wood-based panels from North America decreased by 5.4% in 2014, to $2.6 billion, with Canada accounting for 69% of the total (table 7.4.3). Structural panels accounted for about two-thirds of 2014 panel export value. The value of exports from North America declined by almost 16% for OSB but increased by 0.7% for plywood, by 2.3% for fibreboard and by 13.3% for particle board. The largest markets for US plywood exports in 2014 were Canada (41.5% by value) and Australia (14.6%). Canada and Mexico were the main markets for US fibreboard (comprising 71% and 18.2% of US exports, respectively) and also for US particle board (55.3% and 27.1%, respectively). Of Canada's total wood-based panel exports, 90.1% of plywood, 94.7% of fibreboard, 99.8% of particle board and 89.7% of OSB went to the US.

TABLE 7.4.3

Value of wood-based panel exports, North America, 2011-2014

($ million)

	2011	*2012*	*2013*	*2014*	*Change (%) 2013-2014*
US					
Plywood	391	431	410	385	-6.1
Fibreboard	268	280	264	246	-6.7
OSB	80	76	90	79	-12.2
Particle board	83	94	99	116	16.3
US total	822	881	863	826	-4.3
Canada					
Plywood	169	164	214	243	13.7
Fibreboard	227	232	234	263	12.4
OSB	644	884	1,237	1,039	-16.0
Particle board	161	201	230	258	12.0
Canada total	1,200	1,481	1,915	1,803	-5.9
North America					
Plywood	561	595	624	628	0.7
Fibreboard	494	512	498	510	2.3
OSB	724	960	1,326	1,118	-15.7
Particle board	244	295	330	373	13.3
Total	2,022	2,362	2,778	2,629	-5.4

Source: UNECE/FAO, 2015.

7.5 EXTRA-REGIONAL INFLUENCES AFFECTING THE UNECE

Plywood production, consumption and trade in the Asia-Pacific region influences the availability and prices of tropical plywood in European and North American markets – Asia-Pacific accounted for 71% of world exports and 38% of world imports of plywood (tropical and non-tropical) in 2014. Table 7.5.1 shows the five biggest importers and exporters of plywood outside the UNECE region, by trade volume. China continues to dominate the global production of softwood and hardwood plywood and is the largest exporter of plywood, mostly produced from non-tropical raw material. China's consumption of plywood is large (about 91% of production in 2014) and follows trends in China's construction industry, although a proportion is exported indirectly following re-manufacture into furniture and other secondary processed wood products.

EU imports of hardwood plywood from China increased in 2014, driven by demand for mixed light hardwood plywood faced with birch, eucalypt, poplar, other temperate hardwoods or lesser-known tropical species (ITTO, 2015). There have been indications that the EU Timber Regulation has been affecting the EU plywood market, but rather than shifting to alternative supply countries perceived as presenting lower risk, EU operators have increased purchases of Chinese plywood faced with plantation-grown domestic hardwoods, a product seen as involving a lower risk than tropical plywood (ITTO, 2015). Some Chinese manufacturers are now supplying products to EU markets that are both Q-marked (product quality certification) and certified by the Forest Stewardship Council or the Programme for the Endorsement of Forest Certification.

Malaysia and Indonesia continued to provide the bulk of global tropical plywood exports in 2014; Malaysia's exports declined slightly compared with 2013, and Indonesia's exports increased. In 2014, Malaysian tropical plywood production was restricted by the limited availability of raw material (peeler logs) for plywood mills. Demand and prices for log exports (particularly from Sarawak to India) were raised by the log export ban imposed in Myanmar in 2014. About half Malaysia's tropical plywood exports went to Japan in 2014, with most of the remainder going to Taiwan Province of China, the US, the Republic of Korea and the UK. The imposition of anti-dumping duties by the Republic of Korea on plywood imports from Malaysia, ranging from 5% to 38%, affected Malaysia's exports to that market, which have halved since 2010. In addition to chronic log-supply shortages, which have been pushing up Malaysian plywood prices, rising manufacturing costs and higher freight rates also put upward pressure on Malaysian plywood prices in 2014. Malaysia lost market share in 2014 in EU markets in response to the removal of its Generalized System of Preferences tariff status on 1 January 2014, which provoked a surge in imports in late 2013 followed by a slowdown in early 2014. Malaysian exporters have been focusing on alternative markets in North America and the Middle East.

In contrast, Indonesian plywood increased its share of the market in the UK and other European destinations in 2014, despite relatively high prices. The resumption of regular break bulk shipping services in response to volatile container freight rates, and greater awareness of Indonesia's national timber legality assurance scheme (SVLK), which became operational in 2014, has improved the competitiveness of the country's plywood exports to EU markets.

Plywood demand in Japan, the major market, rose in late 2013 and early 2014 in response to increased building activity as consumers rushed to purchase houses before a rise in consumption tax in April 2014, which was expected to push up the cost of housing. Conversely, housing starts and plywood demand dropped after the tax was implemented. In 2014 and the first half of 2015, Japan's plywood importers expressed concern about the effects of a weakening yen, log shortages and increased manufacturing costs in Malaysia and Indonesia (the major suppliers), which put upward pressure on tropical plywood prices. The gap between suppliers' export prices and depressed Japanese market prices has limited the commitment of Japanese buyers to future purchasing, suggesting that imports are likely to decline in 2015 (ITTO, 2015). The Republic of Korea's plywood imports declined in 2014, with most (75%) of the supply coming from China and the remainder from Malaysia and Indonesia. Malaysia had previously been the dominant exporter, supplying 61% of the Republic of Korea's market share in 2010, but exports were affected in 2011 by the imposition of anti-dumping duties, which were still in force in 2014.

TABLE 7.5.1

Major importers and exporters of plywood outside the UNECE region, by volume, 2012-2014

(thousand m³)

	2012	*2013*	*2014*	*Change (%) 2013-2014*
Major importers				
Japan	2,987	3,180	2,967	-6.7
Republic of Korea	1,298	1,401	1,194	-14.8
Saudi Arabia	752	602		
Taiwan Province of China	743	835		
Mexico	505	469	473	0.9
Major exporters				
China	9,767	10,029	8,940	-10.9
Malaysia	3,025	3,210	3,124	-2.7
Indonesia	3,003	3,256	3,763	15.6
Brazil	1,348	1,473	1,796	21.9
Viet Nam	230	250	331	32.4

Source: Global Trade Atlas, 2015.

7.6 POLICY AND REGULATORY INFLUENCES ON THE SECTOR

The Russian Federation's Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing (Rospotrebnadzor) banned the import of particle board produced by Krono-Ukraine in October 2014, citing an increase in the content of formaldehyde.[10]

Approved wood-based panels and other wood products have been included in the US Department of Agriculture's BioPreferred programme. The BioPreferred programme was created by the 2002 Farm Bill and reauthorized and expanded as part of the Agricultural Act of 2014. The programme's purpose is to increase the development, purchase and use of bio-based products and to contribute to reducing adverse environmental and health impacts. All federal agencies are directed to purchase bio-based products in categories identified by the US Department of Agriculture (USDA, 2015).

Note: The statistical annex of the ***Forest Products Annual Market Review 2014-2015*** is available at: www.unece.org/forests/fpamr2015-annex

[10] http://rospotrebnadzor.ru/about/info/news/news_details.php?ELEMENT_ID=2470

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8 PAPER, PAPERBOARD AND WOODPULP

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HIGHLIGHTS

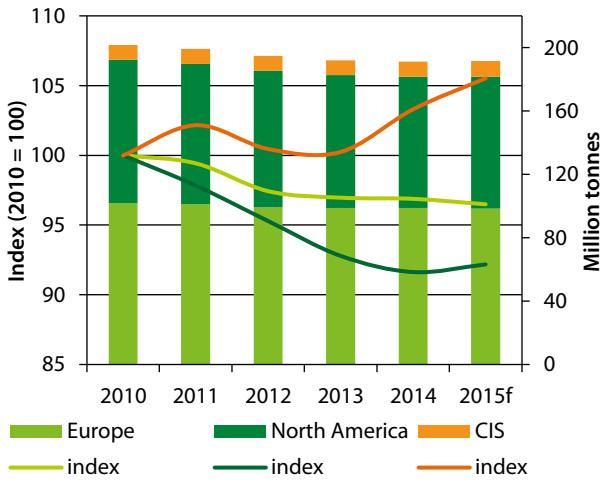
- Paper, paperboard and woodpulp production fell in Europe and North America in 2014 as capacity closures in the graphic grades followed years of declining demand; production rose, however, in the CIS.
- A wave of closures and cost-reduction efforts continued in the paper subsector in Europe and North America in 2014, and further consolidation is underway in 2015 in the graphic paper and paperboard subsectors.
- Paper prices stabilized in 2014, with the exception of newsprint, for which prices continued to deteriorate due to rapidly falling demand; prices increased for packaging paper and paperboard due to consolidation, capacity closures, and stronger demand.
- Newsprint consumption fell by 8.5% in North America in 2014 and is expected to reach only 5 million tonnes in 2015, less than half the consumption of 2005 (13.4 million tonnes). North American newsprint capacity was 5.6 million tonnes in early 2015, having declined by 1.14 million tonnes (17%) in 2014.
- Newsprint production declined by 6.1% in Europe in 2014, the lowest annual output in almost a quarter of a century. This decline in graphic paper production is expected to continue and to result in additional mill closures.
- Graphic paper capacity fell by a total of 3.1 million tonnes in the UNECE region in 2014 and is expected to decline by another 1.55 million tonnes in 2015.
- China has closed over 42 million tonnes of obsolete pulp and paper capacity since 2005.
- Chinese imports of dissolving grades increased steadily in the last decade; however, a series of large capacity expansions around the globe caused supply to exceed demand and prices to trend lower in 2014. This occurred despite the imposition of Chinese duties on dissolving-pulp imports from Brazil, Canada and the US.
- Prices for pulp and recovered paper have shown signs of decline, due mainly to new and expanded capacity, heightened scrutiny by Chinese customs agents to prevent contaminants from entering China, and stagnant global demand.
- South American chemical market pulp expansions continued in 2014, particularly among hardwood grades, as consumers looked to reduce raw-material costs. The increase in hardwood kraft capacity was absorbed thanks to the lower price of hardwood chemical pulp relative to its softwood counterpart, together with strong pulp demand for tissue production.

8.1 INTRODUCTION

After years of capacity rationalization, the global pulp, paper and paperboard industry began to turn around in 2014, aided by structural changes in the demand landscape and important increases in supply from low-cost producing regions. Nevertheless, significant overcapacity remained in 2014 and early 2015 in the publishing-paper-grades segment of the printing-and-writing subsector, with consumers continuing to move to electronic communications. The appreciation of the US dollar against most global currencies also enabled improved financial results for non-US-based suppliers active in export markets; however, buyers in markets with weaker currencies were less fortunate, as their purchasing power was reduced. Cost-reduction strategies, strategic alliances and mergers continued across many subsectors in the pulp and paper industry in 2014 in Europe, Japan and North America. More companies in the subsector continued to convert from graphic grades to packaging papers in 2014, primarily in Europe and North America, while a select few in the US turned their attention to expanding specialty or fluff pulp production. In the UNECE region, Europe and North America experienced decreases in paper and paperboard production in 2014, while production grew in the CIS (graph 8.1.1).

GRAPH 8.1.1

Production of paper and paperboard, UNECE region, 2010-2015



Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

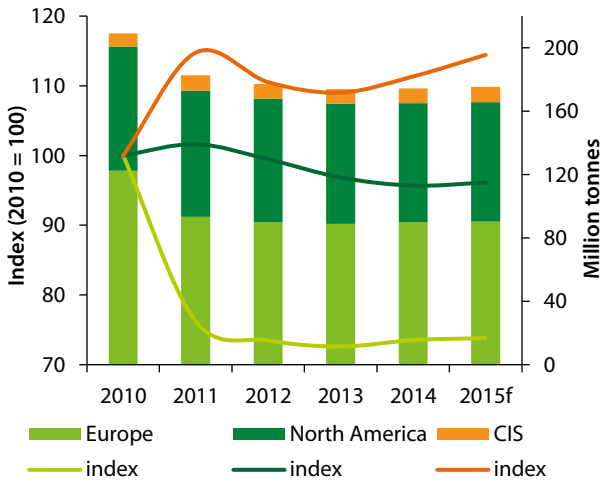
While corporate strategies continue to focus on cost reductions, establishing new markets and investing for the future, all subsectors recognize the need for well-honed logistics for both sourcing raw materials and shipping finished goods to global customers. The complexity of domestic and international trade – such as high volumes of consignment tonnage, especially in Europe, just-in-time inventory, documentation, quality controls for recycled papers entering China, and delays due to unforeseen circumstances – has forced suppliers to invest in flexible transportation systems. Such investments have increased costs but have helped ensure timely delivery, improve customer service and reduce inventory carrying costs at both ends. The global pulp, paper and paperboard industry continues to expand into emerging markets such as Brazil and Uruguay, while keeping abreast of the latest production technologies and consumption trends to maximize logistical efficiencies. Newer and larger pulp mills continue to displace less-efficient ones, and excess capacity in commodity graphic grades will lead to further closures and industry consolidation. The quest to maintain a "lowest-possible cost" position will continue to be the focus of commodity grades in each segment.

The economic recovery in much of Europe in late 2013 and early 2014 fell flat in late 2014, forcing the European Central Bank into quantitative easing in 2015, which caused the euro to weaken against the US dollar. In China, GDP growth fell to "only" 7% in 2014 and is expected to remain around that mark in 2015 as exports and domestic consumption remains relatively weak. China's central government implemented economic and social reforms in 2014 aimed at stimulating the economy, providing a "soft landing" and leading the country along a new path of sustainable but more moderate growth, with less reliance on public investment and an increased focus on private consumption.

The proliferation of electronic formats using the internet as well as smart-phone and tablet technologies continued in 2014 through mid-2015. Businesses and governments are pushing for further cost reductions in data manipulation and communication, including traditional mail services, by embracing technology and investing in processes that provide customers with improved, timelier services. In the transition from paper to electronic formats, businesses and governments often provide dual systems to facilitate the paperless option. As a result, graphic paper demand has continued to decline in Europe, Japan and North America, with 3.09 million tonnes of capacity indefinitely or permanently removed from production in 2014 and a further drop of 1.55 million tonnes expected in 2015 (Valois Vision Marketing, 2015a). There were some encouraging results for the industry, however, with improved shipments and profitability in the market pulp segment, increases in pricing for key uncoated woodfree grades, including office-paper, and ongoing improvement in paperboard demand, reflecting the steady growth of online shopping (and hence packaging consumption) and increasing global trade. Positive financial results continued to flow from industry consolidation, capacity rationalization and the implementation of major cost-reduction strategies. Graph 8.1.2 shows subregional trends in paper and paperboard consumption in 2010-2015.

GRAPH 8.1.2

Apparent consumption of paper and paperboard, UNECE region, 2010-2015



Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

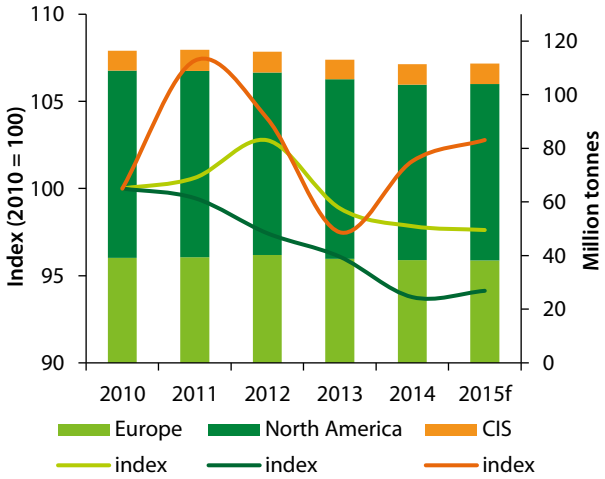
Pulp capacity surged in 2014 with the start-up of three large bleached eucalyptus kraft lines in Brazil, China and Uruguay. These have a combined production of 3.5 million tonnes; another 1.3 million tonnes is set to start up in the first half of 2015. In Asia, and in mature markets such as Europe, Japan and North America, pulp mill closures and conversions removed 1.6 million tonnes of capacity in 2014, and another 1.8 million tonnes of integrated pulp capacity was permanently or indefinitely removed (Valois Vision Marketing, 2015b).

The expansion of woodpulp production in 2010-2015 has been concentrated among hardwood grades and in low-cost countries outside the UNECE region. Significant capacity expansion in the bleached hardwood kraft pulp segment – mainly bleached eucalyptus kraft in Brazil – and robust demand for bleached softwood kraft prompted swing capacity mills (mills that can make pulp from either hardwood or softwood) in North America and western Europe to make increasing volumes of softwood pulp (which have different uses to hardwood pulp and are therefore not in direct competition with it). In addition, high relative production costs and poor financial results have led to closures and conversions in the last five years in the CIS, Europe and North America. As a result, woodpulp production in the UNECE region trended lower in 2010-2015 (graph 8.1.3). The decline in production will continue to shelter producers from the tsunami of hardwood kraft pulp expected in the next ten years from Brazil, Uruguay and other countries. Aiding the large influx of hardwood kraft in 2014 was the large price differential between it and softwood kraft in global markets, which prompted end-users to switch to lower-priced fibre to reduce costs whenever the process and product performance requirements permitted.

Capacity rationalization was once again a focus in Japan, North America, South America and western Europe in 2014. Some newsprint machines were converted to packaging grades, and others were converted from paper-grade pulps to dissolving grades. However, anti-dumping duties imposed by China for five years on commodity and viscose dissolving tonnages from Brazil, Canada and the US prompted some mills to resume production of their original products (i.e. bleached hardwood kraft or fluff pulp) in 2014.[11] The net result of the import duties is that some global capacity expansions have been postponed indefinitely (Valois Vision Marketing, 2015c).

GRAPH 8.1.3

Production of woodpulp, UNECE region, 2010-2015



Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

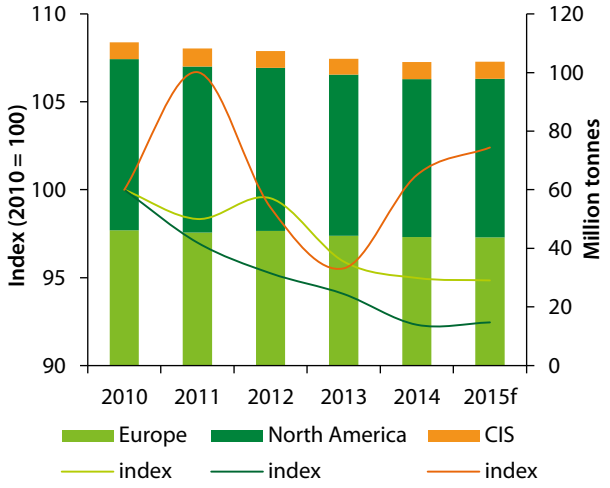
Dissolving-pulp demand continued to grow in 2014 and early 2015, with capacity increases still outpacing supply, causing global prices to remain weak, even in China despite the imposed duties. Fluff-pulp demand also sustained solid and sustainable growth as standards of living rose in Africa, Asia, the Middle East and South America, aided by higher disposable incomes. Graph 8.1.4 shows the trend in demand for woodpulp in the UNECE subregions in 2010-2015.

The move away from print to electronic communication is behind the decline in the apparent consumption of woodpulp over the period 2010-2015. The publishing-paper-grade subsector faces an ongoing decline in consumption. As a result, newsprint machines in the mature markets of Europe and North America are being permanently closed or converted for the production of paperboard and packaging grades. The turnaround in the subsector expected in 2015 has likely been delayed further. The decline in consumption has led companies to further reduce capacity, including through closures and conversions, and industry consolidation will almost certainly be involved (Valois Vision Marketing, 2015b).

[11] Fluff pulp is used to make personal-care items such as disposable nappies/diapers and absorbent pads.

GRAPH 8.1.4

Apparent consumption of woodpulp, UNECE region, 2010-2015



Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

Global prices for hardwood kraft pulps began to erode in early-to-mid 2014, while those for softwood kraft were generally higher, creating a large price differential. This caused the demand for hardwood kraft to soar towards the end of 2014 and into 2015, and prices consequently began to recover. In turn, the demand for softwood kraft weakened modestly in late 2014 and early 2015. Coupled with increased softwood pulp supply from swing mills escaping the wave of hardwood pulp expansions, softwood prices in North America and Europe weakened in this period (Valois Vision Marketing, 2015d). Prices for publishing papers were generally flat to weaker as supply continued to chase demand downward in all UNECE markets. Prices for uncoated woodfree and office papers began to rise in early 2015 following years of falling demand and overcapacity.

In China, an ongoing implementation of a government decree to close inefficient and polluting pulp, paper and paperboard mills reduced capacity by 7.42 million tonnes in 2013 and by 4.92 million tonnes in 2014. In total, the effects of the decree resulted in the closure of 42.4 million tonnes of capacity from 2005 to 2014 (Valois Vision Marketing, 2015e).

The global pulp and paper sector is recovering slowly; many difficult reforms have been implemented and more are required. The sector continues to invest in ways of reducing production costs and diversifying revenue streams through green technologies (including wood-based biorefineries and biofuels). Government incentives have long been a driver of such investments, but state-run energy producers face heavy infrastructure costs to maintain, replace or expand existing generating and transmission capacity. Resultant higher electricity prices for mechanical pulp mills (which consume large amounts of electricity) are likely to reduce their profitability and could put their survival in question. On the other hand, chemical pulp mills have been investing in power boilers to produce their own energy by burning black liquor, and in some cases they have benefited from government subsidies for producing bioenergy (Valois Vision Marketing, 2015b).

8.2 EUROPE

8.2.1 Paper and paperboard production

European production of paper and paperboard edged 0.1% lower in 2014 (table 8.2.1), led by a slowdown in the production of graphic paper grades (UNECE/FAO, 2015). As excess capacity continued to be closed, production fell by 2.1% for graphic grades, 0.4% for coated papers, 3.8% for uncoated mechanical grades and 0.1% for uncoated woodfree papers (Valois Vision Marketing, 2015d).

TABLE 8.2.1

Paper and paperboard balance, Europe, 2013-2015

(thousand tonnes)

	2013	*2014*	*2015f*	*Change (%) 2013-2014*
Production	98,779	98,695	98,297	-0.1
Imports	53,908	54,790	55,075	1.6
Exports	63,885	63,549	63,083	-0.5
Apparent consumption	88,802	89,936	90,289	1.3

Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

Weak demand from the printing and publishing subsector due to the continued rise in the use of electronic communication continued to have a negative impact on the entire sector (table 8.2.2).

Newsprint production declined by 6.1% in Europe in 2014, the lowest annual output in almost 25 years. This decline in graphic paper production is expected to continue and to result in additional mill closures.

The production of packaging grades in Europe increased by 1.0% in 2014, to 48.0 million tonnes, while the production of sanitary and household papers rose by 2.4%. The production of all other grades of paper and paperboard – mainly for industrial and special purposes – increased by 1.9% as economic activity rose in the subregion.

8.2.2 Paper and paperboard consumption and prices

The apparent consumption of paper and paperboard in Europe rose by 1.3% in 2014 (table 8.2.2). Graphic paper consumption increased by 0.3%, led by a rise of 5.2% in the consumption of coated papers; the increase was despite consumption dropping by 2.7% for uncoated mechanical papers and by 3.7% for newsprint. The consumption of packaging materials increased by 1.7%, led by growth of 6.6 % in cartonboard and a 5.4% rise in wrapping papers, while the consumption of sanitary and household papers grew by 3.0%.

TABLE 8.2.2

Production and apparent consumption of paper and paperboard, Europe, 2010, 2013 and 2014

(thousand tonnes)

	Production				Apparent consumption			
	2010	2013	2014	Change (%) 2013-2014	2010	2013	2014	Change (%) 2013-2014
Graphic papers	44,490	39,783	38,953	-2.1	38,461	33,222	33,335	0.3
Newsprint	9,490	8,323	7,813	-6.1	9,490	8,022	7,721	-3.7
Uncoated mechanical	7,737	6,477	6,233	-3.8	6,261	5,068	4,934	-2.7
Uncoated woodfree	9,274	9,406	9,393	-0.1	9,623	8,665	8,623	-0.5
Coated papers	17,988	15,577	15,514	-0.4	13,088	11,467	12,057	5.2
Sanitary and household papers	7,098	7,411	7,590	2.4	7,460	7,232	7,447	3.0
Packaging materials	45,717	47,472	47,963	1.0	44,139	44,106	44,923	1.9
Case materials	26,718	27,864	28,058	0.7	26,923	28,081	28,163	0.3
Cartonboard	9,786	10,324	10,571	2.4	9,003	7,718	8,227	6.6
Wrapping papers	5,152	5,280	5,327	0.9	4,585	4,512	4,756	5.4
Other papers, mainly packaging	4,061	4,004	4,007	0.1	3,628	3,795	3,778	-0.5
Other paper and board	4,572	4,113	4,190	1.9	4,695	4,241	4,231	-0.2
Total paper and paperboard	101,875	98,779	98,695	-0.1	94,755	88,802	89,936	1.3

Sources: CEPI, 2015; UNECE/FAO, 2015.

Prices for most paper and paperboard declined in Europe throughout 2014, a trend that began in the second half of 2011. After relative price stability in 2011, graphic papers recorded a slow and continuous decline in 2012-2014. On the other hand, prices for packaging grades were relatively stable in 2014, driven by robust demand (Valois Vision Marketing, 2015d).

8.2.3 Market and integrated pulp production

Woodpulp production fell by 1.0% in Europe in 2014, to 38.3 million tonnes, due largely to ongoing integrated mill closures and unplanned maintenance downtime (table 8.2.3). Exports fell by 1.0% and imports by 0.9%; as a result, apparent consumption fell by 1.0%.

TABLE 8.2.3

Woodpulp balance, Europe, 2013-2015

(thousand tonnes)

	2013	2014	2015f	Change (%) 2013-2014
Production	38,723	38,321	38,235	-1.0
Imports	20,905	20,722	20,665	-0.9
Exports	15,368	15,214	15,135	-1.0
Apparent consumption	44,261	43,829	43,765	-1.0

Note: f = 2014 Committee on Forests and Forest Industry forecast.

Source: UNECE/FAO, 2015.

The production of mechanical pulp fell by 1.4% in 2014 due to closures of graphic-paper machines. The production of chemical pulp declined by 0.9%, mainly as a result of unplanned maintenance downtime (Valois Vision Marketing, 2015d), and market pulp production fell by 1.0%.

Softwood-based pulp prices in Europe continued to recover for most of 2014 as supply was curtailed and demand was strong from the packaging, tissue and specialty segments. Prices began to falter, however, as 2014 came to a close, partly due to an excess supply of softwood-based market pulp caused by a seasonal slowdown in demand for graphic-paper-grade pulp. In addition, a series of major expansions in the hardwood kraft segment outside Europe caused prices for this product to soften as supply exceeded demand; the resulting price differential between softwood pulp and hardwood kraft, which exceeded $200 per tonne in global markets, drove paper producers to swing demand towards the lower-cost grades of hardwood kraft.

8.2.4 Use of paper for recycling

The use of paper for recycling in Confederation of European Paper Industries (CEPI)[12] countries was essentially flat in 2014, at 47.5 million tonnes. Exports of paper for recycling to non-CEPI countries decreased by 4.6%, to 9.6 million tonnes, 93.7% of which went to Asian markets. Of the total volume of paper collected for recycling in Europe in 2014, about 80% was

[12] Through its 18 member countries (17 EU members plus Norway), CEPI represents some 520 pulp, paper and paperboard companies in Europe.

used within the subregion and 20% was exported, essentially unchanged from 2013 (CEPI, 2015).

Paper for recycling comprised 45.7% of the fibre used for papermaking in CEPI countries in 2014. Woodpulp accounted for another 39.1%, and the remainder (15.2%) comprised non-woodpulp and non-fibrous materials.

Source: UPM, 2014.

8.3 THE CIS SUBREGION

8.3.1 Paper and paperboard production and apparent consumption

The production of paper, paperboard and chemical woodpulp in the CIS rose by 5.4% in 2014, to 15.9 million tonnes (table 8.3.1).

TABLE 8.3.1

Production of chemical woodpulp, paper and paperboard, CIS, 2013-2014

(thousand tonnes)

	2013	*2014*	*Change (%) 2013-2014*
Chemical woodpulp	5,793	6,318	9.1
Paper and paperboard	9,346	9,631	3.1
Total	15,139	15,949	5.4

Source: UNECE/FAO, 2015.

Paper and paperboard production increased by 3.1% in 2014, mainly as a result of capacity expansions of fine papers at Koryazhma and improved export market opportunities. The significant devaluation of the rouble against both the euro and the US dollar in 2014 facilitated a 3.2% increase in exports of paper and paperboard, but more expensive imports rose by 0.2% due to a 2.1% increase in consumption (table 8.3.2).

TABLE 8.3.2

Paper and paperboard balance, CIS, 2013-2015

(thousand tonnes)

	2013	*2014*	*2015f*	*Change (%) 2013-2014*
Production	9,346	9,631	9,839	3.1
Imports	2,845	2,850	2,850	0.2
Exports	2,960	3,054	3,000	3.2
Apparent consumption	9,230	9,427	9,689	2.1

Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

8.3.2 Chemical woodpulp production and apparent consumption

Chemical woodpulp production increased by 9.1% in the CIS in 2014, aided by an expansion in capacity. Imports also increased, by 7.3%, because of a need for higher-value-added grades, including dissolving pulps, and exports rose by 0.7% aided by increased production of chemical pulp, resulting in a 13% rise in apparent consumption (table 8.3.3).

TABLE 8.3.3

Chemical woodpulp balance, CIS, 2013-2014

(thousand tonnes)

	2013	*2014*	*Change (%) 2013-2014*
Production	5,793	6,318	9.1
Imports	236	254	7.3
Exports	1,978	1,992	0.7
Apparent consumption	4,051	4,580	13.0

Source: UNECE/FAO, 2015.

8.3.3 Russian Federation

8.3.3.1 Production and capacity

The production of pulp, paper and paperboard in the Russian Federation was still lower in 2014 than it was in the pre-transition period of 1988-1989 (Rosstat, 2015); however, targeted investment by the private sector, including foreign capital, has increased production recently. Contributing to the increase is an investment project by the Ilim Group, which is the largest investment project in the Russian forest industry. It has many important components, such as a new manufacturing facility in Bratsk and the expansion of white-paper and coated-paper capacity in Koryazhma. Another project is an investment by

Mondi in additional bleached softwood kraft pulp production at Syktyvkar. The reconstruction and restructuring of the Russian pulp and paper industry is continuing, and progress is being made towards producing higher-value products and improved processing of wood raw material.

8.3.3.2 Imports

The Russian Federation's annual trade deficit in paper and paperboard has grown since 2001; this ranged from $1.7 billion to $2.0 billion per year in the period 2008-2013 and was $3.3 billion in 2014. The trade deficit has grown because imports tend to be higher-value products, such as high-quality materials for containers and packaging, coated paper and tissue, whereas exports are mainly commodity products, such as chemical pulp, newsprint and kraft linerboard.

8.3.3.3 Exports

Russian exports of pulp and paper increased after 1990 and peaked in 2005. They constituted 80% of market pulp production in 2014 and 34% of paper and paperboard production. Major export destinations in 2014 were China (market pulp and kraft linerboard), India (newsprint), Ireland (market pulp and kraft linerboard) and Turkey (newsprint). Pulp exports exceeded 2.2 million tonnes in 2014, 55% of which went to China.

8.4 THE NORTH AMERICA SUBREGION

8.4.1 Capacity trends

There were few closures of market pulp operations in North America in 2014, a marked change from previous years. Nevertheless, the printing-and-writing-paper segment continued to suffer from overcapacity and low prices due to falling paper demand, itself the result of increasing electronic communication. Newsprint consumption continued to decline due to decreasing newspaper circulations, reduced advertising, lower basis weights and the impact of the internet. As a result, 1.44 million tonnes of printing-and-writing-paper capacity (7.3% of total capacity) and 1.14 million tonnes of newsprint capacity (17.0% of total capacity) was indefinitely idled or permanently closed in North America in 2014 (Valois Vision Marketing, 2015b).

Overcapacity continued in the newsprint subsector in 2014 due to a 12% decline in consumption of newsprint by daily newspapers. On the other hand, non-newspaper applications, such as flyers and inserts, grew by 2.5% in 2014, to 1.03 million tonnes (Valois Vision Marketing, 2015d).

The consolidation and rationalization of capacity in the paperboard subsector in recent years has led to a tighter supply-demand balance; nevertheless, 100 thousand tonnes of kraft paper capacity was permanently removed in 2014.

Tissue production in North America edged 0.9% lower in 2014. This followed a major wave of investment in 2012-2014, virtually all in the US, which increased capacity by 6.9%, to 9.135 million tonnes; the conversions and upgrades meant that some production capacity was temporarily unavailable. Tissue capacity declined by 1.3% in Canada in 2014, to 10 thousand tonnes, but is forecast to increase in North America in the short term, driven by increased demand for private brands, product-line extensions and premium hygienic tissue.

Following years of closures, the woodpulp subsector experienced relative stability in 2014. Conversions from bleached hardwood kraft to dissolving grades were hampered by difficult markets following the imposition of import duties by China on shipments from Canada and the US (and Brazil) in 2014.

Canadian market pulp exporters benefitted from a weaker currency against the US dollar in 2014, improving margins compared with those seen in much of the last decade. The stronger US dollar also attracted stronger imports of printing and writing paper, causing several US mills to rapidly lose market share in a segment that was already experiencing a decline in overall demand. The affected parties petitioned the US International Trade Commission and the US Department of Commerce, which, in turn, launched an investigation into imports of cut-size office and copy paper.

As for much of the last 15 years, domestic North American demand for graphic paper declined in 2014 as a result of lower advertising budgets for print advertising and growth in electronic media for data transmission and information dissemination. Further paper-machine closures are anticipated and restarts seem unlikely. This pattern is being replicated in every mature market worldwide.

Following a preliminary ruling in November 2013, the Chinese Government, through its Ministry of Commerce, imposed a final duty on commodity or viscose dissolving-pulp grades from Brazil, Canada and the US on 6 April 2014. This led to the indefinite postponement of many proposed expansions in North America because prices in China had fallen below domestic producers' cost of production. The final duties range from 6.8% to 11.5% for Brazil; from 0% to 23.7% for Canada; and from 18.7% to 33.5% for the US.

8.4.2 Production and apparent consumption

North America's apparent consumption of paper and paperboard, which had been trending lower for years, reached an all-time low in 2014, falling by 1.2% to 75.1 million tonnes (table 8.4.1) as a result of capacity closures in graphic papers and paperboard. The paperboard subsector experienced sustained demand and profit growth following industry consolidation and capacity rationalization.

TABLE 8.4.1

Paper and paperboard balance, North America, 2013-2015

(thousand tonnes)

	2013	2014	2015f	Change (%) 2013-2014
Production	83,918	82,869	83,363	-1.3
Imports	12,403	12,664	12,760	2.1
Exports	20,355	20,473	20,727	0.6
Apparent consumption	75,966	75,060	75,396	-1.2

Note: f = 2014 Committee on Forests and Forest Industry forecast.
Source: UNECE/FAO, 2015.

North American paper and paperboard imports rose by 2.1% in 2014, with increased volumes from Asia, while exports grew by 0.6%.

The production of graphic paper declined by 5.7% in North America in 2014 as capacity was cut due to falling demand, continuing a fall that has removed 18.4% from production since 2010 (table 8.4.2). The production of paperboard (packaging material), on the other hand, grew by 1.1%. Prices were relatively flat for paperboard throughout 2014, despite strong demand, as capacity was added to the market. A series of newsprint conversions and debottlenecking projects added 1.1 million tonnes to paperboard production in 2014-2015, following a similar increase in 2013 (Valois Vision Marketing, 2015d).

The production of newsprint fell by 7.8% in 2014, driven by capacity rationalization, including conversions to packaging grades for which margins were drastically better. Uncoated mechanical paper production declined by 2.5% in 2014, while coated paper production fell by 3.0%. Uncoated-freesheet production fell by 7.7% as the volume of cut-size imports from Asia, Europe, Latin America and Oceania grew to almost 20% of demand. Such penetration by imports led several US producers to file complaints alleging unfair trade practices in January 2015. Preliminary duties and further rulings are expected to decrease imports of uncoated freesheet.

Source: UPM, 2014.

North America's apparent consumption of newsprint declined by 8.5% in 2014, to 3.8 million tonnes; it fell by 7.0 million tonnes between January 2004 and December 2014. North American newsprint capacity continues to decline, with announced closures of 1.14 million tonnes in 2014-2015 (Valois Vision Marketing, 2015g).

North America's apparent consumption of graphic papers dropped by 4.4% in 2014, to 22.7 million tonnes (table 8.4.2 and graph 8.4.1). Apparent consumption declined by 2.4% for uncoated mechanical papers, by 3.1% for coated papers and by 4.4% for uncoated freesheet.

The production of sanitary and household tissue fell by 1.6% in the subregion in 2014.

The apparent consumption of paperboard increased by 0.7% in 2014, to 41.0 million tonnes; imports in this subsector grew by 7.3% and exports increased by 5.2%

TABLE 8.4.2

Production and apparent consumption of paper and paperboard, North America, 2010, 2013 and 2014

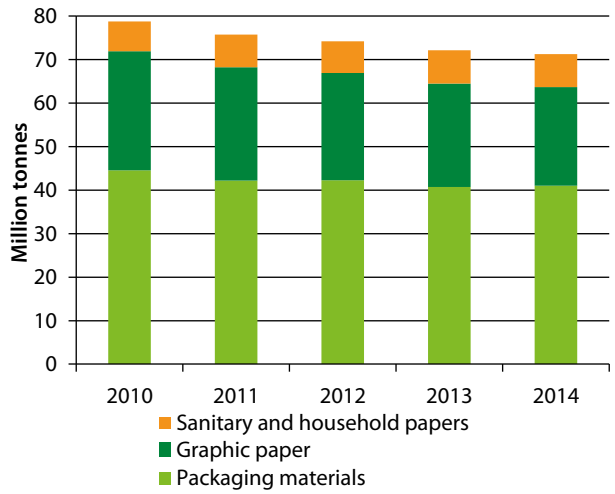
(thousand tonnes)

	Production				*Apparent consumption*			
	2010	*2013*	*2014*	*Change (%) 2013-2014*	*2010*	*2013*	*2014*	*Change (%) 2013-2014*
Graphic papers	29,305	25,377	23,923	-5.7	27,374	23,753	22,711	-4.4
Newsprint	7,463	6,442	5,939	-7.8	4,853	4,177	3,823	-8.5
Uncoated mechanical	4,861	3,790	3,694	-2.5	4,826	3,827	3,737	-2.4
Uncoated wood-free	9,363	8,539	7,883	-7.7	9,385	8,536	8,164	-4.4
Coated papers	7,618	6,605	6,408	-3.0	8,309	7,213	6,987	-3.1
Sanitary and household papers	6,810	7,560	7,437	-1.6	6,863	7,672	7,550	-1.6
Packaging materials	49,919	46,933	47,460	1.1	44,524	40,708	40,993	0.7
Case materials	32,701	33,337	33,951	1.8	28,862	29,389	29,798	1.4
Carton	7,285	7,172	7,062	-1.5	5,909	5,516	5,444	-1.3
Wrapping papers	4,053	3,242	3,297	1.7	3,864	2,622	2,604	-0.7
Other papers, mainly packaging	5,881	3,181	3,150	-1.0	5,888	3,182	3,147	-1.1
Other paper and board	4,410	4,049	4,049	0.0	4,505	3,833	3,806	-0.7
Total paper and paperboard	90,444	79,869	78,820	-1.3	83,266	75,966	75,060	-1.2

Source: UNECE/FAO, 2015.

GRAPH 8.4.1

Apparent consumption of paper and paperboard, North America, 2010-2014

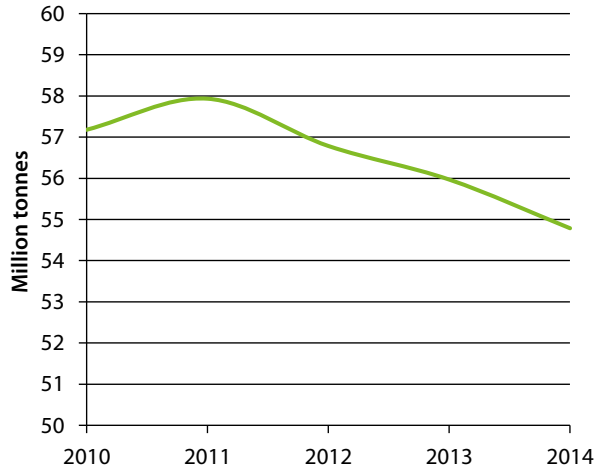


Source: UNECE/FAO, 2015.

The production of chemical woodpulp in North America fell by 2.1% in 2014 (graph 8.4.2) as printing-and-writing-paper production capacity was cut in response to falling demand and stronger cut-size imports. Shipments fell by 0.8% as producers experienced increased competition from offshore mills. High-cost capacity was converted to value-added grades of fluff, dissolving and nano-crystalline cellulose pulps that generated lower output due to their highly refined natures (Valois Vision Marketing, 2015c).

GRAPH 8.4.2

Production of chemical woodpulp, North America, 2010-2014



Source: UNECE/FAO, 2015.

Significant merger and acquisition activity in the North American paperboard subsector in 2013 caused a drop in integrated capacity. In 2014, however, efficiencies such as cost-cutting measures and a tighter supply-demand balance created a stronger pricing environment that allowed an incremental increase in capacity.

The modest recovery in the chemical market pulp subsector that began in 2013 gained momentum in 2014, and the growth in demand was broad-based. Even mature markets such as North America, western Europe and Japan, where paper-machine closures have been prominent, experienced sustained shipment levels. Emerging markets in Asia, Latin America and eastern Europe saw robust growth driven by investments in tissue, packaging and specialties. Despite a sluggish Chinese recovery in 2014, overall Asian demand in the packaging, sanitary and facial-tissue segments was stronger due to increased online shopping and higher standards of living. Major investments in incremental capacity were noticeable once again in China and Indonesia (Valois Vision Marketing, 2015e).

In China, weak exports due to trade issues involving anti-dumping and countervailing duties in Brazil and Europe, along with excess capacity across graphic paper and paperboard grades, led to lower production rates.

8.5 EXTRA-REGIONAL INFLUENCES AFFECTING THE UNECE REGION

8.5.1 South America

8.5.1.1 Brazil

Pulp capacity expansions in South America added 3.0 million tonnes of bleached eucalyptus market pulp capacity in 2014, an increase in global bleached hardwood kraft capacity of 8.9%.

By the end of 2018, projects under the construction or in the planning pipeline could add an additional 4.9 million tonnes of bleached chemical market pulp capacity in Brazil, an increase of 39.6% over the country's existing capacity (Valois Vision Marketing, 2015f).

Brazilian production of pulp, paper and paperboard was 26.9 million tonnes in 2014, a 5.1% increase compared with 2013 (table 8.5.1). Pulp production was 16.5 million tonnes in 2014, an increase of 8.8% resulting from the start-up of yet another new pulp line. Paper and paperboard production declined by 0.4% in 2014, however, due to lacklustre economic conditions.

TABLE 8.5.1

Pulp, paper and paperboard production, Brazil, 2013-2014

(thousand tonnes)

	2013	2014	Change (%) 2013-2014
Pulp	15,129	16,461	8.8
Paper and paperboard	10,444	10,405	-0.4
Total	25,573	26,866	5.1

Source: Ibá, 2015.

Brazil exported more than 10.6 million tonnes of pulp in 2014, which was 64.5% of its production (table 8.5.2). The export volume was up by 12.7% compared with 2013, when 9.4 million tonnes – 62.3% of that year's production – were exported (Ibá, 2015).

TABLE 8.5.2

Woodpulp balance, Brazil, 2013-2014

(thousand tonnes)

	2013	*2014*	*Change (%) 2013-2014*
Production	15,129	16,461	8.8
Domestic sales	1,723	1,817	5.5
Exports	9,429	10,614	12.7
Imports	430	416	-3.3
Apparent consumption	6,130	6,263	2.1

Source: Ibá, 2015.

Unlike pulp, most paper and paperboard produced in Brazil is consumed internally. Exports accounted for only 17.7% of production in 2014, down from 17.9% in 2013 (table 8.5.3).

TABLE 8.5.3

Paper and paperboard balance, Brazil, 2013-2014

(thousand tonnes)

	2013	*2014*	*Change (%) 2013-2014*
Production	10,444	10,405	-0.4
Domestic sales	5,712	5,717	0.1
Exports	1,866	1,846	-1.1
Imports	1,274	1,262	-0.9
Apparent consumption	9,836	9,821	-0.3

Source: Ibá, 2015.

8.5.1.2 Chile

Chile exported 5.22 million tonnes of pulp, paper and paperboard in 2014, up by 1.6% compared with 2013 (table 8.5.4). Aggregate pulp exports increased by 2.5%, aided largely by productivity-gains projects. Newsprint exports fell by 44%, however (following a decline of 39.7% in 2013), due to a major closure caused by high electricity costs, fewer profitable markets and a continued decrease in prices (Valois Vision Marketing, 2015b). In 2015, a series of debottlenecking projects and a major pulp-line reconstruction will increase capacity in pulp production by 23.2%, to 6.55 million tonnes.

TABLE 8.5.4

Pulp, paper and paperboard exports, Chile, 2013-2014

(thousand tonnes)

	2013	*2014*	*Change (%) 2013-2014*
Bleached radiata kraft	1,998	2,138	7.0
Bleached eucalyptus kraft	2,085	2,091	0.3
Unbleached radiata kraft	474	441	-7.0
Newsprint paper	97	54	-44.0
Paperboard	488	499	-2.3
Total	5,142	5,223	1.6

Source: Chilean Customs Service, 2015.

8.5.2 Asia

8.5.2.1 China

China's economic recovery from the 2013 "slowdown" was lethargic, and both exports and domestic consumption stagnated. In response, the Chinese Government initiated social and economic reforms in late 2014 and has since decided to stimulate the economy by investing in infrastructure.

The government, through its Ministry of Industry and Information Technology, continued to force the closure of inefficient and polluting pulp and paper equipment in 2014, reducing capacity by a further 4.92 million tonnes. Since 2005, the ministry has forced the closure of 42.37 million tonnes of pulp and paper capacity.

China's pulp production rose by 3.3% in early 2014 as import prices increased above domestic costs (table 8.5.5); however, the surge of bleached hardwood pulp capacity in 2014 caused prices to drop again. Lower pricing and increased demand for pulps and strong tissue and packaging quickly absorbed the additional volumes and prices recovered; domestic hardwood production is thriving once again because costs are lower than imported tonnage (Valois Vision Marketing, 2015e).

The apparent consumption of woodpulp in China rose by 3.7% in 2014, driven mainly by growth in tissue and paperboard production. China's overall paper and board production rebounded in 2014, with a 3.6% rise following the start-up of several new linerboard, corrugating medium and specialty paper machines (Valois Vision Marketing, 2015e). The country's apparent consumption of paper and paperboard was down by 3.0% in 2014, the result of market-related downtime in the graphic paper and cardboard segments. Significant investment continues in the industry, although several tissue-machine expansions remain scaled back from the overambitious plans announced in recent years. Slower domestic consumption has pushed Chinese tissue and printing-and-writing paper mills to export higher volumes to the Americas, Europe and elsewhere in an effort to fill machine time. In the paperboard subsector, however, overcapacity forced mills into unprecedented market-related downtime in 2014 and early 2015.

TABLE 8.5.5

Production and apparent consumption of pulp, paper and paperboard, China, 2014

(thousand tonnes)

	Production		Apparent consumption	
	2014	*Change (%) 2013-2014*	*2014*	*Change (%) 2013-2014*
Pulp	79,060	3.3	94,840	3.7
Paper and paperboard	104,700	3.6	100,710	-3.0

Source: China Paper Association, 2015.

Kraft pulp imports into China rose to a record 14.3 million tonnes in 2014, a 5.2% increase over 2013, while total pulp imports grew by 6.6%, to 17.96 million (table 8.5.6).

TABLE 8.5.6

Pulp imports, China, 2012-2014

(thousand tonnes)

	2012	2013	2014	Change (%) 2013-2014
Kraft	13,344	13,571	14,277	5.2
Mechanical	1,417	1,388	1,508	8.6
Dissolving	1,579	1,804	2,086	15.6
Other	119	87	93	6.6
Total	16,459	16,850	17,964	6.6

Source: China Customs Bureau, 2015.

China continues to source large volumes of recovered paper to feed its growing papermaking industry; recovered paper represents by far the largest source of fibre in China's paper and paperboard industry. China's recovered-paper imports fell by 5.9% in 2014, to 27.5 million tonnes, as customs officials instituted quality controls (table 8.5.7).

An estimated 47.1% of Chinese recovered-paper imports were sourced from the US in 2014 (US Bureau of Census, 2015), up from 45.4% in 2013. The increase was attributed to an increase in Chinese paper production of 3.6%.

TABLE 8.5.7

Recovered paper imports, China, 2013-2014

(million tonnes)

	2013	Share of total (%)	2014	Share of total (%)
Imports in China	29.2	100	27.5	100
Of which from the US	13.3	45	13.0	47
US exports	18.9	100	19.1	100
Of which to China	13.3	70	13.0	68

Sources: China Customs Bureau, 2015; US Census Bureau, 2015.

8.5.3 Dissolving-pulp demand in emerging markets

Demand for dissolving pulp has grown steadily in the last 15 years, aided by the development of new end-use applications and rapid economic growth in emerging markets. The consumption of dissolving pulp has been driven by consumers in emerging markets looking to improve their standard of living. Applications include personal-care items, detergents, foods, textiles and car parts. There has been very strong growth in rayon, a major subcategory of dissolving pulp, as clothing manufacturers abandon expensive natural fibres such as cotton.

Source: UNECE/FAO, 2014.

Dissolving-pulp capacity expansions in Brazil, China and North America have created a surplus, which has caused prices to collapse to unsustainable levels. High-cost capacity has closed or swung back and forth with fluff or paper-grade pulps. Dissolving-pulp capacity was estimated at 6.7 million tonnes at the end of 2014, while demand was 6.2 million tonnes.

China's imports of dissolving pulp increased by 15.6% in 2014, to 2.1 million tonnes (table 8.5.6).

China imposed import duties on dissolving-pulp imports from Brazil, Canada and the US In 2014. Nevertheless, capacity in those countries expanded further and prices fell to around $800 per tonne, down from $860 when the duties were first imposed.

As the dissolving-pulp market expands and a select few pulp producers delve into nanocellulosic fibres, the quest to develop niche markets will be the modus operandi for improved financial results.

Note: The statistical annex of the *Forest Products Annual Market Review 2014-2015* is available at: www.unece.org/forests/fpamr2015-annex

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Gift Life
WILD BIRD SUET
272890
4/8 LB (3.63 Kg) Bags
UNITS
6 FL OZ (1.43 QT / 1.36 L) UNITS

9 WOOD ENERGY

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HIGHLIGHTS

- Wood energy markets continue to develop strongly, and wood remains the single-most important source of renewable energy in the UNECE region. The contribution of wood to renewable energy portfolios is decreasing, however, because wind and solar energy are developing faster.
- The EU28 produced 13.3 million tonnes of wood pellets and imported about 6.55 million tonnes in 2014. Two mild winters in a row in Europe have brought down residential consumption and the price of wood pellets across the EU28.
- The Sustainable Biomass Partnership certificate, backed by most major European power plants, was launched in 2015.
- The domestic consumption of wood pellets, briquettes and chips is increasing in the CIS. Certain regions of the Russian Federation show promise for the use of wood residues in district heating systems.
- Wood pellet producers in Belarus, the Russian Federation and Ukraine benefited from the depreciation of local currencies, but this did not translate into an increase in long-term supply contracts.
- The wood pellet manufacturing sector underwent important organizational restructuring in 2014, including downstream expansion into the retail and distribution sectors.
- Wood-based combined-heat-and-power plants in the western Balkans had a total installed capacity of 8.7 MWe in 2014, and the region exported 550 thousand tonnes of wood pellets (71.4% of production).
- Canadian production of wood pellets rose to 1.9 million tonnes in 2014, 84% of which was exported. The UK remains the primary destination for Canadian wood pellet exports, taking about half. Canadian exports of wood pellets to the US increased in 2014 and represented 18% of total exports from Canada. New markets for wood pellets are expected to develop in Asia in 2015, with growth in imports by the Republic of Korea.
- US wood pellet production was estimated at 6.9 million tonnes in 2014, up by about 21% from 2013. US wood pellet exports reached a new high of 4 million tonnes in 2014, of which 97% were destined for European countries.
- There was a 2% increase in wood energy consumption in the US in 2014; virtually all this increase was for power generation. There are promising prospects for expansion in the residential sector in the US, where about one household in ten uses wood energy as a primary or secondary source of heating.

9.1 INTRODUCTION

Wood energy is the most important source of renewable energy in the UNECE region. According to the UNECE/FAO Joint Wood Energy Enquiry (JWEE) 2013 (UNECE/FAO, 2015), wood accounts for 46% of all renewable sources in the 25 UNECE countries who replied to the JWEE 2013. Wood energy consumption in the UNECE region grew at an estimated annual rate of 4.8% in the period 2011-2013, compared with a 7.9% global rate for the installation of new capacity of all renewables over the same period (IRENA, 2015). The forest-based industry is the largest consumer of wood energy (43.9%), followed by the residential (35.8%) and combined heat and power (17.3%) sectors. The largest relative increase in wood energy consumption in 2013 was in the residential sector. Wood for energy (by volume of wood used) in 2013 was derived mainly from wood-processing co-products (57.8%) and direct (36.4%) sources, including trees in and outside forests. Average wood energy consumption in the UNECE region in 2013 was 0.92 m^3 per capita (UNECE/FAO, 2015).

Source: UNECE/FAO, 2014.

Preliminary results of the JWEE 2013 indicate that per capita wood pellet consumption in the UNECE region increased by 50% between 2011 and 2013, from 25.9 kg to 38.8 kg (UNECE/FAO, 2015). As a result, there has been a continuous increase in wood pellet manufacturing capacity. Other trends in the sector include mergers and acquisitions to expand market presence and move into residential retail markets, and integration with other forest product manufacturing sectors (e.g. sawmills and pulp and paper mills) to maximize fibre value and reduce transaction costs. Expected growth in wood pellet demand, which some estimate will reach about 50 million tonnes by 2024, continues to drive investments in new manufacturing capacity (Sherrard, 2014a). The role of wood pellets in generating energy from wood is still relatively minor, accounting for about 7% of total wood energy production in the UNECE region. However, pellets are the most dynamic wood energy commodity and have the biggest share of global trade; 58.8% of global wood pellet production is traded internationally in 2013 (UNECE/FAO, 2015).

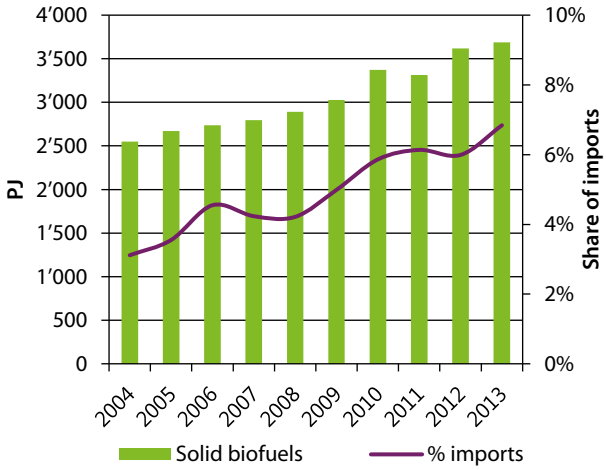
9.2 EUROPE

9.2.1 Consumption and production

The primary production of solid biofuels (excluding charcoal)[13] increased by 2% in the EU28 in 2013, reaching 3,687 petajoules (PJ) (Eurostat, 2015b); primary energy produced from solid biofuels in the EU28 increased by 45% in the ten years to 2013. Solid biofuels are the most important source of renewable energy in the EU28 portfolio. Their share of total renewable energy production was 46% in 2013, a significant decrease from the 55% share in 2005.This was because other forms of renewable energy, such as solar and wind, have expanded more quickly and taken a larger share of all renewable energy sources. The importance of imported feedstock in the production of energy from solid biofuels in the EU28 continues to grow. Imported solid biofuels generated 252 PJ in 2013, which was about 7% of all solid biofuels used in primary energy production (graph 9.2.1).

GRAPH 9.2.1

Total primary energy production from solid biofuels in the EU28, and share of imports, 2004-2013



Note: Excluding charcoal.
Source: Eurostat, 2015b.

The EU28 is the world's largest market for wood pellets (figure 9.2.1); it accounts for about 50% of global wood pellet production and consumes about 70% of it. UNECE data indicate that Europe consumed 21.9 million tonnes of wood pellets in 2013.

Collectively, power production, combined-heat-and-power (CHP) and district heating consumed slightly fewer pellets than the aggregated demand of individual households and small businesses for heat generation (Hawkins Wright, 2015).

The EU28 produced 13.3 million tonnes of wood pellets in 2014, and total manufacturing capacity in the EU28 in was estimated at 16.4 million tonnes (Flach et al., 2014). Germany is the

[13] Eurostat has replaced the product category "wood and wood waste" and now reports on "solid biofuels (excluding charcoal)" (Eurostat, 2015a).

EU28's largest wood-pellet producer, with a total production of 2.1 million tonnes in 2014, followed by Sweden. Sweden's wood-pellet manufacturing has stagnated in recent years and has been partly replaced by imports from the Baltic States and the Russian Federation. France's wood-pellet production was 1.2 million tonnes in 2014, a 34% increase over 2013. The growth in French wood-pellet production is driven by strong residential heating demand, which has been sustained by a combination of high electricity prices and a cultural tradition of wood use for heating; Austria has experienced a similar trend (Flach et al., 2014). Italy is Europe's largest national residential market for wood pellets; consumption in that market has grown by 15% annually from 2011 to 2013 (Ljungblom, 2014). Italy used about 2.4 million tonnes of wood pellets for residential heating in 2013, only about 300 thousand tonnes of which was produced domestically. A growing share of imported pellets are sold in 15 kg bags. North American pellets are sold into the Italian residential market through creative shipping practices and by obtaining ENplus A1 certification, which is the highest grade of pellets certified by the European Pellet Council (Ljungblom, 2014).

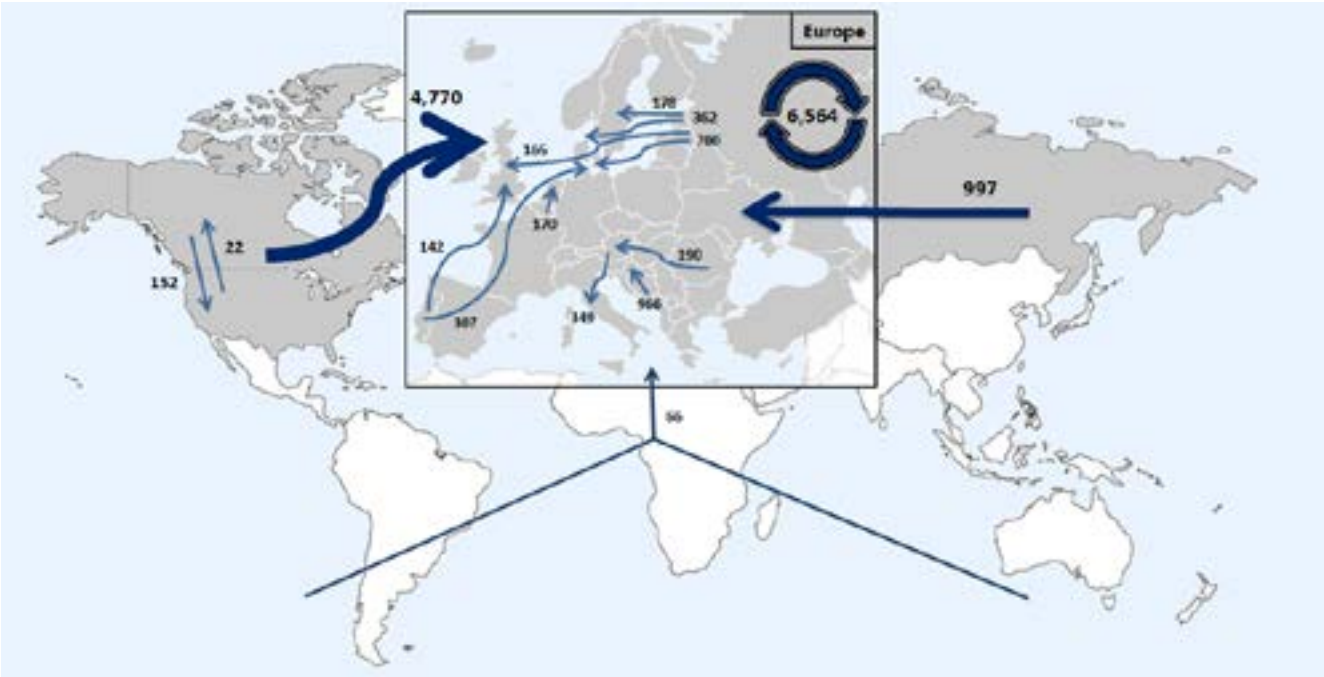
The Baltic states produce wood pellets almost exclusively for export. Wood-pellet production has expanded rapidly in Estonia, Latvia and Lithuania and totalled almost 2 million tonnes in 2013. With a production of about 1 million tonnes, Latvia is the main producer among the Baltic states. Portugal has increased production, exporting nearly its entire production volume to Denmark and the UK (Flach et al., 2014).

The production of all forms of woodfuel continued to grow in the western Balkans in 2014. Wood-chip production had the highest annual growth rate, at about 24%, topping 1 million tonnes in 2014, and wood-pellet production grew by 21%. Glavonjić (2015) reported that there are 129 wood-pellet manufacturers in the western Balkans, of which 92 are in Bosnia and Herzegovina and Serbia. Most of these manufacturers are small, with capacities of 1 thousand to 5 thousand tonnes per year (figure 9.2.2); only nine facilities have installed capacity above 30 thousand tonnes per year. Total wood-pellet installed capacity in the western Balkans is estimated at 1.25 million tonnes, with an actual production of 0.77 million tonnes in 2014 (Glavonjić, 2015).

Wood energy consumption in the western Balkans increased by less than 1% in 2014, to 134 PJ, led by the residential sector. An increasing number of households use wood energy due to the high price of light oil and natural gas and the convenience of wood pellets. A study by Glavonjić and Vukadinović (2014) in two regions of Serbia estimated that average household wood-heat energy consumption exceeded 300 kilowatt hours per m^2 of occupied living space per year. Serbia consumed more than 70 thousand tonnes of wood pellets in 2014, up from just over 7,700 tonnes in 2011. Incentives for using wood energy, including feed-in tariffs, were linked to the installation of five new CHP plants in 2014, one of which was annexed to a wood-pellet facility in Croatia. Total installed electricity generation capacity of CHP plants in the western Balkans was 8.7 megawatts of electricity (MWe) in 2014, and permits have

FIGURE 9.2.1

Global main trade flows of wood pellets, 2013 (thousand tonnes)



Note: The map highlights major trade flows.
Source: COMTRADE, 2015.

FIGURE 9.2.2

Location and capacity of wood pellet manufacturers in the western Balkans, 2013

Notes: ALB = Albania; BIH = Bosnia and Herzegovina; HRV = Croatia; MKD = The former Yugoslav Republic of Macedonia; MNE = Montenegro; and SVN = Slovenia.

Source: Glavonjić, 2015.

been granted for 15 new CHP plants (39.6 MWe) (Croatian Energy Regulatory Agency, 2015; Ministry of Energy, Mining and Industry of Federation of Bosnia and Herzegovina, 2015). New investments in district heating systems are expected in 2015.

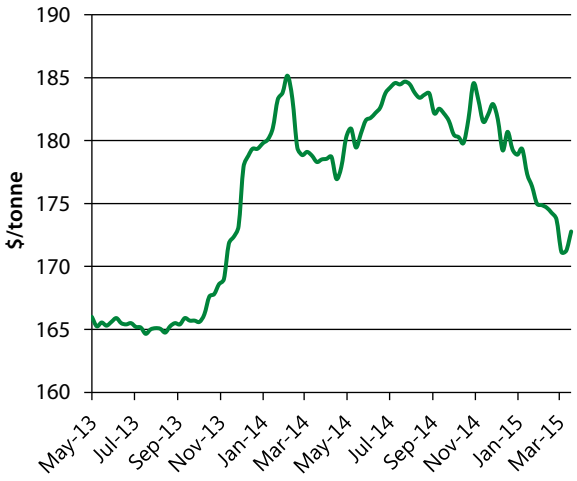
9.2.2 Prices

Argus Biomass (2014) reported that the highest cost, insurance and freight (CIF) spot price for industrial wood pellets at Amsterdam, Rotterdam and Antwerp (ARA) in 2014 was $185.15 per tonne in February. By February 2015, the price had declined by slightly more than $10 per tonne, to $174.87 (graph 9.2.2). Annual wood pellet prices in ARA were higher in 2014 than in 2013. The highest year-over-year change in monthly CIF ARA spot prices in 2014 was in July, when the price was 12% higher than in July 2013. Monthly prices were lower in the first quarter of 2015 than in the same period in 2014, with year-over-year declines in CIF ARA spot prices of 0.2-5% (Argus Biomass, 2015).

There has been price pressure on all woodfuels except pellets in the western Balkans, driven primarily by higher consumption. The ample availability of domestic and imported wood pellets has kept average wood-pellet prices relatively low. In mid-April 2015, average prices for wood pellets in Serbia were €120-130 per tonne (*ex works* i.e. at the factory door, value-added tax excluded), the lowest level in five years (Glavonjić, 2015).

GRAPH 9.2.2

Wood pellet prices at Amsterdam, Rotterdam and Antwerp, May 2013- March 2015



Note: Spot CIF prices within 90 days.

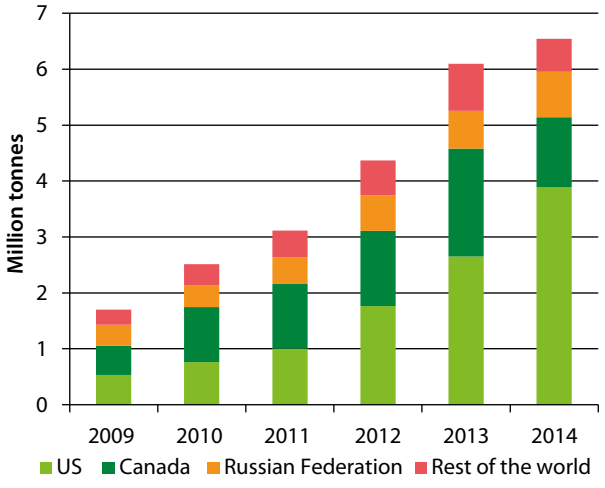
Source: Argus Biomass, 2015.

9.2.3 Trade

Annual EU28 wood pellet imports increased by almost half a million tonnes in 2014, with the US and Canada the main export partners (graph 9.2.3): the US supplied 3.89 million tonnes (59%) and Canada 1.25 million tonnes (19%) of the 6.55 million tonnes imported by the EU28 in 2014. According to Eurostat (2015a), imports from the Russian Federation neared 900 thousand tonnes in 2014, and Belarus and Ukraine are other important suppliers to the EU28. Intra-regional trade of wood pellets is significant in Europe, accounting for more than half of the 15 million tonnes of imports (UNECE/FAO, 2015).

GRAPH 9.2.3

EU28 imports of wood pellets, 2009-2014



Source: Eurostat, 2015a.

The western Balkans is a net exporter of wood energy, exporting 36.4 PJ in 2014. Firewood is the main wood energy product exported, accounting for 43% of exports by energy content. Wood-chip exports from the western Balkans amounted to 0.66 million tonnes in 2014, led by Croatia with 0.4 million tonnes, and wood-pellet exports totalled about 550 thousand tonnes (71% of total production), led by Bosnia and Herzegovina, Croatia and Slovenia, which accounted for more than 80% of the export volume. About 15% of exports were traded between western Balkan countries, and the remainder (i.e. 85%) was exported to other countries, mainly in the EU (Italy took 60%). To cater to European markets, 250 companies in the western Balkans held ENplus certificates as of June 2015 (European Biomass Association, 2015).

9.3 THE CIS SUBREGION

9.3.1 Consumption and production

Demand for wood energy, including pellets, briquettes and chips, is increasing rapidly in all CIS countries. Most Russian district heating plants are reaching obsolescence and have high operational costs. Regional governments have a strong interest in modern, cost-efficient installations, which have the potential to reduce operational costs by more than 75%. Switching to woodfuels can have sizeable economic benefits, especially in remote regions in the Russian Federation. In the Kemerovo region, for example, which is famous for its large coal deposits, the regional government has refitted dozens of municipal district heating boilers to burn wood pellets and chips. The Archangelsk region has started using wood pellets and chips domestically, with the Archangelsk government's 2010-2020 development programme spurring local wood energy demand. One of the aims of the programme is to renovate 101 boiler plants and convert them to local energy sources (mainly wood), and to construct 15 new boiler plants. The region has also developed a system of central gathering points for the collection of wood co-products (sawdust, wood chips and processing residues); as a result, more than 50 municipal boiler plants are burning wood wastes in Archangelsk today.

All CIS countries combined produced about 2 million tonnes of wood pellets in 2014 (Glukhovskiy and Hartkamp, 2014). The largest wood pellet manufacturing company in the Russian Federation, VLK (based in Vyborg), which achieved an estimated 26% of its annual production capacity of 1 million tonnes in 2014, filed for bankruptcy on 30 June 2015 (DP, 2015).

Installed capacity in the Archangelsk region increased to more than 200 thousand tonnes per year in 2014, but actual production and export did not exceed 100 thousand tonnes. Wood-pellet production capacity (pellet mills in actual production) in the Russian Federation increased to an estimated 3.6 million tonnes per year in 2014, but this could decline to 2.6 million tonnes per year if VLK ceases production.

Pellet production is reaching new (remote) regions of the Russian Federation with the installation of small to medium-sized facilities. In Irkutsk, for example, two plants were built in 2014 and three others are under construction. Production by one of the companies in the Irkutsk region, Lesresurs, reached its maximum capacity of 30 thousand tonnes per year and obtained ENplus A1 certification. Its main product, sawn timber, is exported to Japan, and its wood pellets are shipped to Europe (Hartkamp, 2015). Wood-pellet production capacity in Irkutsk is expected to rise to 500 thousand tonnes per year in 2016, with pellets exported to the EU and the Republic of Korea (Perederi, 2015).

The Russian Federation has the capacity to produce about 1 million tonnes of wood briquettes per year, and actual production grew to an estimated 400 thousand tonnes in 2014 (Glukhovskiy, 2015). Wood briquettes have become popular in the residential market, and their consumption is increasing in both the Russian Federation and Ukraine. In Ukraine, fossil fuels have become too expensive for many people; wood energy consumption is expected to rise as a consequence.

9.3.2 Prices

Russian wood pellet producers benefited from the devaluation of the Russian rouble in late 2014. Most wood pellet trade volumes are traditionally agreed on the basis of long-term contracts in euros, which delayed the impact of low demand and currency fluctuations. Since the beginning of 2015, however, long-term contracts have been on hold, because of weak markets, caused partly by successive warm winters and by uncertainty in the European industrial wood pellet market (Alekseev, 2015).

The 2014/2015 winter was the second mild winter in a row, and prices started to decline in December 2014. Prices (in euros) were 20% below the 2014 average in the Russian Federation in the second quarter of 2015. The Russian rouble and the Ukrainian hryvinia depreciated sharply in 2014, and the Belarusian rouble depreciated in January 2015. All three currencies remained weak in the first half of 2015 and inflation is increasing. For all currencies the depreciation effectively reduced production and transportation costs, making the production of pellets and their export to Europe profitable – even for facilities in East Siberia and Irkutsk, which transport pellets over 5,000 kilometres by train to Saint Petersburg (Alekseev, 2015).

Prices for Russian industrial wood pellets were extremely low in May 2015, at around €80 per tonne free carrier[14] or about €100 per tonne FOB in the Gulf of Finland. Low pellet prices ensured continued sales, but at a low level. As long as most storage facilities are close to full capacity in Europe, prices are unlikely to increase (Ivin, 2015).

The export price of wood briquettes in the 2015 summer was about the same as for pellets; on the other hand, the price of briquettes tends to exceed the price of pellets in domestic

[14] The seller delivers the goods, cleared for export, at a named place.

Russian retailer markets in winter. Online shops are offering wood pellets and briquettes in Saint Petersburg at around €130 per tonne, excluding delivery costs and value-added tax (VAT). In the Leningrad region, bags of wood pellets and packages of briquettes weighing 400-1,200 kg are offered at a retail ***ex works*** price of less than €100 per tonne.

9.3.3 Trade

The Russian customs agency reported exports of 879 thousand tonnes of wood pellets to Europe in 2014, of which half was shipped through the harbours of Saint Petersburg, Vyborg and Ust-Luga in the Gulf of Finland. More than three-quarters of exports were destined for industrial pellet markets in Denmark and Sweden, while industrial pellet exports to the Republic of Korea reached 45 thousand tonnes (Rosstat, 2015). Eurostat reported imports of 300 thousand tonnes of wood pellets from Ukraine to the EU in 2014.

Ex works summer prices in CIS countries have declined to the point where many companies are selling at close to their break-even price. Small, remote pellet producers are considering stopping production, or turning to the domestic market.

The first specialized wood pellet transhipment warehouse in the Russian Federation was built in the new port of Ust-Luga near the border with Estonia in 2014.

The trade of wood pellets with the EU is in euros, even in the case of Denmark and Sweden, which have their own currencies and which import about three-quarters of the pellets exported by the CIS.

In the eastern part of the Russian Federation, trade consists mainly of exports to the Republic of Korea (in US dollars). Less than 10% of Russian Federation exports are sold to Asian markets, but promising economic conditions may lead to an increase in this relative proportion. Considering the gradual recovery of demand and installed capacity in the CIS, the trade of wood energy can be expected to increase considerably in 2016.

9.4 NORTH AMERICA

9.4.1 Consumption and production of wood energy

Canada consumed about 512 PJ of wood energy in 2013, comprising 247.7 PJ from residues (up by 15% compared with 2012), 254.9 PJ from spent pulping liquor (Statistics Canada, 2015a), and 9.2 PJ from wood pellets (Wood Pellet Association of Canada, 2015a). About 9% of Canadian manufacturing (197.52 PJ) in 2013 was powered by bioenergy, a rise of 1% over 2012 (Statistics Canada, 2015b). Canada generates about 16 terawatt hours of bio-based electricity annually, which was about 2.6% of Canada's electricity generation in 2013 (Nyboer et al., 2014). The largest bio-based electricity plant in Canada is at Atikokan (a former coal-fired facility operated by Ontario Power Generation), with the capacity to produce 200 MW using wood pellets as a feedstock (Ontario Power Generation, 2015). Currently, Ontario Power Generation has offtake agreements to take 45 thousand tonnes of wood pellets from Rentech per year and another 45 thousand tonnes from Resolute Forest Products, which, combined, would produce about 450 gigawatt hours of bio-based electricity (EDI Weekly, 2014).

Canada had an estimated 23 operational wood pellet mills, with a total capacity of about 3.3 million tonnes in May 2015; four more mills under construction are expected to add 0.86 million tonnes of annual manufacturing capacity by the end of 2015 (Biomass Magazine, 2015a). The country produced 1.9 million tonnes of wood pellets in 2014, with only a fraction consumed domestically (Statistics Canada, 2015c). With extremely low temperatures in the 2014/2015 winter, provinces such as New Brunswick reportedly experienced pellet-supply shortages in meeting the heating demands of local stove owners (CBC News, 2015).

US wood energy consumption was 2,336 PJ in 2014, which was 23% of total renewable energy consumption and 2.2% of total primary energy consumption. Virtually all the increase was in the electricity generation sector, where the use of wood energy increased by 18% in 2014, while consumption for residential, commercial and industrial uses was essentially unchanged. Total wood energy consumption was up by 2% in 2014 compared with 2013 but still 18% below the 1985 high of 2,835 PJ. Wood energy's share of total renewable energy consumption has remained the same since 2012 and is below the 37% high achieved in 2001 (US DOE, 2015c). Reference case scenarios in the 2015 Annual Energy Outlook (AEO) project a 10% increase in wood energy use between 2014 and 2030 (US DOE, 2015b), a marked reduction in the increase compared with previous projections; for example, the 2014 AEO projected a 47% increase in wood energy use between 2013 and 2030 (US DOE, 2015a). The 2015 AEO reported that cellulosic ethanol production was 12 million litres in 2014, although none was from wood (US DOE, 2015b). The US has an estimated 142 operational wood pellet mills with a total capacity of about 9.1 million tonnes, and ten more under construction are expected to add 1.75 million tonnes of annual manufacturing capacity by the end of 2015 (Biomass Magazine, 2015b). The US produced 6.9 million tonnes of wood pellets in 2014, of which about 42% was consumed domestically (UNECE/FAO, 2015).

Although not reflected in recent national statistics, wood energy has reportedly gained popularity as a home heating option in many areas of the US. The increase is most notable in the Northeast region, where data from the US Residential Energy Consumption Survey suggest at least a 50% increase in the number of households using wood as their main heating source in 2012 compared with 2005 (Berry, 2014). Wood represents a lower-cost heating alternative to fuel oil and kerosene in the US Northeast. The Alliance for Green Heat estimated that over 108 thousand homes in New Hampshire have wood or wood-pellet stoves, more than 40% of which use them as the primary heating equipment (Evans-Brown, 2014). About 2.1% of US households used wood as the main

fuel for home heating and another 7.7% used wood energy as a secondary heating source in 2012. Average annual total US residential wood energy consumption is about the same as the consumption of energy derived from propane and slightly less than the consumption of fuel oil for heating. Most US households burn split logs, although the use of wood pellets has risen in recent years (Berry, 2014).

9.4.2 Prices

Wood energy consumption in Canada is dependent largely on feedstock price. Wood pellet prices dropped from C$185 per tonne in July 2014 to C$170 per tonne in April 2015 (CIF ARA). Historically, wood pellet prices have tended to sit in the range of C$150-180 per tonne (CIF ARA), with higher prices observed in winter (Wood Pellet Association of Canada, 2015b). The FOB cost of wood chips on the export market ranged from C$80 per dry tonne in 2014 to C$82 per dry tonne in early 2015 (Statistics Canada, 2015c), significantly lower than prices as high as C$100 per dry tonne in 2012. Estimates of the cost of space heating in Nova Scotia indicate that wood energy can be particularly competitive in rural areas, where there is less price pressure from natural gas. Graph 9.4.1 shows cost estimates for selected energy sources in Nova Scotia in early 2015. Mixed hardwoods, whether used in a furnace, boiler stove or an Environmental Protection Agency-approved stove, were the lowest-cost options.

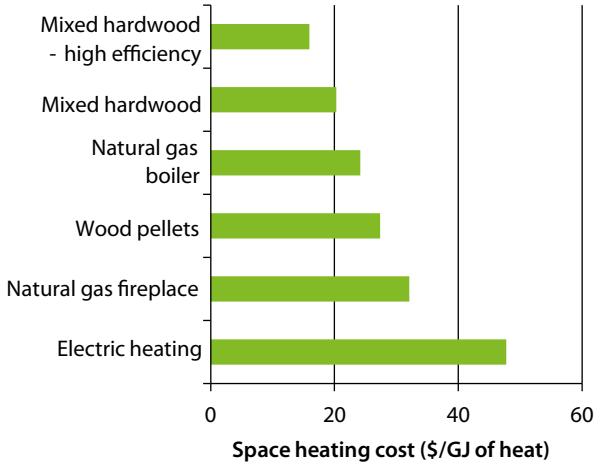
Wood pellet prices reported by the State of Massachusetts Office of Energy and Environmental Affairs (2015) for spring 2015 were $283 per tonne (bulk) and $6.85 per 18.1 kg (40 lb) bag. . The price of premium wood pellets ranged from $265 to $309 per tonne in the US Northeast region in spring 2015, and the price of super premium pellets ranged from $320 to $408 per tonne (WoodPelletPrice.com, 2015). RISI (2015) reported no change in pellet-grade softwood prices ($ per green tonne delivered) in the US Pacific Northwest in 2014 compared with 2013 but year-over-year increases of about 7% in the South Atlantic and South Central regions and 11% in the Northeast. Larger price changes were observed for US hardwood pellet-grade wood across the US, with year-over-year increases of 7% in the South Atlantic and South Central regions in 2014, 16% in the Lake states and 20% in the Northeast. The highest prices estimated by RISI were in the Northeast in the last quarter of 2014, at $40-48 per green tonne of delivered pellet-grade wood.

9.4.3 Trade

According to UN Comtrade (2015), Canada exported 1.64 million tonnes of wood pellets in 2014, roughly the same as in 2013. The UK was the main export partner, taking 54% by value (graph 9.4.2), followed by the US (18%), Italy (14%), the Republic of Korea (8%) and Japan (4%). Canadian exports to Europe were down in 2014 after increasing in 2013, while exports to the US increased by more than 40% in 2014. A notable structural change was the addition of a dedicated wood-pellet export facility at Quebec, which is expected to be the port of departure for 40 thousand tonnes of wood pellets annually over the next decade from Wawa, Ontario, to the Drax power facility in the UK (McCormick, 2014).

GRAPH 9.4.1

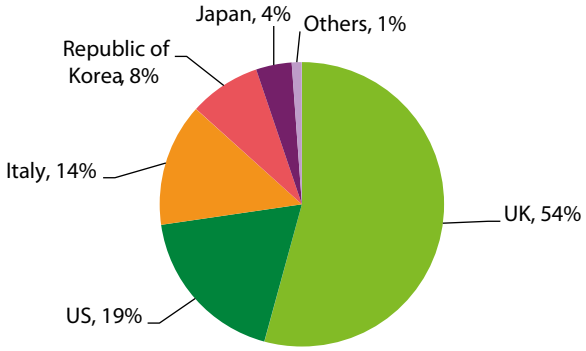
Space heating fuel costs in Nova Scotia January, 2015



Source: Efficiency Nova Scotia, 2015.

GRAPH 9.4.2

Top five export partners with Canada (by percentage of trade value) for wood pellets, 2014, as reported by Canada

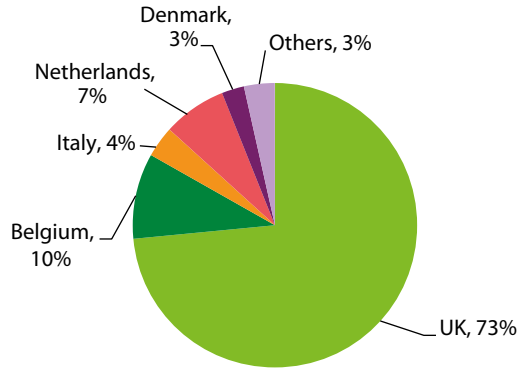


Notes: Commodity 440131. Share determined by value in US dollars.
Source: COMTRADE, 2015.

According to UN Comtrade (2015), the US exported more than 4 million tonnes of wood pellets in 2014, up considerably from 2.91 million tonnes in 2013. The main US export partners (by trade value) were the UK, Belgium, the Netherlands, Italy and Denmark (graph 9.4.3), with the UK accounting for 73% of the total value of pellets exported, taking about 2.9 million tonnes. The rapid emergence of the UK market as the top destination for US wood-pellet exports has been driven by demand from retrofitted coal facilities. For example, Drax Biomass is estimated to import 619 thousand tonnes from the US and almost 883 thousand tonnes from Canada. In addition to importing wood pellets, Drax Biomass has invested in manufacturing and transit facilities on the Gulf Coast in the US (Drax Biomass, 2015); the first vessel departed from Drax Biomass's Baton Rouge port facility on 7 April 2015 (Fletcher, 2015).

GRAPH 9.4.3

Top five export partners with the US (by percentage of trade value) for wood pellets, 2014, as reported by the US



Notes: Commodity 440131. Share determined by value in US dollars.
Source: COMTRADE, 2015.

9.5 POLICY, STANDARDS AND REGULATORY INFLUENCES

There is no official standard definition of sustainable wood energy in the UNECE region. The European Commission is yet to develop sustainability criteria for solid or gaseous biofuels among EU members. For more than two years the European Commission has been expected to offer a proposal on harmonized sustainability criteria for biomass for electricity generation, heating and cooling (Aguilar et al., 2013). In the Netherlands, co-firing had dropped to zero (from more than 1 million tonnes per year) by the end of 2014, mainly due to uncertainties about sustainability requirements and how these would be implemented. The Government of the Netherlands, the private sector and non-governmental organizations are implementing a covenant on biomass sustainability with the aim of reinforcing the Energy Agreement for Sustainable Growth signed in 2013 (Netherlands Enterprise Agency, 2015). The Government of the Netherlands has a biomass support scheme with the aim of increasing the use of wood pellets to 3.5 million tonnes per year by 2020.

In May 2014 the International Organization for Standardization (ISO) issued specification standards for solid biofuels directly relevant to wood energy under ISO 17225 (ISO, 2014). The standards for solid biofuels have seven parts: 1) general requirements; 2) graded wood pellets; 3) graded wood briquettes; 4) graded wood chips; 5) graded firewood; 6) graded non-woody pellets; and 7) graded non-woody briquettes. It is expected that an eighth part will be added to cover advanced biomass fuels (ISO, 2014). ENplus certification is growing rapidly worldwide. The European Pellet Council (EPC) revised and updated the ENplus certification system (version 3.0), which entered into force on 1 August 2015. The standard was based initially on EN 14961-2, but this was overtaken by ISO 17225-2. Today, several ENplus criteria exceed ISO 17225-2: for example, the minimal mechanical durability of ENplus A1 wood pellets is now set at ≥98%.

Source: UNECE/FAO, 2014.

The Sustainable Biomass Partnership (SBP), initiated by major European utilities that use biomass (mostly in the form of wood pellets) in large thermal power plants, issued framework standards and processes in March 2015 for demonstrating compliance with legal, regulatory and sustainability requirements. The six SBP standards represent a certification framework to be assessed for compliance by independent third-party certification agencies. The SBP endorses standards and processes developed by the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (Sustainable Biomass Partnership, 2015).

In the western Balkans, high VAT rates on wood are a barrier to larger market shares for wood energy. The rates are equal to those on natural gas, ranging from 17% in Bosnia and Herzegovina to 25% in Croatia. In Serbia, the VAT on wood pellets is 20%, which is double the VAT on natural gas (Glavonjić and Vukadinović, 2014). VAT rates on wood are much higher in the western Balkans than in western European countries – for example, the rate is 7% in Germany, 10% in Italy and 5% in the UK. Public policy programmes encouraging efficient wood energy adoption are uncommon in the western Balkans. An exception is Slovenia, where households can receive a subsidy for modern woody biomass boilers, but only for central heating and only for boilers that meet the following criteria: efficiency above 90%, dust emissions less than 40 mg per m^3, and carbon-monoxide emissions not exceeding 500 mg per m^3 (Slovenian Environmental Public Fund, 2014). The subsidy can cover up to 25% of eligible investment costs (not to exceed €2,000 for boilers with a nominal capacity of up to 40 kW, €7,500 for boilers with a nominal capacity of 40-120 kW, or €15,000 for boilers with a nominal capacity greater than 120 kW). Croatia might be the next country to adopt a programme supporting wood energy consumption. At the beginning of 2015, the Croatian Environmental Protection Fund started designing stimuli for the installation of energy-efficient biomass-burning appliances (Croatian Energy Regulatory Agency, 2015). The residential, public and commercial sectors would all be eligible to access funds under the programme.

Russian Federal Law FZ-415 (of 28 December 2013) on "amending the forest code and the code of the Russian Federation on administrative offences", which came into full effect on 1 January 2015, requires woodworking companies to monitor the legality of their wood resources. The new law contributes indirectly to the effective implementation of the EU Timber Regulation (No 995/2010). At least ten companies are ENplus-certified in the CIS, and more wood-pellet producers have applied for certification. Several ENplus-certified producers are also pursuing FSC and SBP certification to widen their portfolios and decrease marketing risks. Some 20 companies in the Russian Federation and ten in Belarus are preparing for SBP certification today. Demand for SBP-certified wood pellets has resulted in increased FSC certification in the CIS (Hartkamp, 2015). Within the SBP, the FSC is an approved sustainable forest management certification system.

The US Environmental Protection Agency (US EPA) has revised its draft framework for guidelines on accounting for biogenic carbon emissions from stationary energy sources (US EPA, 2014). The framework lists the following factors that can influence the assessment of biogenic carbon-dioxide emissions: feedstock growth and harvest; the processing, transport, storage and use of a biogenic feedstock at the stationary source; and the possible alternative fate of biogenic feedstock materials if not used for bioenergy. Under the framework, carbon neutrality is not assumed for all biomass energy ***a priori***; a decision on whether a feedstock is carbon neutral should be reached only after considering its production and consumption cycle (US EPA, 2014). The framework includes draft guidance for estimating the net increase in carbon dioxide in the atmosphere caused by increased biogenic feedstock use, by feedstock category and region, compared with a business-as-usual baseline with less or no biogenic feedstock use. The framework is still under review.

The US EPA has updated its clean-air standards for residential woodstoves and pellet stoves (US EPA, 2015). The New Source Performance Standards will phase in emission limits over a five-year period, beginning in 2015. Manufacturers have to comply with a maximum limit on particulate matter emissions of 4.5 grams per hour of operation for catalytic and non-catalytic stoves, but retailers may sell existing inventory until 31 December 2015. Within five years of the effective date of the final rule, manufacturers must comply with a maximum limit on particulate-matter emissions of 2.0 grams per hour for catalytic and non-catalytic woodstoves and pellet stoves. The standards apply only to new wood heaters and will not affect wood heaters already in use in homes.

9.6 INNOVATION IN THE SECTOR

Recent technological advances are aiming to produce biomass with coal-like properties. Sherrard (2014a) reported on torrefaction projects in Austria (Frohnleiten) and the Netherlands (Geertruidenberg) that are reaching commercial scale; in the US, a project in Quitman, Mississippi, reportedly has an installed capacity of 250 thousand tonnes per year (Sherrard, 2015a). In Canada, steam treatment technology is expected to be used to process biomass to supply Ontario Power Generation's Thunder Bay power plant with 7,500 tonnes per year (Sherrard, 2014b). The use of hydrothermal carbonization is another pathway for obtaining coal-like properties. Investments in advanced biomass technologies continued in 2014, with partnerships between Texas-based Zilkha Biomass Energy and Finland's Valmet and between US-based River Basin Energy and Canada's Arterran Renewables, among others (Sherrard, 2015a).

Wood has potential as a feedstock for liquid transportation fuels. UPM reported in May 2015 that its new wood-based BioVerno diesel fuel (produced at UPM's Lappeenranta biorefinery in Finland) will be available at local ABC service stations as part of ABC's "smart diesel" range. The fuel reportedly suits all diesel engines (UPM, 2015).

Arguably the most significant innovation in wood energy markets in 2014 was in the sector's business structure, particularly in wood pellet manufacturing. There is growing interest within the forest products industry (specifically the pulp and paper, sawmilling and wood-processing industries) in integrating pellet production using existing residue streams and infrastructure (e.g. energy, wood-handling and transportation). For example, Canfor Corporation (Canada) announced plans to construct a pellet plant at its Chetwynd and Fort Saint John sawmill sites. The pellet plants will be constructed and operated in partnership with the Pacific Bioenergy Corporation (Sherrard, 2014a, 2014b).

Wood pellet manufacturing expanded downstream into retail and distribution in 2014, mainly in Europe for residential and light commercial heat markets, and there was also industrial consolidation. For example, Sherrard (2015a) reported that German Pellets acquired Heizwert (the largest pellet retailer in Austria) and launched a new joint venture with ZG Raiffeisen in southern Germany. Drax acquired Billington Bioenergy in the UK (Sherrard, 2015b), and there was a merger between the pellet manufacturers Agroenergy (Sweden) and Neova (Latvia). Rentech's acquisition of New England Wood Pellets and Allegheny Pellet was seen as an opportunity for Rentech to access US residential markets. Enviva Biomass's acquisition of Green Circle BioEnergy made it the world's largest pellet producer, with a nameplate capacity of about 2.25 million tonnes per year. It is also noteworthy that Enviva Partners LP filed an initial public offering with the US Securities and Exchange Commission in October 2014. The company began trading its common units on the New York Stock Exchange on 29 April 2015 under the ticker code "EVA". Enviva Partners announced the closing of its initial public offering of 11.5 million common units on 4 May 2015, with net proceeds of approximately $213.6 million (Bloomberg, 2015).

Note: For the first time, the statistical annex of the ***Forest Products Annual Market Review 2014-2015*** contains tables on wood pellets. This is available at: www.unece.org/forests/fpamr2015-annex

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10 VALUE-ADDED WOOD PRODUCTS

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HIGHLIGHTS

- Companies are carefully reviewing the benefits of taking their manufacturing operations offshore; a furniture industry study found that manufacturers could be overestimating their savings by up to 30%.
- Furniture imports into the US increased by 8.6% in 2014, continuing their rapid growth for a third consecutive year.
- Spending on remodelling in the US was slowing by mid-2015, but it is forecast to increase again in the near future.
- Global furniture market forecasts were exceeded in 2014, and new forecasts predict continued positive developments (the market is at a record high).
- The trade in mouldings and builders' joinery and carpentry products is not recovering at the same pace as the furniture trade due to sluggish new housing construction and dwindling remodelling activity in the US.
- Profiled wood markets are gaining strength in the US, with Brazil and Chile the US market's leading suppliers of imported softwood mouldings.
- Germany is by far the world's largest producer of wood laminate flooring, at 235 million m^2 per year, followed distantly by Turkey at 94 million m^2 and the US at 85 million m^2.
- Glulam, laminated veneer lumber and wooden I-beam production and consumption continue to recover, following construction trends in North America, but they are still well below the levels seen ten years ago.
- About 90% (560 thousand m^3) of global cross-laminated timber (CLT) was produced in Europe in 2014, and this is forecast to increase to 630 thousand m^3 in 2015.
- The use of CLT is making possible the construction of tall wooden buildings. The current record-holder is a 14-storey residential high-rise in Bergen, Norway, and an 18-storey wooden building is planned in Vancouver, Canada.
- Earthquake-prone countries such as Japan have shown keen interest in increasing the use of CLT, and Japan has published a roadmap to pave the way for CLT in the Japanese building market.

10.1 INTRODUCTION

Primary products such as sawnwood, and wood-based panels can be processed into value-added wood products such as furniture, builders' joinery and carpentry products (BJCs), profiled wood, and engineered wood products (EWPs). EWPs include I-beams (also called I-joists), finger-jointed sawnwood, glue-laminated beams (glulam), laminated veneer lumber (LVL) and cross-laminated timber (CLT). CLT is a relatively new product, and it is regarded as a "game-changer" because it has the potential to greatly expand the use of wood in the construction of tall buildings.

10.1.1 Trade policy issues

The *Forest Products Annual Market Review* has been reporting on the Chinese-made bedroom furniture antidumping case since 2005. The case began in 2004 when US manufacturers accused some Chinese companies of unfair pricing, and the US Department of Commerce (DOC) issued import duties for the products in dispute. In 2014, the DOC announced new retroactive duties for several Chinese companies. Some were given a rate of 0% and some a low rate (3–7%), but many companies that failed to provide information face the highest rate of 216% if they continue to export bedroom furniture to the US. These rates were released as part of the final results of the 2012 administrative review, which analysed shipments in that year and determined whether Chinese producers warranted a change from their initial cash deposit rate. The DOC initiated its ninth annual administrative review of wooden bedroom furniture shipments from China in February 2015, examining the 2013 shipments of 16 Chinese manufacturers (Russell, 2015).

10.2 FURNITURE

The value of global furniture production was estimated at $480 billion in 2014, an increase of almost 10% over the previous year (CSIL, 2015). The global economic recovery led by the US is fuelling construction demand, which, in turn, is the major driver of increased furniture consumption. The furniture trade is highly globalized, and overall trade is increasing year by year, although not all regions and subsectors of the market are experiencing positive developments. Furniture manufacturing is increasingly taking place inside the UNECE region as the benefits of producing furniture in lower-cost countries decline. Nevertheless, furniture consumption is growing fastest in the emerging markets, and a significant share of furniture manufacturing will remain there to supply domestic consumers.

The value of the global furniture trade was $140 billion in 2014, with the largest import markets being, in descending order, the US, Germany, France, the UK and Japan. The most recent forecasts (March 2015) indicate that furniture and bedding sales will increase by 15.5% in the US in the next five years (French, 2015). Consumer spending on furniture is forecast to increase at a faster pace than in the past few years; global furniture sales grew by 5.5% in 2014 (French, 2015). Many forecasts are cautious in the short term but optimistic in the longer term. Bad weather affected US sales in early 2014, and winter sales in 2014-2015 were disrupted by problems in US ports that hindered the delivery of imported goods to retailers. The industry is optimistic about future growth in the US, and orders are 23% higher now than they were at their lowest point in 2009.

Furniture manufacturers continue to review their cost structures, and offshoring remains an option. For product categories in which labour costs make up a significant share of production costs and for which competition is stiff, there are still advantages in offshoring. Labour costs have increased rapidly in many offshore producer countries, however, and these have not been fully offset by productivity gains. Recent currency fluctuations have also reduced or eliminated the cost advantage of offshore production. According to a survey by the Boston Consulting Group (2014), furniture manufacturers could be overestimating their savings in offshore operations by up to 30%. Many companies are now carefully reviewing their strategies on where to make new investments.

China is still the world's largest furniture manufacturer and exporter, even though its manufacturing costs have increased. Many furniture manufacturers have moved to Viet Nam, which has become the second-largest exporter of furniture to the US. According to an analysis by Russell (2015), labour costs in Viet Nam are among the lowest in Asia, and manufacturers have been able to avoid the import duties levied on Chinese manufacturers. Viet Nam has also managed to attract Taiwanese companies that had invested in China but which were unable to continue there after the bedroom furniture duties imposed by the US came into force. Unrest in Viet Nam in 2014 over an oil rig dispute with China caused several factories to shut down temporarily, making some furniture manufacturers uneasy about further investments in the country.

A few companies have invested in facilities in Mexico, where labour costs are now comparable with those in China and where transportation distances to their main market (the US) are considerably shorter. Changing consumer preferences for custom-made and tailored orders are easier to fulfil when manufacturing takes place close to the point of sale. Some companies are also increasing manufacturing in the US when suitable conditions exist related to the availability of raw materials, labour costs, productivity through automation, and the ability to deliver to customers quickly.

The furniture industry is trying to renew itself. Further automation will help reduce manufacturing costs, but there is also a need to update the perception among workers that the industry is old-fashioned. Furniture manufacturers in mature markets are finding it increasingly difficult to find skilled workers, such as upholsters and sewists. The aging of the workforce has depleted the pool of skilled workers in the furniture industry, and fewer young people are looking for jobs in it.

Active communication is essential both for regrowing the furniture industry, which has been contracting for many years, and for reaching consumers. On the latter, Furniture

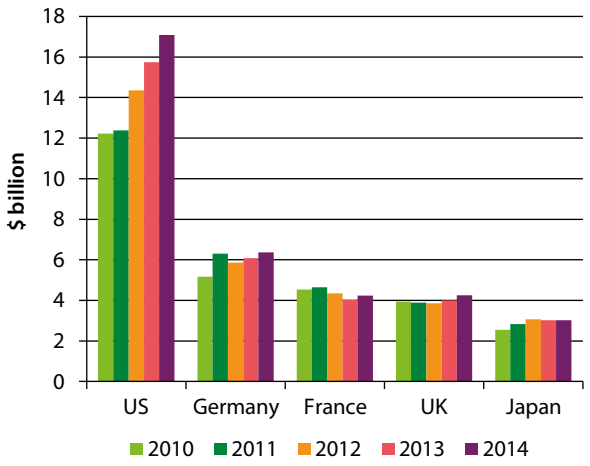
Today (2014) reported that 80% of consumers in the US have purchased furniture online, and this trend will certainly increase. Traditional showrooms are losing their importance because people are willing to purchase furniture without seeing it first.

The value of wooden furniture imports by the US was $17.1 billion in 2014, up by a solid 8.6% over 2013. This was the third consecutive year of growth in wooden furniture imports, showing the strength of the US market.

The value of wooden furniture imports was $6.4 billion in 2014 in Germany, $4.2 billion in France and $4.3 billion in the UK, in all cases representing modest growth compared with 2013 (graph 10.2.1 and table 10.2.1). For the first time in the UK, more than 50% of all wooden furniture imports came from Asia; in contrast, the share of Asian exports to the US has been above 70% for several years. France and Germany remain largely European markets, although the share of Asian imports (21% and 17%, respectively) is growing.

GRAPH 10.2.1

Wooden furniture imports, top five importing countries, 2010-2014



Sources: Eurostat, 2015; Trade Statistics of Japan, 2015; US International Trade Commission, 2015.

TABLE 10.2.1

Furniture imports, top five importing countries, 2013-2014

(value in billion dollars, and market share in percentage)

	US		Germany		France		UK		Japan	
	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
Total value of imports	15.7	17.1	6.1	6.4	4.0	4.2	4.0	4.3	3.0	3.0
Of which furniture parts	2.2	2.4	1.4	1.3	0.7	0.7	0.8	0.8	0.6	0.6
Origin (%)										
Asia	73.9	73.1	15.8	16.8	20.1	21.3	47.7	51.3	88.1	88.2
Europe	10.5	11.1	83.7	82.7	78.7	77.4	49.3	45.5	11.0	11.0
North America	9.4	9.2	0.2	0.1	0.3	0.5	0.9	0.9	0.7	0.7
Latin America	6.1	6.4	0.2	0.2	0.5	0.4	2.0	2.1	0.1	0.1
Others	0.1	0.1	0.1	0.2	0.4	0.3	0.3	0.2	0.1	0.1

Sources: Eurostat, 2015; Trade Statistics of Japan, 2015; US International Trade Commission, 2015.

10.3 BUILDERS' JOINERY, CARPENTRY AND PROFILED WOOD MARKETS

BJC markets are recovering swiftly in Germany and the US, but other markets in Europe are flat. German imports grew by 9.5% in 2014, and the US market experienced a third consecutive year of solid growth. BJC markets are typically local, and manufacturing abroad is not as profitable as it is for wooden furniture. Nevertheless, about one-third of UK and US imports originate in Asia. Other materials, such as metal and plastics, are increasingly used in window frames, and the share of Asian manufacturing for these materials is higher than for wood products (table 10.3.1 and graph 10.3.1).

The Leading Indicator of Remodeling Activity (Harvard University, 2015a) measures spending on improvements by homeowners in the US. The indicator increased in late 2014 but softened in the first months of 2015; it is forecast to gain more traction by the end of the year (Harvard University, 2015b), with annual spending on home improvements to increase by a modest 2.9%.

The home improvement industry fared much better in the US during the global financial crisis than did the broader housing market, according to a report by the Joint Center for Housing Studies (Harvard University, 2015c). When house prices collapsed, many owners preferred to invest in improvements to their existing homes rather than purchase other homes, and investors buying houses to rent out made improvements to increase rental prices. Many houses were also remodelled to fit their aging residents´ needs, a trend that is expected to continue. Most older people prefer to stay in their homes for as long as they can, and modifications can help improve accessibility. Also, energy-efficiency improvements – partly subsidized by government – have increased; these consume significant amounts of BJC products.

TABLE 10.3.1

Builders' joinery and carpentry imports, top five importing countries, 2013-2014

(values in billion dollars and market share in percentage)

	US		Germany		France		UK		Japan	
	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
Total value of imports	1.8	1.9	1.0	1.1	0.6	0.6	0.8	0.8	1.1	1.1
Origin (%)										
Asia	34.4	33.7	8.6	8.1	9.9	9.8	34.4	36.8	88.8	91.6
North America	47.0	47.3	0.2	0.2	0.7	0.5	1.8	1.9	3.0	2.9
Europe	4.8	5.0	90.8	91.0	87.2	87.7	59.6	57.2	5.5	3.6
Latin America	13.6	13.6	0.0	0.0	1.3	1.0	2.8	2.8	0.0	0.0
Others	0.2	0.4	0.4	0.6	0.9	1.1	1.5	1.3	2.6	1.9

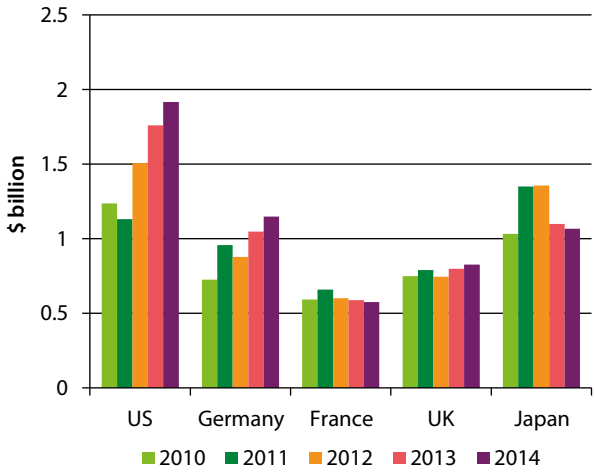
Sources: Eurostat, 2015; Trade Statistics of Japan, 2015; US International Trade Commission, 2015.

According to the Improving America´s Housing report (Harvard University, 2015c), spending on home improvements in the US peaks among owners in their mid-30s to mid-50s, a time when family sizes and household incomes are typically growing. In 2013, owners in this age range spent about 30% more (on average) on home improvements than did the rest of the population. In the last housing boom, which ended in 2006, the baby-boomers (born 1945-1964) were at a prime consuming age; now, however, they are retiring and their disposable incomes are diminishing. Nevertheless, baby-boomers still account for almost half of remodelling consumption in the US because they generally have much less debt than do younger generations. Currently, high unemployment is restricting consumption among the young; buying a home is more difficult now than it has been for many years for the youngest potential house-owner group (i.e. those people now entering the labour market) known as the millennial generation. Many young people are residing longer with their parents in their childhood homes, or they are renting. The millennial generation will be bigger (in absolute numbers) than the baby-boomer generation, given continuing immigration to the US. Current immigration is almost 7% higher than it was for the baby-boomer generation at comparable ages. Such favourable demographics, and stabilizing economic conditions, offer a solid base for growth in remodelling markets.

Data published by the National Association of the Remodelling Industry (2015) on current and future remodelling business conditions show that the momentum maintained for most of 2014 was easing by the end of the year. The majority (80%) of remodellers were involved in discussions with homeowners about increasing energy efficiency, and many of these projects are now moving ahead. Typical targets for such remodelling are insulation, energy-efficient windows, and heating systems.

GRAPH 10.3.1

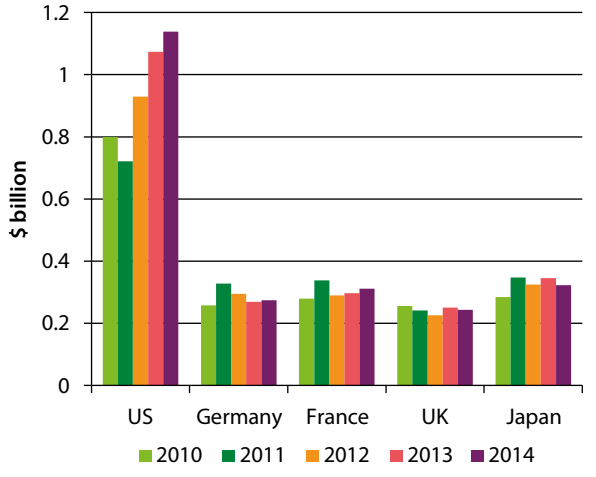
Builders' joinery and carpentry imports, top five importing countries, 2010-2014



Sources: Eurostat, 2015; Trade Statistics of Japan, 2015; US International Trade Commission, 2015.

GRAPH 10.3.2

Profiled wood imports, top five importing countries, 2010-2014



Sources: Eurostat, 2015; Trade Statistics of Japan, 2015; US International Trade Commission, 2015.

TABLE 10.3.2

Profiled wood imports, top five importing countries, 2013-2014

(values in billion dollars and market shares in percentage)

	US		Germany		France		UK		Japan	
	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
Total value of imports	1.1	1.1	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3
Origin (%)										
Asia	20.2	20.3	19.9	22.0	10.5	9.3	59.3	55.8	77.7	76.4
North America	9.9	10.9	1.3	1.1	0.2	0.2	3.7	4.4	7.2	7.1
Europe	3.1	3.1	72.2	71.0	69.6	69.7	35.9	38.1	9.5	10.2
Latin America	64.9	64.4	3.9	3.3	18.5	19.5	1.0	1.5	4.3	5.0
Others	1.9	1.3	2.6	2.6	1.2	1.3	0.1	0.2	1.3	1.3

Sources: Eurostat, 2015; Trade Statistics of Japan, 2015; US International Trade Commission, 2015.

Profiled wood markets continue to recover in the US. Import growth increased by 58% from 2010 to 2014, concentrated in a few producer countries with comparative advantages. The availability of suitable raw materials, existing facilities and market channels, and devaluing currencies have all helped producers take back some of the markets they lost during the global financial crisis.

Imports of softwood mouldings into the US in 2014 were led by Brazil (37%), Chile (29%), Canada (11%), China (9%) and Mexico (8%) (together accounting for more than 90% of the market). Profiled wood markets in Europe, which are more local, continued to stagnate in 2014 (graph 10.3.2 and table 10.3.2).

10.4 WOOD LAMINATE FLOORING

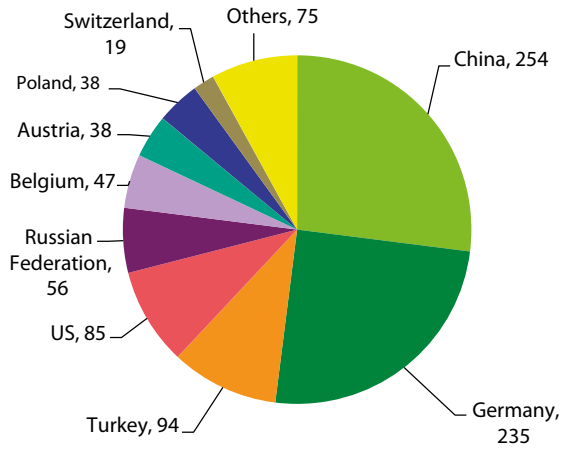
Global wood laminate flooring production increased from 925 million m^2 in 2013 to 940 million m^2 in 2014. The largest producers of this product were China, which accounted for 27% of production in 2014, and Germany, which accounted for 25% (graph 10.4.1)

Turkey is growing in importance as a producer, accounting for 10% of global production in 2014 and replacing the US as the world's third-largest producer of this product.

Wood laminate production increased by 20 million m^2 (3.7%) in Europe in 2014, to 565 million m^2, almost reaching the 2007 (pre-global financial crisis) production of 575 million m^2. North American wood laminate production was only about 15% of European production in 2014; North America is a net importer of this product, and its consumption has increased by about 50% since 2009.

GRAPH 10.4.1

World production of wood laminate flooring, 2014 (million m^2)



Source: Munksjö, 2015.

10.5 ENGINEERED WOOD PRODUCTS

Demand for EWPs depends heavily on residential construction (new and, just as importantly, repairs and renovations) and increasingly on non-residential building construction such as schools, restaurants, stores and warehouses (WoodWorks, 2015).

The consumption of EWPs in North America has recovered modestly since the bottoming of building construction activity. The information presented in this section has been obtained from reports published by the Wood Products Council (2009a, 2009b) on new residential construction and repairs and remodelling in North America.

Market information on glulam, LVL and wooden I-beams for 2014 is available only for the North America subregion. The UNECE/FAO no longer has a source of information for these products in Europe; readers should refer to the *Forest Products Annual Market Review 2013-2014* for the most recent UNECE/FAO information on European markets for these products.

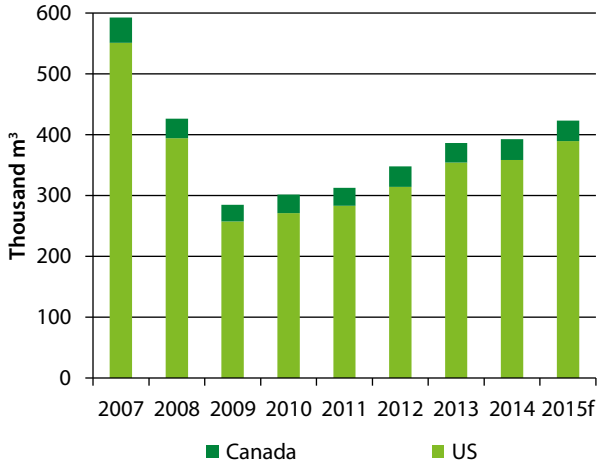
10.5.1 Glulam

Overall production of glulam in North America declined from 750 thousand m^3 in 2006 to 285 thousand m^3 in 2009. Production showed consistent and significant annual gains from 2010 through to 2015, to a forecast 423 thousand m^3 (graph 10.5.1 and table 10.5.1).

New residential construction and remodelling comprise 52% of the North American glulam market, followed by non-residential applications (37%); the remaining 11% is used for industrial and other applications (APA, 2015).

GRAPH 10.5.1

Glulam production, North America, 2007-2015



Notes: f = forecast. Conversion factor: 1 m^3 = 650 board feet.
Source: APA, 2015.

TABLE 10.5.1

Glulam consumption, production and trade, North America, 2013-2015

(thousand m^3)

	2013	*2014*	*2015f*	*Change (%) 2013-2014*
US				
Production	353.8	358.5	389.2	1.3
Consumption				
Residential	178.5	190.8	210.8	6.9
Non-residential	129.2	136.9	146.2	6.0
Industrial/other	21.5	21.5	23.1	0.0
Total consumption	329.2	349.2	380.0	6.1
Inventory change	24.6	9.2	9.2	-62.5
Canada				
Production	32.3	33.8	33.8	4.8
North America				
Total production	386.2	392.3	423.1	1.6

Notes: f = forecast. Conversion factor: 1 m^3 = 650 board feet. Canadian imports are assumed to be minimal.
Source: APA, 2015.

10.5.2 Wooden I-beams

Builder surveys indicate that the I-beam share of raised wood floor area (which does not include concrete floor area) was relatively constant, at between 47% and 50%, in the five years to 2014. This share was substantially higher than in 1992, when it was 16%.

Demand for I-beams in the North America subregion peaked in 2005, with both demand and production declining after the US housing bubble burst in 2008. An estimated 115 million linear metres were produced in 2009, and there have been significant increases since then. The forecast production in 2015 is 228.7 million linear metres, which would be a 97% increase over 2009 (graph 10.5.2 and table 10.5.2).

TABLE 10.5.2

Wooden I-beam consumption and production, North America, 2013-2015

(million linear metres)

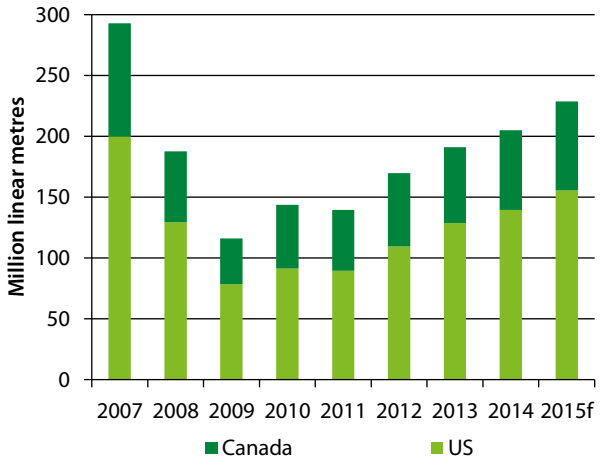
	2013	*2014*	*2015f*	*Change (%) 2013-2014*
USs				
Production	128.7	139.3	155.5	8.3
Consumption				
New residential	142.1	150.9	171.6	6.2
Repair, remodelling	4.0	4.0	4.3	0.0
Non-residential, other	10.1	10.1	10.7	0.0
Total consumption	156.1	164.9	186.6	5.7
Canada				
Production	62.2	65.5	73.2	5.4
Consumption				
New residential	25.0	25.3	25.6	1.2
Repair, remodelling	1.5	1.5	1.5	0.0
Non-residential, other	3.4	3.4	3.7	0.0
Total consumption	29.9	30.2	30.8	1.0

Notes: f = forecasts. Conversion: 1 linear metre = 3.28 linear feet.
Source: APA, 2015.

About 90% of I-beams are used in new residential construction (APA, 2015), with the balance used for non-residential building construction, repairs and remodelling.

GRAPH 10.5.2

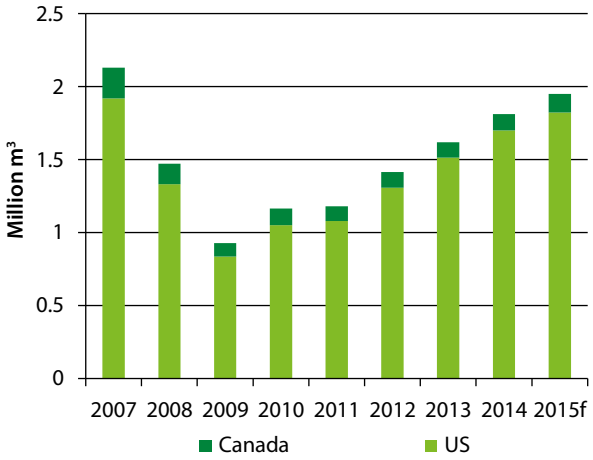
I-beam production, North America, 2007-2015



Notes: f = forecast. Conversion factor: 1 linear metre = 3.28 linear feet.
Source: APA, 2015.

GRAPH 10.5.3

LVL production, North America, 2007-2015



Notes: f = forecast. Conversion factor: 1 m^3 = 35.3147 cubic feet.
Source: APA, 2015.

10.5.3 Laminated veneer lumber (LVL)

Most LVL in North America is used in new-home construction. In 2014, 73% of total consumption was used in beams and headers, rim boards and similar applications, and the balance was used in I-joist flanges (APA, 2015). Rim boards are used on the perimeter of I-beam floor systems to provide fastening points for the I-beams and to assist in distributing wall loads.

North American production of LVL peaked with the US housing market in 2005, at 2.6 million m^3, and declined thereafter, along with I-beam production. According to forecasts, 1.9 million m^3 of LVL will be produced in North America in 2015, up by 110% from the trough in 2009 (graph 10.5.3 and table 10.5.3).

LVL is well accepted for use in beams and headers, and consumption should grow as the housing market improves. Like other EWPs, LVL allows the use of longer spans and fewer pieces to carry the same loads, compared with conventional sawnwood products.

In addition to the EWPs discussed above, a number of other structural composite lumber products are manufactured in North America, including parallel strand lumber (PSL), laminated strand lumber (LSL) and oriented strand lumber (OSL). These products are made from strands of wood of varying lengths and widths to achieve differing strength and stiffness properties. PSL and LSL are manufactured primarily by a single company, and production volumes are low compared with other EWPs. OSL is in production at a single plant converted from OSB production: uses are expected to be the same as for solid sawn lumber and glulam, such as posts, beams, headers, rim boards and structural framing lumber.

TABLE 10.5.3

LVL consumption and production, North America, 2013-2015

(thousand m^3)

	2013	*2014*	*2015f*	*Change (%) 2013-2014*
Consumption				
I-beam flanges	430	473	541	9.9
Beams, headers, other	1,187	1,328	1,407	11.9
Total consumption	1,617	1,801	1,948	11.4
Production				
US	1,515	1,699	1,821	12.1
Canada	105	110	127	5.4
Total production	1,620	1,809	1,948	11.7

Notes: f = forecast. Conversion: 1 m^3 = 35.3137 cubic feet.
Source: APA, 2015.

10.5.4 Cross-laminated timber

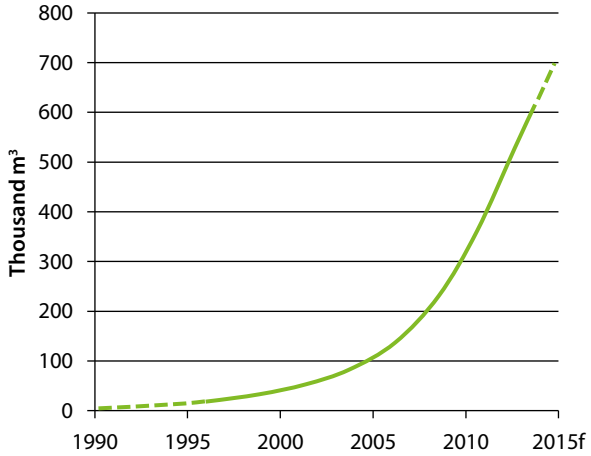
The development of CLT started in the early 1990s when research-and-development pioneers and innovators recognized its technical and economic potential. The first CLT production facilities were constructed in the DACH countries (Germany, Austria and Switzerland) in 1994; pilot projects on the use of CLT in construction followed, and national and international technical approvals were developed (CLT product standards did not exist at the time). The internationally accepted term "cross-laminated timber" was published for the first time in 2000 at the COST E5 conference in Venice, Italy.

CLT entered the building market in 2005-2010, transforming from a small-scale niche product into large-scale industrial production. Now, after 25 years of cooperative research and development and internationally showcased CLT-constructed buildings, CLT is firmly established as a new-generation product. The dimensions and lay-up of its production have been standardized, and it is produced in optimized production lines (including the use of post-processing technologies). CLT is used in a wide range of applications in single-family houses, multistorey towers, public buildings and specialty construction.

Global production of CLT was about 625 thousand m^3 in 2014, and this figure is forecast to increase to about 700 thousand m^3 in 2015 (graph 10.5.4).

GRAPH 10.5.4

Global production of CLT, 1990-2015



Note: f = forecast.
Source: Institute of Timber Engineering and Wood Technology, Graz University of Technology, 2015.

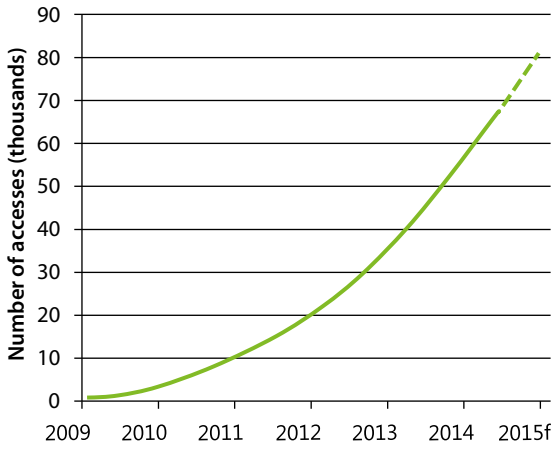
10.5.4.1 CLT in Europe

The DACH countries (Austria, Germany and Switzerland) have been the driving force in CLT development, not only as the originators of CLT products but also as the leading CLT producers. Austria has seven CLT production facilities, Germany three and Switzerland two. Minor production sites exist in Finland, Italy, Norway, Spain and Sweden, and more CLT factories are under construction in Finland, France, Sweden and the UK.

About 90% of CLT production worldwide is located in Europe, with a total production volume of 560 thousand m^3 in 2014, forecast to increase to about 630 thousand m^3 by the end of 2015. The global distribution of CLT production is likely to change, however, with new planned capacity in, for example, Japan and North America. National CLT production volume is not necessarily proportional to national consumption – the central European timber industry is strongly export-oriented, supplying other parts of Europe as well as overseas markets. CLT has become an important material in urban multistorey residential and public buildings, perhaps more so outside producer countries than within them; this trend is likely to continue in the near future. The international CLT product and design standards, and open-source software packages such as the CLTdesigner (Holz.bau Forschungs GmbH, 2015), have supported the international trade of CLT remarkably well (graph 10.5.5). Standardization in Europe comprises product standard EN 16351 (currently a draft version, with legal validity envisaged by the end of 2015) and design standard EN 1995-1-1 (currently in revision).

GRAPH 10.5.5

Number of accesses of the software package CLTdesigner, 2009 to April 2015 (cumulative)



Note: f = forecast.
Source: Holz.bau Forschungs GmbH, 2015.

10.5.4.2 CLT in North America

In contrast to Europe, the CLT market in North America is at an early stage of development and is strongly influenced by activity in Canada and Europe. FPInnovations brought together experts from Canada, the US and Europe to produce the CLT Handbook in 2011 (adapted for the US market in 2013); this handbook is designed as a guide for architects and technical engineers on the use and production of CLT in North America.

Two Canadian plants and one in the US currently manufacture CLT, and there are plans for a plant in the US that would be the largest in the world. The US has a valid product standard for CLT (due to be adopted by the International Building Code in 2015), which should help open the market for CLT as a building product. Again, multistorey residential timber buildings will play a major role in driving this market.

Another emerging trend – tall wooden structures – was discussed in the *Forest Products Annual Market Review 2013-2014.* Buildings are in the pipeline in North America that will be taller than the 27.5 m (90 foot) building constructed in the Wood Innovation and Design Centre at Prince George, British Columbia, Canada. One such building is a planned 18-storey wooden tower at the University of British Columbia (graph 10.5.6), which would be the tallest wooden building in the world (the current record-holder is "the Tree" in Bergen, Norway, at 14 storeys).

10.5.4.3 Extra-regional CLT developments

Japan's CLT market has a great deal of potential. That country's Ministry of Land, Infrastructure, Transport and Tourism published a CLT "roadmap", which envisions the use of CLT in the Japanese building market. The roadmap foresees that the annual CLT production volume will increase from about 10 thousand m^3 to 50 thousand m^3 by the end of 2016 and to about 500 thousand m^3 by 2024. The first steps towards creating the necessary foundation for this growth have already been taken. For example, tests have demonstrated the suitability of CLT in resisting structural failures caused by earthquakes (figure 10.5.1). Japan's CLT product standard, published in 2013, will help pave the way for future growth, and the Japanese building law is expected to allow the use of CLT in buildings by the end of 2016.

FIGURE 10.5.1

A seven-storey building at the E-Defense test facility, Kobe, Japan

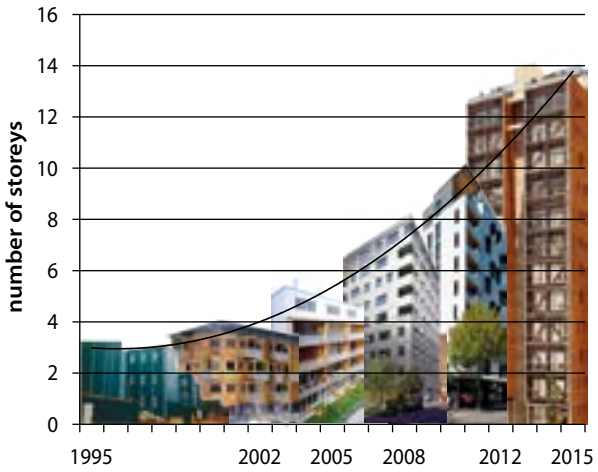
Source: National Institute for Earth Science and Disaster Prevention, 2015.

CLT markets are developing in other regions, too, where the potential of this product is now acknowledged. Pilot projects in Australia, including multistorey residential, office and public buildings, are using CLT produced in Austria. In China, CLT building techniques are being standardized. Activities on the use and production of CLT are underway in Chile and New Zealand.

10.5.4.4 CLT summary

Worldwide, the use of CLT as a building product is expected to grow at rates in the double digits. Within the next decade, therefore, CLT could become as important as glue-laminated timber, and it is likely to extend the limits of tall wooden buildings upwards. The maximum height of buildings built with wood has been increasing for 20 years (graph 10.5.6).

GRAPH 10.5.6



Number of storeys of CLT residential and office buildings, 1995-2015

Note: *1 = Aichach, Germany; *2 = Judenburg, Austria; *3 = Vienna, Austria; *4 = London, UK; *5 = Melbourne, Australia; *6 = Bergen, Norway.

Source: Institute of Timber Engineering and Wood Technology, Graz University of Technology, 2015.

Note: The statistical annex of the *Forest Products Annual Market Review 2014-2015* is available at: www.unece.org/forests/fpamr2015-annex

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11 HOUSING AND CONSTRUCTION

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HIGHLIGHTS

- The new residential and renovation construction markets in the US and the eurozone were valued at $338.7 billion (€305.5 billion) and $673.3 billion (€614.4 billion), respectively, in 2014.
- In Europe, 55% of the value of the new residential and renovation construction markets in 2014 was in renovation; in the US, this figure was 30%.
- The housing construction market in Europe is still subdued, in part due to the effects of the global financial crisis and the tepid nature of European economies. Nevertheless, residential housing construction is projected to improve by 2.4% in 2015 and by 4.3% in 2017.
- Housing completions achieved record levels in the Russian Federation in 2014, with nearly 1.1 million new dwellings put in place, an increase of 20.3% from 2013.
- The US housing market continues to stabilize and improve in all its sectors, but it is still hindered by slow economic growth, slow household formation, student debt, underemployment, declining real median incomes, and a constrained housing inventory.
- High-value houses and the multi-family market exhibited above-average construction and sales in the US in 2014, but single-family construction remains substantially below its historical average.
- Canada's economic fundamentals improved in late 2014; they are projected to continue to improve in 2015 but decline slightly (from 2015 levels) in 2016. Forecasts suggest stable housing demand and starts in 2015 and 2016.

11.1 BUILDING IN THE UNECE REGION, 2014-2015

The consumption of wood products is correlated strongly with construction. This chapter presents the current situation in the construction of housing and other structures in the UNECE region. When construction slows or increases, demand for wood products generally follows suit. Such trends occur unevenly across the region (see 11.1.2 for a discussion) and the globe, strongly influencing wood-export markets.

Construction itself is linked to the economic situation. The International Monetary Fund (IMF) and the World Bank project inconsistent economic growth in the US, Canada and the eurozone. The IMF forecasts the gross domestic product (GDP) of the advanced economies at 2.4% in 2015 and 2016, including 3.1% in 2015 and 2016 in the US; 1.2% in 2015 and 1.5% in 2016 in the eurozone; 2.2% in 2015 and 2.0% in 2016 in Canada; and -3.8% in 2015 and -1.1% in 2016 in the Russian Federation. For OECD countries, GDP is forecast at 1.5% in 2015, increasing minimally to 1.6% in 2016 (IMF, 2015). See Chapter 1 provides more information on economic developments with implications for the forest sector.

11.1.1 Green building initiatives

Green building is the craft of fabricating structures and incorporating processes that are environmentally accountable and resource-efficient. It could include structure design, siting, construction, operation, maintenance, renovation, and deconstruction – a building's life cycle (EPA, 2015).

European and North American entities are conducting life-cycle analyses of wood products and substitute construction materials. Such analyses and simple comparison methods may aid builders and consumers in the selection of wood as a preferred "green" construction material (Ritter et al., 2011). Research and development is also being conducted in Europe and North America into the use of wood products in building systems, and on codes and standards.

In the US, the American Woodworks Council (2015) provides free technical support, education and resources on the design of non-residential and multi-family wood buildings with the objective of making it easier to design, engineer and construct wooden buildings at a reduced cost. The National Association of Home Builders (NAHB) (2015) has developed a programme for certifying buildings to the ICC-ASHRAE 700 National Green Building Standard. The International Green Construction Code (2015) is modelled on the standards of the International Code Council and is mostly used in the US. Green Globes, a green building rating and certification tool, is used primarily in Canada and the US (Green Globes, 2015), and Canada also uses EnerGuide 80 (CUKSBN, 2015).

The Building Research Establishment Environmental Assessment Methodology (BREEAM®) is the oldest established method for assessing, rating and certifying building sustainability (BREEAM, 2015). The European Commission has adopted the communication titled "Resource efficiency opportunities in the building sector" with the objectives of reducing the environmental impact of buildings by improving overall resource efficiency and advancing the competitiveness of construction businesses (Joint Research Centre, 2015). Europe is projected to have the greatest level of market activity in green building; Asia is the fastest-growing market for green building; and North America has the largest total market involvement (CUKSBN, 2015).

11.1.2 Wood use in construction policies

Last year's housing chapter reported that, in North America (in 2006), single-family houses use about 25.1 m^3 of sawnwood and 14.2 m^3 of wood-based panel products (an average multi-family unit uses 4.1 m^3 of lumber and 1.5 m^3 of wood-based panels) (Adair and McKeever, 2006). This figure is significantly lower in Europe, where less than 1 m^3 of wood products per unit is used (UNECE/FAO, 2012). The above figures underscore the importance of residential construction as well as the potential of policies to increase the use of wood in construction, especially in Europe.

Barriers to the use of wood in construction include the following: existing construction codes and standards may not adequately account for the role of wood; builders may have inadequate knowledge of wood products; there are few demonstration projects; and efforts to transfer technology are only getting started. A particularly important obstacle is that many policies do not consider wood as a "green and sustainable" material. In the US, California's CALGreen was the first statewide green building code to be enacted with the aim of adopting Leadership in Energy and Environmental Design (LEED) protocols (Ritter et al., 2011). In Europe, initial efforts were energy-based (i.e. they addressed heating and energy efficiency). Wood use in construction efforts may be considered to be in its infancy (Ciccarese et al., 2014).

A study undertaken by the UNECE/FAO Forestry and Timber Section has reviewed the current policy and regulatory environment regarding sustainable construction materials in the building sector in the UNECE region and the effectiveness

Source: UNECE/FAO, 2014.

of such regimes in driving the adoption of wood products. The study found that many countries in the region (100 survey responses from 33 countries) have policies in place to encourage the use of wood and have moved in this direction through a whole life-cycle approach, emphasising the effects of production and consumption on the environment (Goodland, in press).

See section 2.4.3 for further information on policies affecting the role of wood in construction.

11.2 EUROPEAN CONSTRUCTION MARKET

11.2.1 Review and outlook

Germany, France and the UK dominate Europe's new residential construction market. These are projected to account for 53% of total output in 2017, up from 50% in 2015; if Italy and Spain are included, the share exceeds 66%. France, Germany, Italy, Spain and the UK were estimated to account for more than 78% of renovation expenditure in 2014 (Euroconstruct, 2015).

The Euroconstruct region[15] housing forecast is for moderate growth of 2.4% ("volume of output") in 2015, increasing by 4.3% in 2017. Total residential construction expenditure in the Euroconstruct region was estimated at $673.3 billion (€614.4 billion) in 2014, of which renovation comprised 60.0% ($408.5 billion; €368.4 billion) and new residential construction 40.0% ($269.6 billion; €246.1 billion) (Euroconstruct, 2015). New construction and renovation constituted 50.7% and 49.3% of residential expenditure, respectively, in 2007 (Euroconstruct, 2010). New housing construction contributed an estimated 1.6% to Europe's GDP in 2014 (Euroconstruct, 2015). Total new residential construction and renovation spending are forecast to increase by an average of 11.1% and 2.9%, respectively, from 2014 to 2017 (Euroconstruct, 2015).

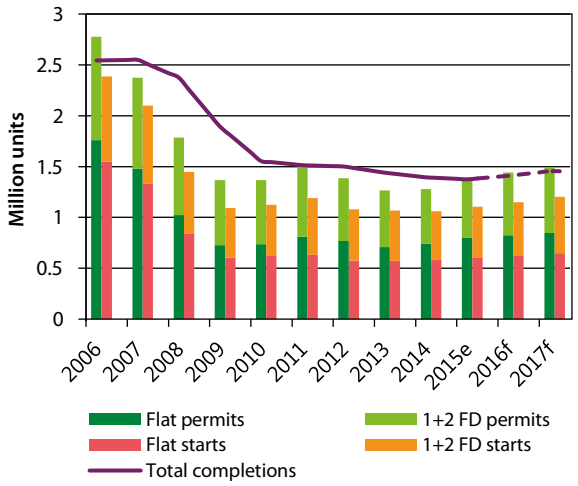
The rate of home ownership[16] was lower in Austria, Denmark, France, Germany and the UK than in the US (where it was 65%) in 2013. The rate was 67% in the Netherlands and 90% or more in Hungary, Lithuania, Romania and Slovakia. In seven EU countries the rate was between 80% and 89% and in 11 countries it was between 70% and 79%. High rates of home ownership in the eurozone tend to be in countries "where the majority of home owners do not have outstanding housing debt" (Neal, 2015).

11.2.2 New housing

Total new housing permits and starts were projected at 1.384 million and 1.113 million units, respectively, in the EU in 2015, minimally more than in 2014 (graph 11.2.1). A total of 1.277 million permits were authorized in 2014, which was 54.4% below the high achieved in 2005. Nearly 480 thousand flats and 582 thousand 1+2-family dwellings starts were estimated in 2014, and about 657 thousand multi-family and 737 thousand flats were completed (Euroconstruct, 2015).

GRAPH 11.2.1

Building permits, housing starts and completions, Euroconstruct region, 2006-2017



Notes: FD = family dwellings; e =estimate; f = forecast.
Source: Euroconstruct, 2015.

11.2.3 Non-residential buildings and civil engineering

Non-residential construction is influenced greatly by overall economic conditions, whereas civil engineering is directly affected by government expenditure. In the private sector, this construction segment includes factories, logistics and office buildings, retail stores and hotels; in the public sector it comprises schools, universities, hospitals, administrative buildings, public-safety buildings, transport stations and airport buildings. Civil engineering includes roads and bridges, railways, telecommunications, water works, energy infrastructure, and other transportation and civil engineering projects. Both the private and public sectors also have new construction and renovation components. Non-residential construction comprised 32.0% of all construction activities in 2014, and housing and civil engineering comprised 45.8% and 22.2%, respectively. Aggregate economic growth is expected to positively affect construction demand to 2017 (Euroconstruct, 2015).

Euroconstruct (2015) stated that, "the recovery in non-residential construction is only expected to proceed at a moderate pace … and the most buoyant sectors are likely to be the private ones". New non-residential construction expenditure is projected to increase by 1.7% in 2015, 3.7% in 2016, and 2.3% in 2017; non-residential renovation is projected to increase by 2.0% in 2015, 1.6% in 2016 and 1.3% in 2017; and total non-residential construction values are projected to increase by 1.9% in 2015, 2.7% in 2016 and 2.0% in 2017 (table 11.2.1). In descending order, the UK, Germany, France, Italy and Spain are projected to be the largest non-residential construction markets in the Euroconstruct region in 2017 (Euroconstruct, 2015).

[15] The Euroconstruct region comprises 19 countries. The western area consists of Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the UK. The eastern area comprises the Czech Republic, Hungary, Poland and Slovakia.

[16] The ratio of owner-occupied units to total residential units in a specified area.

Spending on civil engineering was affected more than other construction sectors by the global financial crisis and by budget reductions, declining by 11.9% from 2011 to 2014. Euroconstruct (2015) projected "moderate growth in the upcoming years".

Overall, civil engineering construction values are predicted to increase by 1.7% in 2015, 3.0% in 2016 and 3.8% in 2017 (table 11.2.1). In descending order, Germany, France, the UK, Italy and Spain are projected to be the largest civil engineering markets in 2017 (Euroconstruct, 2015).

TABLE 11.2.1

Total non-residential construction spending, Euroconstruct region, 2014-2017

(€ billion)

	Non-residential	Civil engineering
2014	429.2	297.1
2015e	437.2	304.3
2016f	449.1	313.4
2017f	457.9	325.3

Notes: e = estimate; f = forecast.
Source: Euroconstruct, 2015.

11.2.4 Residential construction and renovation

Total new construction spending in the Euroconstruct region was $673.3 billion (€614.4 billion) in 2014 (table 11.2.2), 73.2% of which was in Germany, France, UK, Italy, Spain and the UK (table 11.2.3). The value of new residential construction was projected to grow by 2.4% in 2015 compared with 2014, and gains were also projected for 2016 (6.5% above the 2014 value) and 2017 (11.1% above the 2014 value). Estimates for residential renovation or renovation are also optimistic: renovation – one of the more important construction sectors – is projected to grow by 2.9% in 2017 compared with 2014 (Euroconstruct, 2015).

TABLE 11.2.2

New residential construction and residential renovation spending, Euroconstruct region, 2014-2017

(€ billion)

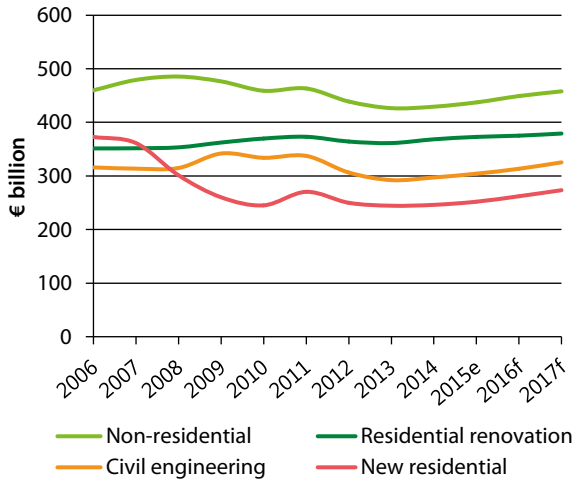
	New residential construction	Residential remodelling
2014	246.1	368.4
2015e	251.9	372.8
2016f	262.1	375.2
2017f	273.4	379.1

Notes: e = estimate; f = forecast.
Source: Euroconstruct, 2015.

All major sectors (new residential, non-residential building, civil engineering and residential renovation) and subsectors (commercial, educational and health, industrial, offices, agricultural, storage buildings and miscellaneous non-residential buildings) are forecast to increase through 2017 (graph 11.2.2).

GRAPH 11.2.2

Euroconstruct region construction spending, 2006-2017



Notes: e = estimate; F = forecast.
Source: Euroconstruct, 2015.

TABLE 11.2.3

Top five Euroconstruct region countries for new construction and renovation expenditure, 2014-2017

(€ billion)

New construction						*Renovation*				
Country	*2014*	*2015e*	*2016f*	*2017f*		*Country*	*2014*	*2015e*	*2016f*	*2017f*
Germany	47.5	49.6	51.1	52.4		Germany	115.1	115.1	114.5	113.9
France	45.1	44.2	47.3	50.4		Italy	65.7	65.9	66.4	67.3
UK	40.5	43.3	44.2	45.7		France	53.1	53.6	54.1	55.0
Italy	15.1	15.8	17.3	19.2		UK	38.2	39.6	40.2	40.5
Spain	16.2	14.8	14.9	15.1		Spain	13.5	13.7	14.1	14.7

Notes: e = estimate. f = forecast.
Source: Euroconstruct, 2015.

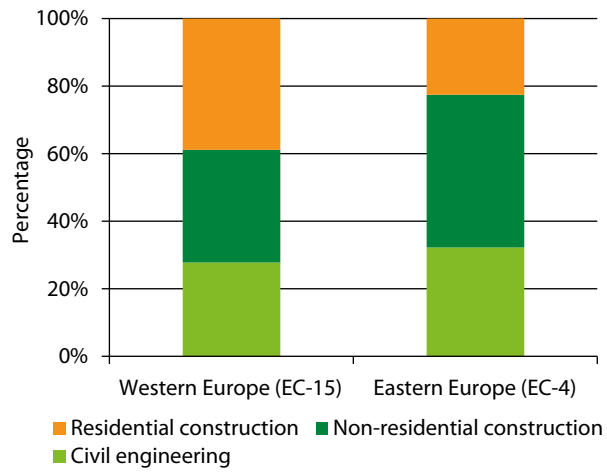
11.2.5 Construction sector share and growth: Contrasting western and eastern Europe

In Euroconstruct's western area, total residential construction is predicted to increase from $655.2 billion (€607.6 billion) in 2015 to $694.2 billion (€633.7 billion) in 2017. Residential construction in the Czech Republic, Hungary, Poland and Slovakia (that is, Euroconstruct's eastern area) is forecast to increase from $18.8 billion (€17.2 billion) in 2015 to $20.6 billion (€18.8 billion) in 2017 (Euroconstruct, 2015).

In the western area, new residential construction and residential renovation combined accounted for 47.1% of total construction expenditure in 2014, followed by non-residential construction (31.4% of expenditure). In the eastern area, new non-residential construction accounted for 43.6% of total construction expenditure and new civil engineering for 33.4% (graph 11.2.3) (Euroconstruct, 2015).

GRAPH 11.2.3

Euroconstruct sector shares for new construction, 2014



Source: Euroconstruct, 2015.

11.3 CIS CONSTRUCTION MARKET, WITH FOCUS ON THE RUSSIAN FEDERATION

Housing completions in the Russian Federation reached record levels in 2014, with a total of 1,080,300 new residences completed, a year-over-year rise of 20.3%. Residential space built totalled 83.6 million m^2, an increase of 18.6% over 2013. The number of built and their total floor space were both the highest in Russian history. Residences containing a total area of 28.0 million m^2 were built from January to May 2015, an increase of 24.8% over the same period in 2014 (Russian Federation Federal State Statistics Service, 2015).

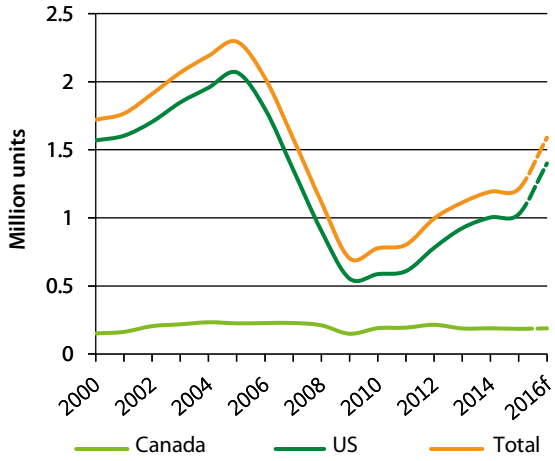
In contrast to the information provided by the Russian Federal State Statistics Service, PMR Research (2015) reported that, "the total Russian construction output (not just residences) contracted by 4.5% year over year … in 2014, after the 0.1% expansion achieved a year before [2013]", and "construction is projected to resume growth in 2016".

11.4 NORTH AMERICAN CONSTRUCTION MARKET

The housing markets of both Canada and the US (graph 11.4.1) exhibit the after-effects of the housing crash and the global financial crisis. While both markets have improved, US housing starts in particular remain well down from the peak achieved in the mid-2000s.

GRAPH 11.4.1

Housing starts, North America, 2000-2016



Notes: 2015=estimate; 2016=forecast.

Source: US Census Bureau, 2015a; CMHC, 2015; National Association of Realtors®, 2015.

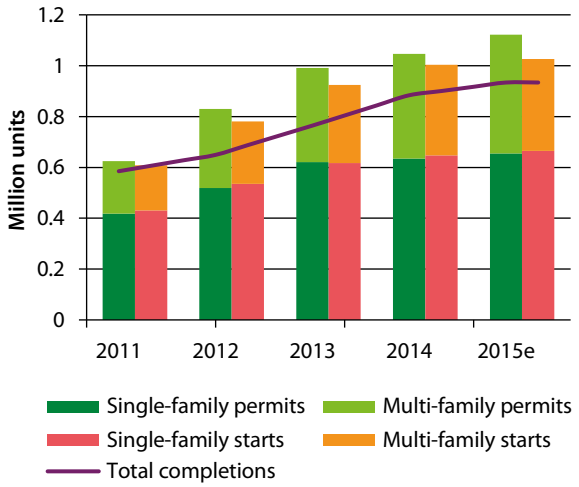
11.4.1 US housing market

The US housing market may be best described as having had incremental growth in 2014, with existing house sales declining and new house sales marginally higher than in 2013. Total housing permits increased by 5.6% over 2013, with single-family housing permits increasing by 2.2% and multi-family permits by 11.3%. Total 2014 housing starts[17] increased by 8.5% compared with 2013, with single-family starts increasing by 4.9% and multi-family starts by 15.6%. Total starts in May 2015 were estimated at a seasonally annualized adjusted rate (SAAR) of 1.036 million (5.1% higher than in May 2014): single-family starts were 680 thousand units (up by 9.1%), and multi-family starts were 356 thousand (down by 2.5%) (graph 11.4.2). Single-family starts in 2014 were substantially below the annual average for 1959-2008, which was about 1.1 million units (US Census Bureau, 2015a).

[17] A start is taken to occur when excavation for the footings or foundation of a building begins.

GRAPH 11.4.2

US housing permits, starts and completions, 2011-2015



Notes: e = estimate (January-May 2015 data); SAAR = seasonally annualized adjusted rate.

Source: US Census Bureau, 2015a.

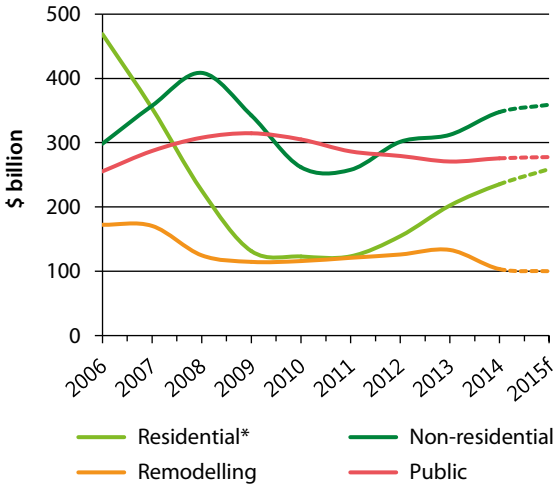
Source: UNECE/FAO, 2014.

Existing house sales increased by 9.2% year over year in May 2015, when 5.35 million (SAAR) existing houses were sold over the course of the year. The median existing house sales price was $228,700 (€201,096), up by 7.9% compared with the same period in 2014 (National Association of Realtors, 2015). New home sales averaged 528 thousand units per month from January to May 2015; new house sales increased by 19.5% in May, year over year, with 546 thousand sales reported; and the median new house sales price was $282,800 (€249,175) in May 2015, down by 1.3% compared with May 2014 (US Census Bureau, 2015b). Nationally, US house prices increased by 4.2% year over year in April 2015, and the 10-city and 20-city composite indices increased by 4.6% and 4.9%, respectively, year over year (Standard & Poor's, 2015).

Residential construction spending (single-family and multi-family units) is improving (graph 11.4.3): total private residential construction spending increased by nearly 1% in 2014, to $338.7 billion (€305.5 billion). Single-family construction spending increased by 13.4%, to $193.6 billion (€174.6 billion), and multi-family expenditure increased by 32.7%, to $41.8 billion (€37.7 billion). Remodelling (renovation) spending decreased by 22.4% in 2014 compared with 2013, to $103.3 billion (€93.2 billion) (all SAAR) (US Census Bureau, 2015d). New housing construction added 2.4% to the US GDP in 2014 (Federal Reserve Bank of St. Louis, 2015).

GRAPH 11.4.3

US construction spending, 2006-2015



Notes: *Private residential spending less remodelling expenditure (SAAR); f = forecast (May 2015 data).

Source: US Census Bureau, 2015d.

11.4.2 US construction outlook

Factors affecting the aggregate housing market in the US include a tepid economy; shortages of building lots; strict mortgage credit standards; a low level of housing inventory (existing and new); declining real median incomes; rising housing costs; student debt; and underwater homes.[18] Zillow (2015) reported that, of the 49.8 million mortgaged homes in the US in the fourth quarter of 2014 (US Census Bureau, 2015c), about 9.7 million were under water.

The US housing market continues to stabilize, however, and improvement is indicated in all sectors of it. The following factors may hinder the development of a more robust housing market: a slow-growth economy; adult millennials[19] living longer with their parents; student debt; under-employment; declining real median incomes; and a constrained housing inventory. Bright spots include higher-value home construction and sales; multi-family construction; and an increase in household formation in the fourth quarter of 2014.

[18] An underwater home is a house in which the house owner owes more on the mortgage than the house's current appraised value.

[19] Millennials are generally considered the generation of Americans born between 1980 and 2004. They are the most numerous generation in the US, representing one-third of the total population in 2013.

11.4.3 Canadian housing construction market

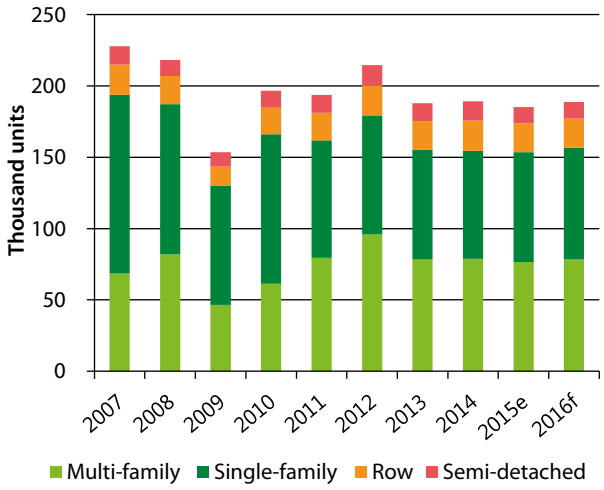
The Canadian housing market is stable, even with the uncertainty caused by a decline in oil prices. Housing starts are projected to moderate by 2016, with total housing starts estimated in the range of 148 thousand to 203 thousand units (graph 11.4.4) (CMHC, 2015). According to Bendiner (2015), "[t]here is an element of overbuilding in major markets across Canada. And, with completion rates rising (most notably in Toronto), we expect construction activity to be held back as [2015] progresses". The Canadian Mortgage and Housing Corporation (CMHC) (2015) projected moderately increasing home sales through 2016. New housing construction contributed 4.9% to Canada's GDP in 2014 (Statistics Canada, 2015).

The Canadian economy is forecast to grow modestly through 2016, with GDP forecast at 2.3% in 2015 and 2.2% in 2016. The unemployment rate is expected to decrease to 6.6% in 2015 and 6.5% in 2016; although modest, this decrease may aid the housing market (CMHC, 2015).

Source: UNECE/FAO, 2015.

GRAPH 11.4.4

Housing starts, Canada, 2007-2016



Notes: e=estimate; f = forecast.

Source: CMHC, 2015.

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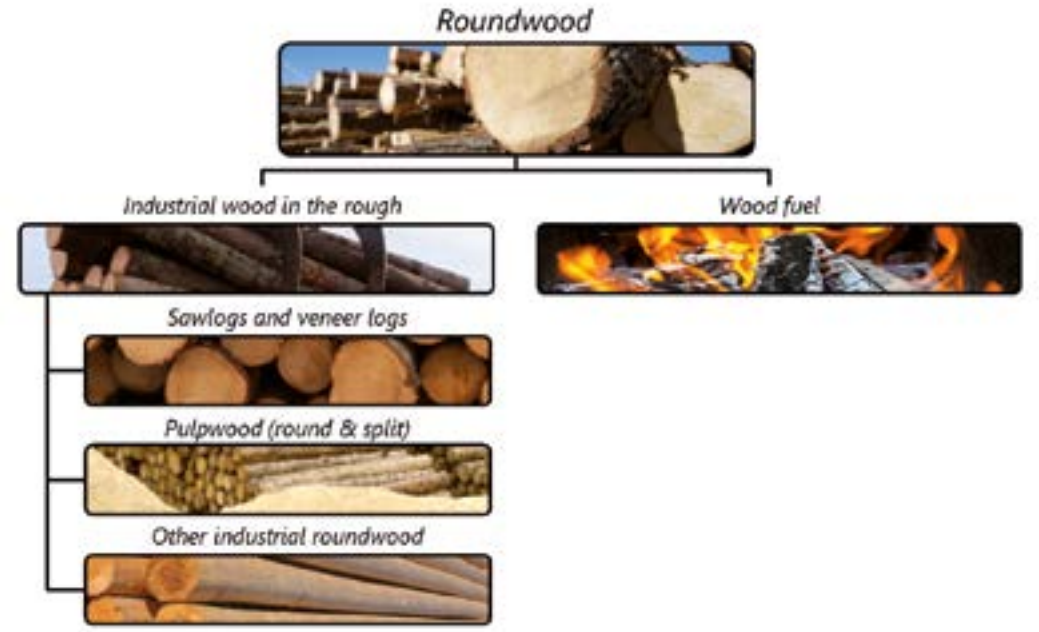
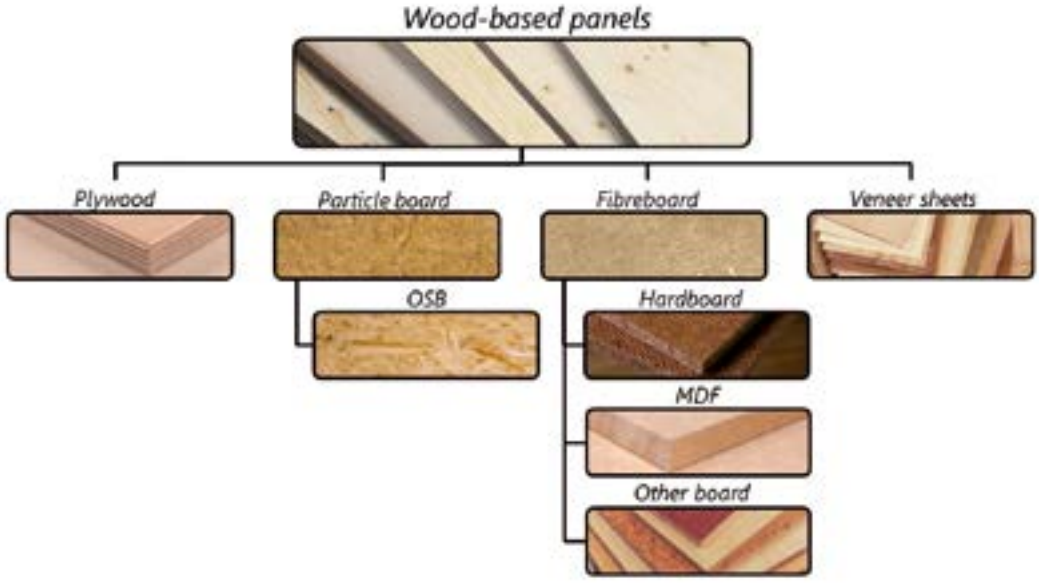
ANNEXES

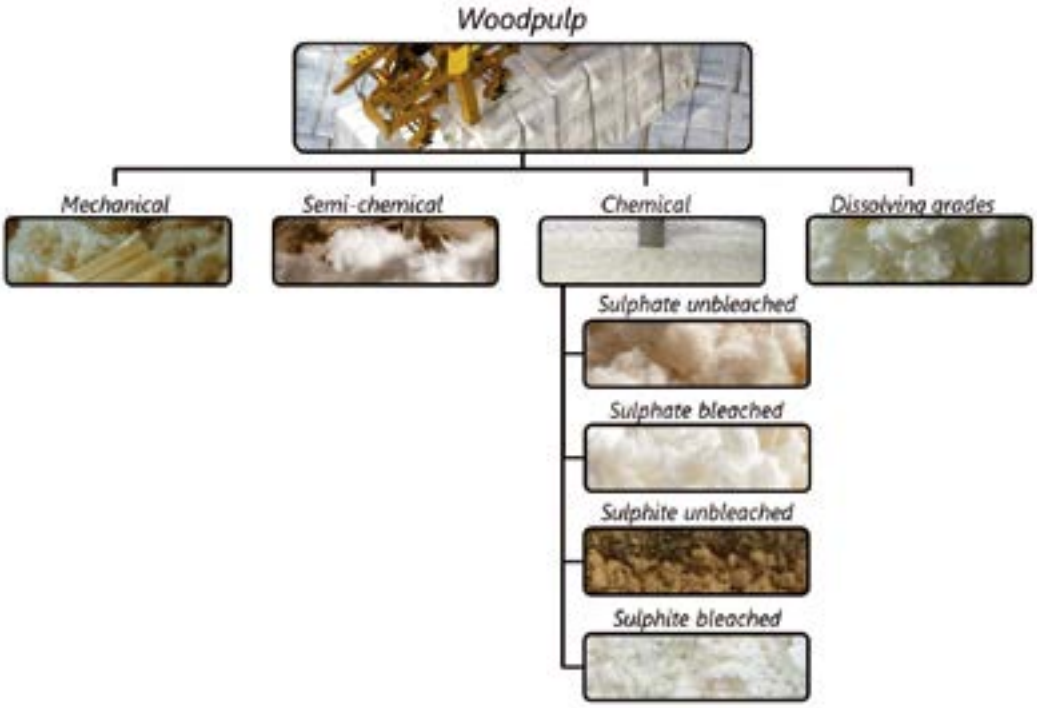
COMPONENTS OF WOOD PRODUCTS GROUPS

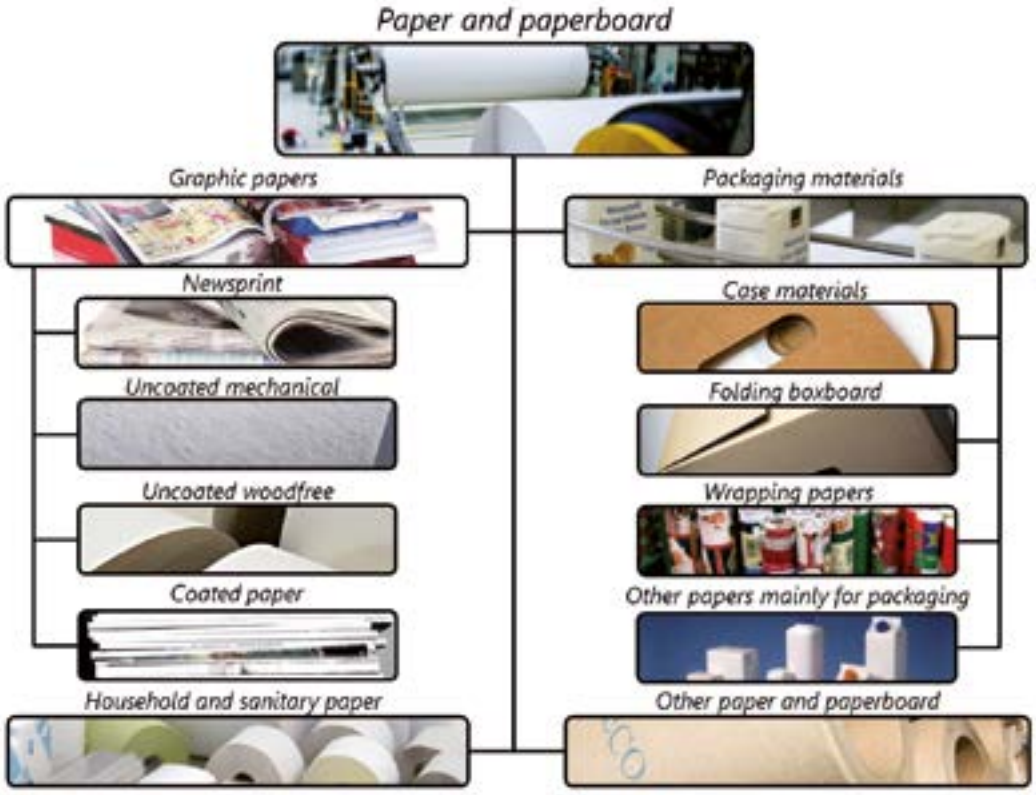
(Based on Joint Forest Sector Questionnaire nomenclature)

The important breakdowns of the major groups of primary forest products are diagrammed below. In addition, many sub-items are further divided into softwood or hardwood. These are: all the roundwood products; sawnwood; veneer sheets; and plywood. Items that do not fit into listed aggregates are not shown. These are wood charcoal; wood chips and particles; wood residues; sawnwood; other pulp; and recovered paper. The sources for pictures used in these diagrams are databanks of Metsä Group (2012), Raunion Saha (2012), Stora Enso (2012) and UPM (2012).






Woodpulp
Mechanical
Semi-chemical
Chemical
Dissolving grades
Sulphate unbleached
Sulphate bleached
Sulphite unbleached
Sulphite bleached


Paper and paperboard
Graphic papers
Packaging materials
Newsprint
Uncoated mechanical
Uncoated woodfree
Coated paper
Household and sanitary paper
Case materials
Folding boxboard
Wrapping papers
Other papers mainly for packaging
Other paper and paperboard

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Armenia
Azerbaijan
Belarus
Georgia
Kazakhstan
Kyrgyzstan
Republic of Moldova
Russian Federation
Tajikistan
Turkmenistan
Ukraine
Uzbekistan

North America
Canada
United States of America

Europe		
European Union		*Other countries*
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Belgium	Latvia	Andorra
Bulgaria	Lithuania	Bosnia and Herzegovina
Croatia (1.7.2013-)	Luxembourg	Iceland
Cyprus	Malta	Israel
Czech Republic	Netherlands	Liechtenstein
Denmark	Poland	Monaco
Estonia	Portugal	Montenegro
Finland	Romania	Norway
France	Slovakia	San Marino
Germany	Slovenia	Serbia
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The UNECE Committee on Forests and the Forest Industries is a principal subsidiary body of the UNECE (United Nations Economic Commission for Europe) 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, the Commonwealth of Independent States, 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 Industries 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, 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 the facilitation of 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 the framework for cooperation e.g. by organising 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 to 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 Industries 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;
5. It should also keep under review its structure and priorities and cooperate with other international and intergovernmental organizations active in the sector, and in particular with the FAO (the Food and Agriculture Organization of the United Nations) and its European Forestry Commission, and with the ILO (the International Labour Organisation), in order to ensure complementarity and to avoid duplication, thereby optimizing the use of resources.

More information about the Committee's work may be obtained by contacting:

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Study Papers are usually based on statistics, forecasts and information submitted by country correspondents in the UNECE region (Europe, North America and the Commonwealth of Independent States). The basic information is often submitted via agreed questionnaires and then complemented by expert analysis from outside and within the secretariat. Study Papers are issued on the responsibility of the secretariat, although the studies most often are the work of many contributors outside UNECE/FAO.

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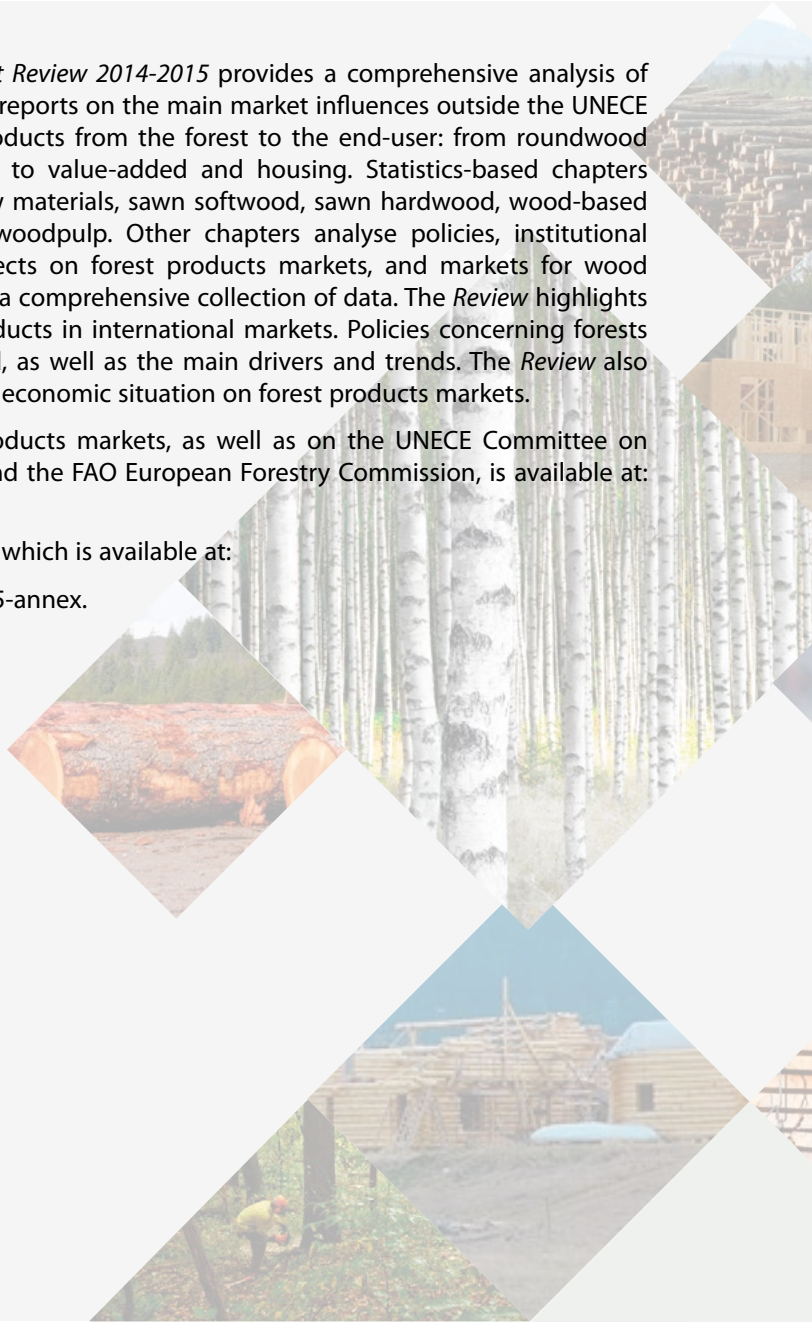
Forest Products
Annual Market Review 2014-2015

The *Forest Products Annual Market Review 2014-2015* 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 and housing. Statistics-based chapters analyse the markets for wood raw materials, sawn softwood, sawn hardwood, wood-based panels, paper, paperboard and woodpulp. Other chapters analyse policies, institutional forestland ownership and its effects on forest products markets, and markets for wood energy. 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.

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 a statistical annex, which is available at:

www.unece.org/forests/fpamr2015-annex.



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