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# Forest Products

Annual Market Review 2010-2011



UNITED NATIONS

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Forestry and Timber Section, Geneva, Switzerland

## Geneva Timber and Forest Study Paper 27

# FOREST PRODUCTS ANNUAL MARKET REVIEW 2010-2011

*Project Manager*

**Douglas Clark**



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Geneva, 2011

## NOTE

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## ABSTRACT

The UNECE/FAO *Forest Products Annual Market Review, 2010-2011* provides general and statistical information on forest products markets and related policies in the UN Economic Commission for Europe region (Europe, North America and the Commonwealth of Independent States). The *Review* begins with an overview chapter, followed by description of the macroeconomic situation. Next it includes an analysis of government and industry policies affecting forest products markets. Five chapters are based on annual country-supplied statistics, describing: wood raw materials; sawn softwood; sawn hardwood; wood-based panels; and paper, paperboard and woodpulp. Additional chapters discuss markets for wood energy, certified forest products, value-added wood products, forest carbon, tropical timber, and market developments in China. In each chapter, production, trade and consumption are analysed and relevant material on specific markets is included. Tables and graphs provided throughout the text present summary information. Supplementary statistical tables may be found on the UNECE Timber Committee and FAO European Forestry Commission website at [www.unece.org/timber](http://www.unece.org/timber).

## KEYWORDS

Bioenergy, biomass, builders joinery, carbon, cardboard, carpentry, certification, certified forest products, climate change, China, construction, consumption, engineered wood products, EWP, exports, fiberboard, fibreboard, Forest products markets, forestry industry, forestry statistics, fuelwood, furniture, housing market, imports, lumber, market analysis, MDF, OSB, paperboard, particle board, particleboard, plywood, production, pulp and paper industry, pulplogs, pulpwood, REDD, roundwood, sawlogs, sawn hardwood, sawn softwood, sawnwood, sustainable forestry, timber, tropical timber, wood energy, wood fuels, wood industry, wood pellets, wood products, wood-based panels, woodpulp

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## FOREWORD

It is remarkable to think that if timber were discovered today in a laboratory, what an amazing material it would be seen as. Beautiful in appearance, largely carbon-neutral in production, renewable as a resource, and as versatile in its usage as plastic, with none of the huge carbon footprint and use of limited resources that plastics represent. Even its method of production enhances the environment; no-one wants to live next to a mine or an oil-rig but almost everyone would like to live near a forest.

This miracle product would be hailed as a triumph of modern technology, the 'climate change killer' the world has been hoping for. As well as its many uses in construction, furnishings and secondary products (such as paper and refinery products), it would be the kind of status symbol that people would want their MP3 player and laptop to be made of; this beautiful, quintessentially 'green' product that will be a key factor in saving the planet.

It is indeed strange that, while all the informed opinion on green matters acknowledges the role of wood as a 'green' material and a vital factor in the fight to mitigate climate change, it has yet to truly gain that image with the general public and policy makers, tending instead to maintain its traditional role. The image we have to cast off is that of timber as a 'traditional' material, with no relevance to modern methods or concerns.

Changing the public perception of forest products is one of the many challenges facing us now, i.e. how to move wood from a well established niche market to being the first and most obvious material of choice for any number of uses. It is only wood's long and distinctive history that stops wooden objects from being as aspirational for the young, as those made of 'modern' materials like metal, plastic or glass.

Appropriately, 2011, the International Year of Forests, is looking more optimistic for forest products than the recent past, with a gradual but clear recovery in markets across the UNECE region. The *Forest Products Annual Market Review 2010 - 2011* presents an analysis of this and other trends, and is written not just for the industry, but also for policymakers and opinion-formers, providing all parties with the background they need for informed decision-making.

Through the *Review*, UNECE and FAO present the first comprehensive analysis of this year's forest products markets and policies for the UNECE region. The different chapters focus on the various sectors of the industry, presenting market data along with the policy and economic factors that lie behind them and analysis to aid in understanding the market changes that have been occurring.

I take this occasion to express my sincere appreciation to all those who have played a part in the production of this joint publication, including the 114 experts, information suppliers, the many partner organizations, but especially our colleagues in FAO, and the secretariat, all of whose hard work has resulted in this Review.



Ján Kubiš

Executive Secretary

United Nations Economic Commission for Europe

## PREFACE

### By the Leader of the UNECE/FAO Team of Specialists on Forest Products Marketing

The 2010-2011 *Forest Products Annual Market Review* reveals signs of a slower than expected economic recovery, after a global recession and resulting financial crisis that began in 2008. Demand for forest products is starting to increase again, albeit slowly, fuelled largely by strong growth in China, which appears to have weathered the downturn better than North America and Europe. The US housing market, which is among the principal demand drivers for wood and wood products in the UNECE region, is at last showing early signs of revival but it is too soon to say if this will be sustained. Without a significant recovery in the housing market, many sectors will continue to face difficult trading conditions.

Once again, members of the UNECE/FAO Team of Specialists on Forest Products Marketing have played a key role in providing the content and analysis in the *Review*. Ed Pepke, who for many years led the team that produces the *Review* and who worked to raise the quality of the publication and broaden its coverage of new and emerging sectors, has retired from FAO and joined the European Forest Institute. Douglas Clark, who worked with Ed on the *Review* for many years, has taken over the production of this issue. I wish them both well in their respective new roles.

The theme of this year's *Review* is "Forest products – contributing to a green economy." It is entirely appropriate that we focus on the many ways in which wood, one of the 'greenest' of all raw materials, can make a key contribution to strengthening the green economy. Wood's tremendous versatility means that there is hardly any area of life in which it cannot play a major part. Traditionally, wood has been used extensively in construction, in paper and packaging and as a fuel. We believe that, if the wood products industry can build awareness of the benefits of using wood and encourage architects, engineers and builders to increase their specifying or use of wood, a number of ancillary benefits may follow. Examples of such secondary benefits are increased employment, especially in rural areas, a reduction of carbon emissions, and a transition from energy intensive building materials. In addition to new building and engineering innovations that allow wood to be used in major civil engineering projects, wood-based materials are evolving in the manufacture of plastics and pharmaceuticals, as textiles for clothing and floor coverings and even for the optical screens of laptop computers.

The analysis of market and policy developments in this *Review* is based on "first-available" statistics supplied by official country correspondents. As such, it is the first comprehensive analysis covering all primary wood-processing and secondary, value-added wood-products sectors for the UNECE region. The *Review* provides the basis for the Market Discussions that will take place at the joint Timber Committee/European Forestry Commission meeting in Antalya, Turkey in October 2011. The *Review* serves also as an important resource for government policymakers, industry representatives, academics and other forest-sector stakeholders.

Jointly, the UNECE Timber Committee and the FAO European Forestry Commission mandate the Team of Specialists to advise them on forest products market developments, policies and opportunities in the UNECE region and with its trading partners. The Team supports capacity-building, training and information dissemination in social, economic and environmental aspects of forest products markets, marketing and forest-sector development. I take this opportunity to thank Team members, the secretariat production team and all the other people who contributed information and statistics to make the *Forest Products Annual Market Review* a unique and valuable resource for the global forest products community.

If you have found this publication of value in your work, please let us know. Your suggestions as to how we could enhance it would be most welcome: please send all ideas to [info.timber@unece.org](mailto:info.timber@unece.org)



Dr. Richard Vlosky  
Team Leader

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Many of these people give freely of their time and expertise, others are supported by companies, universities or industry associations, institutions and a variety of organizations. Without their help, it simply would not be possible to produce this annual publication. This particular edition could not have been published without the financial support of the Swiss and Finnish governments and CEI-Bois.

The *Review* benefits from a longstanding partnership with the Department of Forest Sciences, University of Helsinki, which provides two marketing assistants every year. This year, Anastasia Tolmatsova and Miika Malmström undertook market research; prepared price data; produced all the graphics and revised our Graphics Production System, as well as the websites associated with the *Review*. Their input has been critical to the quality and timeliness of the publication. Anne Toppinen, Professor, and Lei Wang, Researcher at the Department, facilitated these annual internships: we thank them and look forward to continuing this mutually beneficial arrangement.

From the UNECE/FAO Forestry and Timber Section, Alex McCusker collected, validated and produced the statistics, Matt Fonseca undertook the publication layout and Karen Taylor dealt with administrative matters. Arnaud Brizay translated the press release into French and Evelina Rioukhina translated it into Russian.

This year's *Review* has a new cover design, produced by Yves Clopt, Graphic Artist, UNECE.

In all, 47 people worked directly in preparing this publication, not including the additional contributors and statistical correspondents listed separately on the next pages.

I would particularly like to pay tribute to the contribution of our many authors and reviewers. The process this year began rather later than other years, with the result that everyone had to meet some exceptionally tight turnaround times. That we achieved the deadline for the production of the *Review*, in spite of the later start, is a reflection of the commitment and hard work of those authors and reviewers. The list of lead and contributing authors will be found on page 151. Finally, I am grateful to our editors: Karen Sturges-Vera and Christina O'Shaughnessy for working tirelessly on the drafts.

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<sup>1</sup> *Forest Products Statistics* is available at: <http://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 2011. Within the 56-country UNECE region, data for the 31 EU and EFTA countries are collected and validated by Eurostat, and, for other UNECE countries, by UNECE/FAO Geneva.

The statistics for this *Review* are from the TIMBER database system. As the database is continually being updated, any one publication's analysis is only a snapshot of the database at that particular time. The database and questionnaires are in a state of permanent development. Data quality differs between countries, products and years. Improvement of data quality is a continuing task of the secretariat, paying special attention to the CIS and south eastern European countries. With our partner organizations and national correspondents, we strongly believe that the quality of the international statistical base for analysis of the forest products sector is steadily improving. Our goal is to have a single, complete, current database, validated by national correspondents, with the same figures available from FAO in Rome, Eurostat in Luxembourg, ITTO in Yokohama and UNECE/FAO in Geneva. We are convinced that the data set used in the *Review* is the best available anywhere as of July 2011. The data appearing in this publication form only a small part of the total data available. *Forest Products Statistics* will include all of the data available for the years 2006-2010. The TIMBER database is available on the website of the joint Timber Committee and European Forestry Commission at <http://www.unece.org/forests/fpm/onlinedata.html>

The secretariat is grateful that correspondents provided actual statistics for 2010 and, in the absence of formal statistics, their best estimates. Therefore all statistics for 2010 are provisional and subject to confirmation next year. The responsibility for national data lies with the national correspondents. The official data supplied by the correspondents account for the great majority of records. In some cases, where no data were supplied, or when data were confidential, the secretariat estimated figures to keep region and product aggregations comparable and to maintain

comparability over time. Estimations are flagged within this publication, but only for products at the lowest level of aggregation.

In spite of everyone's best efforts, there are still some significant problems. Chief among these problems are differing definitions, especially when these are not mentioned, and unrecorded removals and production. In certain cases, for example woodfuel removals, the officially reported data may as little as 20% of actual figures. The Joint Wood Energy Enquiry has gone some way to improving the quality and coverage of data for wood energy. Conversions into the standard units used here are also not necessarily done in a consistent manner. The Joint FAO/UNECE Working Party on Forest Economics and Statistics is currently carrying out work to increase awareness of problems in measurement and how to deal with these. Intra-EU trade is less reliable than extra-EU trade.

In addition to the official statistics received by questionnaire, trade association and government statistics are used to complete the analysis for 2010 and early 2011. Supplementary information came from experts, including national statistical correspondents, trade journals and internet sites. These sources are cited where they occur in the text, and at the end of the chapters.

## 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 stocks. It is synonymous with "demand".

"Net trade" is the balance of exports and imports and is positive for net exports, i.e. when exports exceed imports, and is negative for net imports, i.e. when imports exceed exports. Trade data for the 27 European Union countries include intra-EU trade, which is often estimated by the countries. Export data usually include re-exports. Subregional trade aggregates in tables include trade occurring between countries of the sub-region.

For a breakdown of the regions please see the map in the annex. References to EU refer to the 27 countries members of the EU in 2010. The term Commonwealth of Independent States (CIS) refers to 12 countries: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, and is used solely for the reader's convenience.

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).

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

Please note that all US and Canadian softwood lumber production and trade are in solid  $m^3$ , converted from nominal  $m^3$ . An explanation of this is provided in the Forest Products Annual Market Review, 2001-2002, page 84.

Russian sawn softwood production data have been estimated to avoid negative apparent consumption. Please see footnote 15 on page 47 for an explanation of the procedure used.

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.

## SYMBOLS AND ABBREVIATIONS USED

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

...	not available
€	euro
\$	United States dollar unless otherwise specified
ATFS	American Tree Farm System
BC	British Columbia, Canada
BJC	builders' joinery and carpentry
CAD	Canadian dollar
CFP	certified forest product
CIS	Commonwealth of Independent States
CO <sub>2</sub>	carbon dioxide
CoC	Chain-of-custody
CSA	Canadian Standards Association
EFI	European Forest Institute
EFTA	European Free Trade Association
EQ	equivalent of wood in the rough
EU	European Union
EWPs	engineered wood products
FSC	Forest Stewardship Council
FOB	Free on board
GDP	gross domestic product
GHG	greenhouse gas
Gj	gigajoule
GWh	gigawatt hour
ha	hectare
IMF	International Monetary Fund
ISO	International Organization for Standardization
ITTO	International Tropical Timber Organization
kWh	kilowatt hour
LVL	laminated veneer lumber
m.t.	metric ton or tonne
m <sup>2</sup>	square metre
m <sup>3</sup>	cubic metre
MBF	one thousand board feet
MDF	medium density fibreboard
MSF	one thousand square feet
MWe	megawatt electrical
MWth	megawatt thermal
NGO	non governmental organization
OSB	oriented strand board
PEFC	Programme for the Endorsement of Forest Certification Schemes
PJ	petajoule
PoC	Province of China
REDD	Reducing Emissions from Deforestation and Forest Degradation
SAR	Special Administrative Region (of China)
SFI	Sustainable Forestry Initiative
SFM	sustainable forest management
STEM	Swedish Energy Agency
SWE	the equivalent volume to what it was in the solid green roundwood
VAWPs	value-added wood products
WTO	World Trade Organization



# 1 Overview of forest products markets and policies, 2010-2011

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## Highlights

- Industrial roundwood production recovered from last year's record low, climbing by 8%.
  - Consumption of wood and paper products rose in 2010, regaining some of the lost ground following the sharp fall in 2009.
  - Wood energy markets have continued to expand as government and industry policies have encouraged the production of heat and electricity from biomass throughout the UNECE region.
  - Competition for wood raw material has intensified across all sectors.
  - Manufacturers have been faced with increased prices for wood, energy and transport that they have not been able to pass on in the form of higher product prices.
  - There is a prospect that export taxes imposed by the Russian Federation on roundwood may be modified as part of the negotiations for the entry of the Russian Federation to the WTO.
  - Trade in illegally harvested wood and wood products became more difficult in 2009 and 2010 with new European Union and United States legislation, which shifts the burden of responsibility to importers, and even to buyers.
  - The current contribution of carbon markets to forestry is small but has a significant future potential, depending on the outcome of further REDD+ discussions at COP-17 in Durban, South Africa and whether or not the EU-ETS is amended so that afforestation/reforestation become eligible.
  - There are signs of a modest recovery in the construction sector, though housing activity remains subdued.
  - The only construction sector that has shown resilience during the economic crisis has been green building.
  - Several governments are enacting legislation to encourage a change in cultural attitudes to wood and to make it the material of first choice in construction, especially for public buildings.
-

## 1.1 Introduction to the publication

This edition of the UNECE/FAO *Forest Products Annual Market Review* provides the first comprehensive analysis published in 2011 of forest products market developments in 2010, and the policies driving them, for the UNECE region. The UNECE region is made up of three subregions: Europe, North America and the Commonwealth of Independent States (CIS). It stretches from Canada and USA in the west through Europe to the Russian Federation and to the Caucasus and Central Asian republics in the east. It covers almost the entire boreal and temperate forests of the northern hemisphere – about 1.7 billion hectares – more than 40% of the world's forest area and almost 38% of the land area of the UNECE region. Forest cover varies widely from country to country. Finland, for example, has more than 70% forest cover, the Russian Federation more than 50%, while the Netherlands is around 11%. The region accounts for almost 80% of world trade in forest products, which was valued at \$380 billion in 2009, the latest year for which data are available.

The *Review* is a background document for the annual UNECE Timber Committee Market Discussions, which will be held in Antalya, Turkey, on 12-13 October 2011 during the joint meeting of the 69<sup>th</sup> UNECE Timber Committee and the 36<sup>th</sup> session of the FAO European Forestry Commission (EFC).

Every year the *Review* features a theme. In 2011, the theme is, "Forest Products – contributing to a Green Economy". This ties in with the theme for the Timber Committee/European Forestry Commission meeting, entitled "Orman 2011, Forests in the Green Economy" to underline the contribution the sector already makes to greener economies, but also to explore how the sector's contribution could be strengthened, and how the increased use of forest products could further reduce the world's environmental footprint.

The *Review* makes a first attempt to highlight new, greener, areas for the sector's development. Some of these might seem tiny at the moment, if compared to larger markets, but they are potentially highly important for the sector's future development and merit being highlighted.

This chapter acts as the Executive Summary. It gives an overview of the 13 following chapters and combines them into a comprehensive market analysis. The *Review* is structured primarily by market sectors but in reading the *Review* it will be evident just how closely linked the various sectors are and the extent to which they are interdependent.

The first two chapters deal with economic and policy developments and are an essential foundation for the sector-by-sector analyses presented in the remaining chapters. The *Review* analysis period of 2010-2011 is

based on the first available statistics collected by the UNECE/FAO Forestry and Timber Section from official country statistical correspondents or provided by Eurostat.

Electronic annexes provide additional statistical information and the entire TIMBER Database, which was updated with statistics from national correspondents in June 2011, is also available through the website. The comprehensive statistics, which form the basis of many of the chapters, provide a transparent background to the *Review*. References at the end of each chapter not only substantiate and give credit to the ideas within the chapter but also provide a wealth of information for further reading.

## 1.2 Market developments

### 1.2.1 The economic background

The global economy in 2011 is in the midst of a three-speed recovery. The advanced economies of North America and western Europe are growing at an annual rate of about 2%, with much of the rest of the world, including Latin America, Africa, the Middle East, central and eastern Europe, and the CIS growing at about 5%, and developing Asia at about 8%. The economic crisis of 2008-2010 was more moderate in the emerging economies and their recoveries have been stronger. This reinforces the rising importance of emerging markets, especially those in Asia.

Recovery in North America and Europe has been slow; the gross domestic product of many of the region's economies is only now returning to its peak level prior to the crisis. Unemployment remains high, with little prospect of any rapid change. The housing market busts in the United States and several European countries, such as Ireland and Spain, have yet to stabilize. With high unemployment, and limited access to credit, a strong rebound seems unlikely. Sovereign debt levels have increased substantially in most advanced economies, becoming problematic in some, including, most notably, those in the periphery of the eurozone. It is becoming increasingly apparent that the debt of these periphery economies represents a solvency issue and that the emergency support that was initially extended by the EU and IMF will not be enough to resolve their crises. There has been a shift towards austerity throughout the advanced economies amid concern about rising debt levels that are likely to further weaken their recoveries. The relatively strong growth in much of the rest of the world has resulted in escalating global prices for commodities, raising concerns about inflation.

An added problem for some countries has been currency-exchange rates. One example of such a problem exists within the eurozone. While the core is enjoying

satisfactory growth, those countries on the periphery may face an extended recession, or at least very slow growth. The core is running a trade surplus and could benefit from a slight euro appreciation, while the periphery countries are running large current account deficits and desperately need a euro depreciation and looser macroeconomic policy.

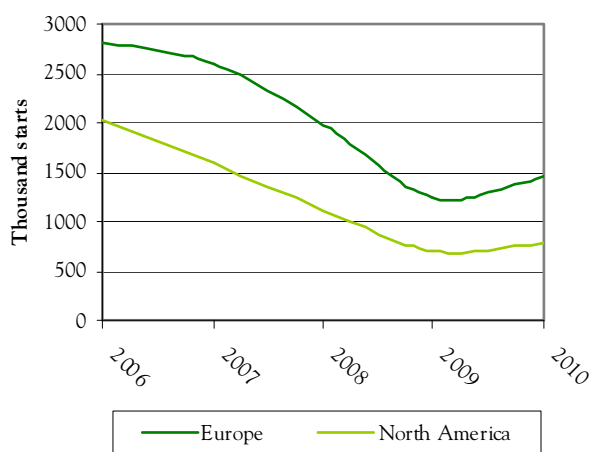
The world economy is facing a number of longer-run difficult challenges, and securing international cooperation to address them has been difficult. This includes improving financial-sector regulation, liberalizing trade (i.e. the finalization of the WTO Doha negotiations), and climate change.

### 1.2.2 Construction sector

It is well recognized that the construction sector is the principal driver for the demand for forest products. If proof were needed, it is only necessary to look to North America: the collapse in the residential construction sector (dropping from almost 2.5 million starts in 2005 to just over 0.5 million starts in 2009) led to a reduction in demand for building materials that produced the sharpest fall in timber harvests since UNECE/FAO began collecting data in 1964. There has been a modest recovery in 2010 and the hope is that this will continue into 2011 (graph 1.2.1).

GRAPH 1.2.1

Housing starts in Europe and North America subregions<sup>2</sup>, 2006-2010



**Sources:** US Census Bureau, Canada Mortgage and Housing Corporation, Euroconstruct, 2011.

<sup>2</sup> We have not been able to source reliable data for the CIS and have therefore excluded it from this graph. Last year's *Review* estimated starts in the region of 0.7 million (Russian Federation and Ukraine only)

## 1.3 Policy developments

The General Assembly of the United Nations declared 2011 the International Year of Forests, to raise awareness of the importance of forests for people and their livelihoods and thus the need for conservation and sustainable management. Policy issues are covered in detail in the chapter 2, but a brief summary appears below.

### 1.3.1 Trade-related policies

Efforts to combat illegal logging have continued. The EU Timber Regulation, which will enter into force in 2013, requires anyone introducing wood for the first time into the EU to exercise due diligence in verifying its legality. This new legislation, operating in conjunction with FLEGT (Forest Law Enforcement, Governance and Trade) legislation should help to ensure that only legally-sourced wood is traded within the EU. For the first time, action is being taken under the Lacey Act<sup>3</sup> against a company alleged to have imported illegally-sourced ebony into the US. A Chatham House report of July 2010<sup>4</sup> indicates that this legislation may be having some impact because it shows a decrease in illegal logging.

### 1.3.2 Climate and energy-related policies

Negotiations to develop a legally binding successor agreement or an alternative trading mechanism to the Kyoto Protocol, which expires in 2012, continued in Cancún, Mexico but without agreement. They will continue at the COP-17 (Conference of the Parties) meeting in Durban, South Africa, to be held from 29 November to 9 December 2011. One of the nine objectives agreed by governments in Cancún<sup>5</sup> was, "to protect the world's forests, which are a major repository of carbon."

A new European energy policy to counteract Europe's increasing dependence on imports of fossil fuels will have at its core, the pillars of competitiveness, sustainable development and security of supply. The European Union is leading the way in terms of energy policy, having set targets to help achieve the goal of supplying a 20% share of total energy use from renewable energy by 2020. Currently, woody biomass accounts for around half of all renewable energy in the EU-27.

The European pulp and paper industry faces competitive auctions of EU Allowances and binding emission benchmarks against reference emission levels when the EU-Emission Trading System enters Phase III, starting in 2013.

<sup>3</sup> [http://www.aphis.usda.gov/plant\\_health/lacey\\_act/index.shtml](http://www.aphis.usda.gov/plant_health/lacey_act/index.shtml)

<sup>4</sup> <http://www.chathamhouse.org.uk/publications/papers/view/-/id/911/>

<sup>5</sup> <http://cancun.unfccc.int/cancun-agreements/main-objectives-of-the-agreements/#c33>

### 1.3.3 Environment-related policies

Ministers from 42 countries meeting at the Forest Europe Ministerial Conference on the Protection of Forests in Europe, in Oslo from 14-16 June 2011 adopted two documents; the Oslo Ministerial Mandate for Negotiating a Legally-Binding Instrument on Forests in Europe, and the Oslo Ministerial Decision: European Forests 2020.

The Ministerial Mandate established an Intergovernmental Negotiating Committee charged with producing a legally-binding framework agreement to ensure the protection and sustainable management of Europe's forests. The Committee is expected to start its work in 2011 and have it finished by June 2013.

The Ministerial Decision on European Forests 2020, outlines a shared vision, goals and targets for 2020, among which are to have:

- Developed and implemented national forest programmes and strategies that take into account climate change adaptation and mitigation.
- Substantially increased the supply of wood and other forest products from sustainably managed forests.
- Increasingly reflected the full value of ecosystem services in national policies and market-based instruments.
- Halved the rate of loss of forest biodiversity.
- Taken effective measures to eliminate illegal logging and associated trade.

### 1.3.4 Green building policies

Green building is gaining momentum throughout the UNECE region and beyond. Several governments, recognising the major contribution that wood can make in both energy efficiency and a reduced carbon footprint when compared to competing materials, such as concrete and steel, are promoting policies and actions that favour wood.

Canada took a major lead in promoting wood in construction. The British Columbia Provincial Government's "Wood First Act", passed in 2009 requires wood to be considered as the primary building material in all new publicly-funded buildings, such as schools, libraries or sports complexes. In this way, it is hoped it will encourage a cultural shift towards viewing wood as the first choice for construction, as well as for interior design. Other provinces have now adopted Wood First initiatives.

This movement has spread across the border to the United States where the US Forest Service has adopted a strategy to use wood preferentially in new buildings, to expand research into green building materials, and to explore opportunities to demonstrate wood as a green building material in all new structures larger than 900m<sup>2</sup>.

The European Union is looking to develop significantly more energy-efficient construction. While not singling out wood specifically, its aim of reducing the energy use and carbon footprint of the construction sector (currently 40% of all energy in the EU is used in construction, which also produces 36 % of CO<sub>2</sub> emissions), the emphasis on lightweight materials and recyclability, should lend an advantage to wood.

## 1.4 Forest products – contributing to a green economy

When most people think of forest products they probably call to mind the more obvious ones such as sawnwood, wood panels and perhaps paper. Few would imagine the extent to which forest products have extended into many different areas of life – textiles, food additives (based on cellulose), optical screens for laptops, casings for televisions, computers and mobile telephones<sup>6</sup> and even computer keyboards<sup>7</sup>. The world is waking up to the possibilities offered by wood.

In construction, wood can often replace steel beams and concrete. Take a look at the Engineered Wood products in chapter 12 to see some of the impressive structures than can be engineered in wood, including a ten-storey residential dwelling. The front cover shows the amazing 'Parasol' in Seville Spain, constructed of engineered wood products. The lower carbon footprint of wood in comparison with "energy-hungry" building materials reinforces wood's credentials as a natural, renewable material.

New techniques, or sometimes a re-examination of processes from yesteryear, allow wood to be modified and to become even more versatile. For example, Wood Plastic Composites, which have the appearance of wood, but are even more stable and durable, are ideal for external uses.

The pulp and paper sector, in particular, is exploring how it may become more efficient and cost-effective and contribute even more strongly to the green economy. One such route is the exploration of new pathways such as integrated biorefining.

Forest products markets are global: wood and wood products are traded globally. Manufacturing may take place in lower-cost countries distant from the market for their end products. While some consumers are influenced in their buying by "green credentials" and look for evidence that their purchase is derived from forests that are managed sustainably, a great many others may be

<sup>6</sup> <http://www.arboform.org/>

<sup>7</sup> <http://www.europeanplasticsnews.com/subscriber/newscat2.html?channel=620&id=1277195376>

more strongly influenced by value for money, or simply price.

There are several outstanding examples of how wood products can substitute for more carbon-intensive materials, for instance, in construction. However, there are still problems of perception to overcome among architects, engineers and consumers, who may be hard to convince of the merits or the suitability and durability of wood. Many countries in the UNECE region are increasingly aware of the benefits of wood as a green material. Sweden, for instance, makes significant use of wood in single-family and multi-storey housing.

While many countries are taking a lead in promoting wood in construction, in some others, it seems that the reverse may be happening. The Russian Federation, for instance, has a fine tradition of building in wood, but timber's role is slowly being eroded by what may be seen, by some, as "more modern" materials, which may be marketed as more durable.

Until the eighteenth century, wood was in common use for building but over time, in many countries, stone and brick took the place of wood. Even where the external finish may not be wood, there are some regions which use timber-framed construction at the core of a building, such as Scotland and the United States, a system that is much less common in England and much of continental Europe. Through innovation and better marketing, the forest products sector is working to promote fully the potential that wood offers to expand the Green Economy. Some of the developments that are taking place are covered in the later chapters. There are some striking examples of structures made of wood and many architects recognise that wood is an effective substitute for concrete and steel, in many circumstances.

Life cycle analysis of timber in construction confirms its green credentials with low impact in extraction and processing, as well as good energy performance, in association with good design. Additionally, buildings constructed in wood "store" carbon. A recently published study highlights the benefits that would accrue, if architects and others specified wood in construction rather than steel or concrete, which have much higher carbon footprints<sup>8</sup>.

A major contribution of forests to the Green Economy is the sheer amount of carbon that is absorbed from the atmosphere and then stored in trees, as well as in the wood products that are made from them. A study

released in July 2011, by the Institute of Arctic Biology<sup>9</sup>, confirms the key role that forests and forest products play as stores of carbon. It estimates that between 1990 and 2007, the world's forests have stored about 2.4 gigatonnes of carbon every year.

Throughout Europe, forestry and forest industries support about four million jobs, many of which are in rural or socially fragile areas. As well as offering resources for industry, and a source of clean renewable energy, forests are a vibrant habitat, teeming with life, and provide additional sources of income as well as places to relax and unwind.

Though the *Review* focuses primarily on industrial products and the energy that can be derived from forests, forests provide a much wider range of opportunities for generating income, such as hunting, the collecting of mushrooms, wild fruit, herbs and medicinal plants, teas and honeys, which together represent an important source of income for many countries. Recreation, too, can generate extra income, if not directly for the forest owner, for the many businesses that benefit from having a forest on their doorstep.

## 1.5 Regional and subregional markets

Although economic conditions are still difficult in many parts of the UNECE region, there is at last moderate optimism that the recovery in forest products markets has begun. The situation differs across the product sectors, but most are showing signs of improvement. Perhaps the wood-based panels sector is the one which continues to face the most difficult trading conditions, although even here, there are brighter prospects, especially in Europe. It is apparent that until the housing markets begin to show a stronger recovery than has been seen so far, the continuation of recovery may not be as strong as the industry would like. The risk of a "double-dip" recession cannot be entirely dismissed and the consequences would be severe.

As reported in last year's *Review*, the production of industrial roundwood in 2009 fell to its lowest level since UNECE/FAO began collecting statistics in 1964. Fortunately, overall consumption of forest products recovered in 2010 across the UNECE region (graph 1.5.1).

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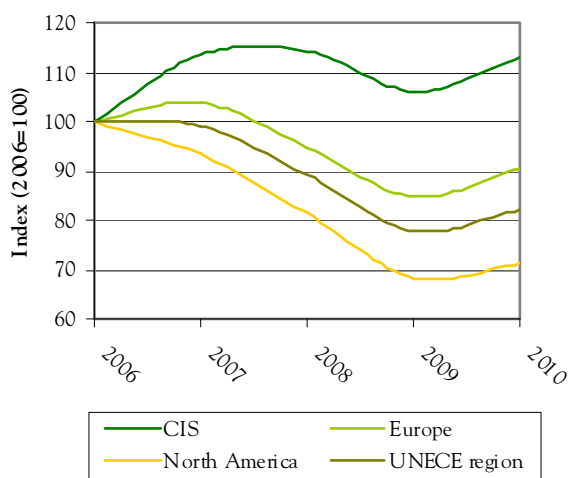
<sup>8</sup> Lippke, B, et al Carbon Management, June 2011, Vol. 2, No. 3, Pages 303-333 available at <http://www.future-science.com/doi/full/10.4155/cmt.11.24?prevSearch=allfield%253A%2528Bruce%2BLippke%2529&searchHistoryKey=&>

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<sup>9</sup> <http://www.iab.uaf.edu/news/index.php?newsrel=92>

GRAPH 1.5.1

Consumption of forest products in the UNECE region, 2006-2010



**Note:** Based on roundwood equivalent for sawnwood, panels and paper and paperboard.

**Source:** UNECE/FAO TIMBER database, 2011.

Consumption of the principal forest products has risen, with 2010 totals showing gains, mostly in the range 3% - 10% (table 1.5.1). Consumption of wood-based panels in North America is the one sector that stands out as strikingly different: although consumption did show an increase, it was only 0.5%.

### 1.5.1 Wood raw materials markets - increased demand leads to higher timber harvests

Timber harvests rose by 8% in 2010 as the UNECE region recovered from the record low of 2009, reflecting higher demand for sawnwood, wood-based panels and paper products. Despite this, timber harvests were the second lowest recorded since 1966.

Consumption of softwood industrial roundwood in 2010 was almost 9% higher compared with last year, but still 16% lower than in 2006. North American consumption was 30% lower in 2010 than in 2006.

Wood raw-material costs, the highest cost component when manufacturing forest products, have gone up for both the sawmilling sector and for pulp manufacturers. Sawlog prices at the end of March 2011 were only a fraction below the all-time high recorded in January 2008. It may seem odd that prices have risen, even though industrial roundwood production, and the consumption of forest products in North America and Europe remain well below their pre-crisis levels. Some of the price increases must simply reflect the cost increases

in wages, energy and transport that forest growers and producers have had to bear. In addition, forest owners may have been reluctant to place wood on the market until prices improved. Added to this, a reduction in sawnwood production has resulted in lower availability of co-products, such as chips and sawdust.

The strong pulp market and tight supply of sawmill chips pushed pulpwood and wood chip prices higher in most regions around the world, with softwood and hardwood fibre ending close to record levels in many markets. The use of woody biomass for energy has increased competition for small logs, wood chips and sawdust and is another factor putting pressure on wood-fibre prices. However, cost inflation in labour, energy and transport also plays a part.



**Source:** M. Fonseca, 2010.

TABLE 1.5.1

Apparent consumption of sawnwood <sup>a</sup>, wood-based panels <sup>b</sup> and paper and paperboard in UNECE region, 2006-2010

	Thousand	2006	2007	2008	2009	2010	Change 2009 to 2010	
							Volume	%
<b>Europe</b>								
Sawnwood	m <sup>3</sup>	119 855	127 327	101 895	90 737	101 466	10 729	11.8
Wood-based panels	m <sup>3</sup>	71 038	74 548	67 892	59 585	63 134	3 550	6.0
Paper and paperboard	tonnes	98 720	101 067	99 693	90 020	93 907	3 887	4.3
<b>Total</b>	m <sup>3</sup> EQ <sup>c</sup>	698 418	726 749	662 820	593 282	633 377	40 094	6.8
of which: EU27								
Sawnwood	m <sup>3</sup>	105 580	113 230	88 315	78 263	88 554	10 291	13.1
Wood-based panels	m <sup>3</sup>	63 000	65 487	58 478	51 623	53 594	1 971	3.8
Paper and paperboard	tonnes	91 021	92 070	88 024	78 604	81 688	3 085	3.9
<b>Total</b>	m <sup>3</sup> EQ <sup>c</sup>	630 542	652 856	579 705	515 552	549 339	33 787	6.6
<b>CIS</b>								
Sawnwood	m <sup>3</sup>	15 192	17 421	16 304	17 843	17 561	-282	-1.6
Wood-based panels	m <sup>3</sup>	11 654	13 720	15 561	11 045	12 897	1 852	16.8
Paper and paperboard	tonnes	8 337	9 176	9 099	8 572	9 329	757	8.8
<b>Total</b>	m <sup>3</sup> EQ <sup>c</sup>	77 838	88 461	89 091	82 695	87 925	5 230	6.3
<b>North America</b>								
Sawnwood	m <sup>3</sup>	149 677	134 146	110 386	83 456	89 023	5 567	6.7
Wood-based panels	m <sup>3</sup>	69 033	61 639	51 454	47 196	47 453	257	0.5
Paper and paperboard	tonnes	98 080	96 187	88 296	77 232	80 009	2 777	3.6
<b>Total</b>	m <sup>3</sup> EQ <sup>c</sup>	749 193	700 898	610 879	513 167	534 109	20 942	4.1
<b>UNECE region</b>								
Sawnwood	m <sup>3</sup>	284 725	278 895	228 585	192 036	208 051	16 014	8.3
Wood-based panels	m <sup>3</sup>	151 725	149 907	134 907	117 825	123 484	5 659	4.8
Paper and paperboard	tonnes	205 136	206 430	197 089	175 823	183 245	7 422	4.2
<b>Total</b>	m <sup>3</sup> EQ <sup>c</sup>	1 525 449	1 516 108	1 362 791	1 189 145	1 255 411	66 266	5.6

**Notes:** a/ Excluding sleepers, b/ Excluding veneer sheets, c/ Equivalent of wood in the rough. Roundwood equivalent has been assumed, as follows: 1 m<sup>3</sup> of sawnwood = 1.89; 1 m<sup>3</sup> wood-based panels = 1.64; 1 tonne paper = 3.60 m<sup>3</sup>, based on UNECE/FAO Discussion Paper 49. CIS sawnwood consumption is based on secretariat estimates, explained in detail in chapter 5, section 5.3.

**Sources:** UNECE/FAO TIMBER Database and secretariat estimates, 2010.

### 1.5.2 Sawn softwood markets –evidence of a slow but cautious recovery across the region

Recovering trends in consumption of sawn softwood (+9.8%) occurred in most UNECE subregions, and were replicated in terms of production and trade. Consumption in North America and Europe increased by 8.8% and 12.6%, respectively, while CIS consumption was unchanged from 2009. The positive development of demand for sawn softwood directly affected production and trade with increases in output in North America (+11.8%), Europe (+9.1%) and the CIS subregion (+4.2%).

While demand and prices continued to pick up in the first half of 2011, soaring raw material costs posed a threat to the profitability of sawmills in many parts of central

and eastern Europe regions. Strong Chinese demand has also pushed up log prices along the US west coast.

Unstable demand in the CIS subregion resulted in flat consumption trends in 2010. However, exported volumes drove production higher and both showed an improvement of 7.7%. Exports were led by the Russian Federation, where Asian and particularly Chinese demand, drove total exports higher by 8.2%, leading to an estimated 4.0% increase in output.

North American mills struggled with uneven consumption and sluggish housing starts. Cost pressures continued to keep mills from adding extra capacity, and scheduled curtailments were an ongoing feature in the market. A major bright spot was soaring demand from

China, which allowed west coast producers to take advantage of large volume orders and often favourable prices.

### **1.5.3 Sawn hardwood markets – the beginning of a hesitant recovery**

The sawn hardwood industry took its first tentative steps on the road to recovery in 2010, as overall production across the UNECE region increased by 3.3% to 33.2 million m<sup>3</sup>. However, production continues to be constrained by the permanent loss of processing capacity and low harvesting levels. Over the past decade, harvesting of the large US resource has been falling steadily, owing to declining levels of domestic consumption and a major reduction in the number of logging professionals.

After several years of turmoil, supply and demand for sawn hardwood in the UNECE region are now finely balanced at relatively low levels and prices are more stable. Across the region, consumption of sawn hardwood in 2010 increased by 0.7% to 31.7 million m<sup>3</sup>, in line with a slow improvement in the broader economy. Gains in consumption in northern and central Europe and in Turkey were offset by static or declining consumption in southern Europe, North America and the CIS. There were also rising exports of sawn hardwood from all UNECE subregions to China.

Globalization in the furniture sector, combined with weakness in the construction and housing sectors, has led to a decline in demand for appearance grade sawnwood within the UNECE region but to increasing exports of these grades to other markets, particularly China. Tropical hardwoods have continued to lose market share to temperate hardwoods as a result of limited availability of tropical hardwood as well as the development of innovative new products for external applications, based on temperate hardwoods. Oak has continued to consolidate its dominant market position in Europe.

### **1.5.4 Panel markets – continuing difficult trading conditions**

Consumption of wood-based panels in North America, which had bottomed out in 2009 as a result of the near collapse of the US housing market, showed a modest gain in 2010. However, this trend was due more to an increase in exports than to any increase in domestic demand. With no immediate signs of a significant lift in US house starts, the main market outlet for structural panels, domestic consumption, is likely to decline again in 2011. Certainly, there is nothing to suggest any widespread re-opening of the many mills that were reported to have closed in last year's *Review*. With North American structural panel manufacturers increasingly looking offshore for new markets, overall production of

structural panels in the region are expected to increase slightly in 2011. As the US economy continues to recover, demand for non-structural panels is projected to increase steadily throughout 2011 and 2012, particularly within the furniture, cabinet and moulding sectors of the industry.

In Europe, the picture is brighter: production capacity had increased by 6.4% by the end of December 2010, compared with one year earlier. An issue that has surfaced during 2010-2011 is the impact of subsidies offered to electricity generators who are switching to biomass. This seems to be a particular issue in the United Kingdom, where sawmills and panel producers have combined forces to launch a campaign, "Make Wood Work", to highlight fears about future supplies of raw material.

New investment is taking place in the panel sector, with the Russian Federation, Turkey and Ukraine being the principal beneficiaries. The wood-based panel sector is likely to face continuing difficult trading conditions until there is a wider revival in the construction sector.

### **1.5.5 Paper, paperboard and woodpulp – markets looking more robust**

A global rebound in pulp, paper and paperboard markets began soon after the global financial crisis of 2008-2010, leading to more robust market conditions in 2010 and early 2011, with higher consumption and prices for most pulp, paper and paperboard commodities. European and North American output rebounded in 2010 but still lie below pre-crisis production levels. In the Russian Federation, output almost completely recovered to levels that preceded the global financial crisis, though Russian production remains less than 4% of global production. However, global growth in paper and paperboard production has been gradually shifting over the past decade from the UNECE region to other world regions, most notably to Asia, and China in particular (graph 1.5.2).

Marketing strategies evolved as the pulp and paper producers of the UNECE region faced the dual challenge of limited growth, or declining European and North American consumption, and expanded global competition. One such strategy is evident in the increasing emphasis on exploring how the industry can become more efficient and cost-effective and, by such means, contribute even more strongly to the green economy.

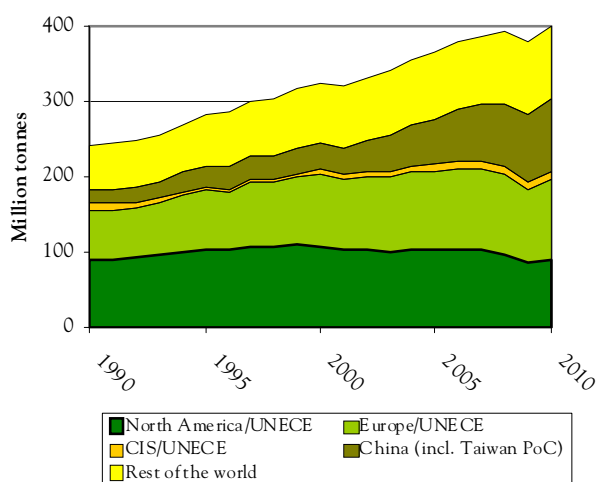
Green and sustainable features of paper and paperboard, such as the use of renewable resources and product recyclability, have helped support industry sustainability initiatives and an evolving symbiotic relationship between pulp and paper market development and the green economy. The pulp and paper industry is exploring new pathways to a greener economy, such as



integrated biorefining with production of biofuels and wood-based chemicals, or development of nanocrystalline cellulose technology. More symbiotic partnerships are needed among industries to fully develop green pathways, such as between forest industries and energy, chemical, textile, food, and agricultural industries.

GRAPH 1.5.2

Production of paper and paperboard in UNECE regions, China and rest of the world, 1990-2010



Note: Data for rest of world is preliminary in 2010.

Source: UNECE/FAO, China Paper Association, 2010.

### 1.5.6 Wood energy markets – accelerated growth

Demand for woody feedstock for renewable energy generation has fostered the emergence of a true global trading market. International trade has formalized into the creation of a wood-energy commodity contract exchange market in a joint effort between APX-ENDEX and the Port of Rotterdam. Large investments in industrial pellet production capacity in North America and the Russian Federation have been made under expectations of a continuously growing demand. Investments in wood-energy feedstock manufacturing in other parts of the world may follow. Nonetheless, demand is still dependent on public policy commitments in the form of renewable energy mandates, financial support to energy production and consumption, among other policy tools.

The EU remains the major driver of wood energy consumption, due to its ambitious renewable energy commitment and reduction in greenhouse gas emission targets. International wood energy markets are dominated by industrial pellets, while regional and local markets rely on chips and forest industry co-products. In the coming years, public efforts are expected to further pursue the use of woody materials to produce liquid motor fuels, to reduce the transport sector's dependence on fossil fuels.

Over the next couple of years, the sustainability of wood energy utilization will be further examined, evaluating net greenhouse gas emission levels as well as the impact of woody biomass removal on the forest resource. Wood energy public policy might be revised in the light of findings of sustainability assessments as well as how such policies affect other wood product markets.

In Europe, there is general acceptance that using wood to produce energy is carbon neutral, in that any CO<sub>2</sub> released in the process will be quickly reabsorbed by growing trees with no net addition of CO<sub>2</sub> to the atmosphere. However, this view does not seem to be universally accepted. In the United States, the US Environmental Protection Agency (EPA) intends to thoroughly assess greenhouse gas emissions from different biomass sources and energy generating technologies after which it will rule whether biomass energy generation will require CO<sub>2</sub> emission permits.

Some environmental groups are also raising concerns about the use of wood, related primarily to its use for the generation of electricity, without heat recovery.

### 1.5.7 Certified forest products markets

By May 2011, the global area of certified forest was 375 million hectares, a 7% increase from May 2010. Almost all the recent growth in certified area has taken place in the Russian Federation and North America. Almost 90% of certified forests are in the northern hemisphere, which is rather different from the original goal of certification where tropical forests were intended to be the main beneficiaries. Currently, less than 2% of tropical forest is certified, compared with almost 33% of North American forests and more than half of forests in western Europe.

There has been a 20% growth in Chain-of-Custody certificates issued worldwide in 2010, which now number close to 30,000, a six-fold increase since 2005. Even so, the volume of global trade in wood products that this represents is negligible. While consumer awareness of certification appears to be growing, it seems that the producers of certified timber are not receiving a price premium for their produce over non-certified produce and that, consequently, certification represents an added cost for growers.

However, the development of Green Building codes throughout the UNECE region and beyond, which place stress on the use of sustainably-produced low-carbon-footprint materials, could favour timber products and provide a stimulus for certification and chain of custody tracking.

### 1.5.8 Carbon markets

The United Nations led negotiations continued in 2010-2011 working towards an international climate

change agreement, to formulate a successor to the Kyoto Protocol, and agree the operational details of REDD+. Negotiations on the LULUCF rules under the Kyoto Protocol, and Monitoring Reporting and Verification (MRV) of REDD+ are vital for engaging the forestry sector in climate change mitigation.

The European pulp and paper industry faces competitive auctions of European Union Allowances and binding emission benchmarks against reference emission levels when EU-ETS enters Phase 3, starting 2013.

So far the impact of carbon markets on forestry's contribution to the green economy has been small. The voluntary carbon market has seen the main growth in forest carbon projects, albeit on a small scale. The outlook is positive for a wider inclusion of forest-based emission reductions, which are coveted by corporate compliance buyers. The main opportunity would come if the EU-ETS decided to accept afforestation/reforestation projects, which currently are excluded.

Thirteen new Clean Development Mechanism afforestation/reforestation projects were under review or registration between June 2010-June 2011 with a mitigation prospect of 654,000 tonnes of CO<sub>2</sub>e from a total area of 73,000 hectares. There are four on-going wood-waste to energy and biomass utilization Joint Implementation projects in the Russian Federation's pulp and paper mills, and several biomass retrofit and co-generation projects in eastern Europe.

### 1.5.9 Value-added wood products markets

Global furniture production was estimated at \$376 billion in 2009 while global trade stood at \$92 billion after a severe 20% contraction in 2009. The US was by far the largest importer of furniture with a total import value of \$10.7 billion. The market experienced a 26.4% drop in furniture imports in 2009; over a two-year period the drop was 34.9% compared with 2007. The latest statistics from February 2010 reported an increase of 13% in US furniture orders compared with 2009.

The rapid erosion of the builders' joinery and carpentry import markets continued, with the value of imports into the five largest importing countries falling by 20% (\$1 billion) in 2009. The decline in profiled wood imports was also 20%, with French and UK imports declining 30%, US imports by 25% and German imports by 20%. An increase in house construction may reverse this trend, as any increased demand seems likely to be satisfied by imports rather than domestic production. The effects of the downturn in construction have been tangible. The exporting countries, mostly in Asia, have lost thousands of jobs as hundreds of production facilities have been closed.

Engineered wood products allow the forest sector to compete in markets traditionally dominated by concrete

and steel. New products and processes are being developed to efficiently use small-diameter logs to produce structural and decorative materials. These innovations enable wood to maintain and extend its market share, especially now that architects and specifiers increasingly recognize that wood is a renewable resource that can easily be recycled.

### 1.5.10 Tropical timber markets

Trade in tropical primary wood products continued to be affected by the downturn in global markets, although there were signs of recovery in 2010. There has been a decline in the importance of traditional tropical wood product markets, the EU, the USA and Japan, where housing and construction markets remain depressed: China and India have become more dominant with China's tropical log imports returning to pre-crisis levels in 2010, following a recovery in China's housing sector and the recovery in demand for China's exports of secondary processed products.

Imports of tropical sawnwood (the major tropical primary wood product import) into the European Union were expected to remain at a low level in 2010, with many EU member countries facing government austerity measures, sluggish construction activity, a continuing tendency for importers to maintain low stocks. There are clear signs of a declining market share for tropical sawnwood in the external joinery and furniture sectors as tropical sawnwood faced stiff competition from modified wood products, based in temperate hardwoods.

### 1.5.11 China market development

China is the main country outside the UNECE region which impacts the region's markets. It is the major trading partner with the region: its imports of raw materials benefit the region's exporters, while its exports provide increasingly tough competition for wood processors and manufacturers within the UNECE region. In the case of wooden furniture and plywood, there are ongoing trade disputes as UNECE-based producers allege that subsidies in China have resulted in unfair competition.

The growth of China's forest sector in the past 10 years has been remarkable. In 2005, it overtook Italy to become the major world furniture producer. In only 10 years, China has more than doubled its production of paper, pulp and paperboard, which now accounts for almost 25% of global production. It is now also the largest producer of wood-based panels, production of which has doubled in only four years

## 2 *The economic situation and construction sector developments in the UNECE region, 2010-2011*

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### Highlights

- The speed of the global recovery from the worst economic crisis since the 1930s varies significantly by region; growth is much faster in the emerging economies than in the advanced economies.
  - Economic growth in the coming year is likely to remain weak in North America and western Europe, as austerity is implemented to address increasing sovereign debt levels.
  - Given weak growth in the advanced economies, unemployment levels, especially long-term and youth unemployment, are likely to remain high for several more years.
  - Growth is more robust in the emerging economies, but their declines during the crisis were greater and thus, their current income levels are only slightly above pre-crisis levels: growth has been exceptionally fast in Turkey.
  - Increasingly, it is becoming apparent that the debt of the eurozone periphery economies is a solvency issue and not just a liquidity problem. As such, the remaining eurozone, and perhaps even EU members, will be required to absorb some of the losses associated with a debt write down.
  - The eurozone is experiencing a governance crisis as its existing institutions have been unable to properly address the sovereign debt crisis in some of its periphery economies; significant reforms in several areas are likely.
  - The significant variation in the economic situation in different countries, both within Europe and globally has created numerous policy conflicts between countries and has made policy coordination and cooperation more difficult.
  - The US housing market, by all indicators, appears to have entered a double-dip recession with home starts and sales at levels not seen since the Great Depression.
  - The Canadian housing market has rebounded from the recession, although housing starts are still well below 2008 levels.
  - The European housing construction market is stagnant, primarily due to the collapse of the Spanish housing market though there is the prospect of a gradual improvement, possibly beginning in 2012 – most notably in Germany and Poland.
  - The housing correction is far more advanced in the US than in Europe and it seems likely that European homes may be overvalued, which poses a possible risk to Europe's housing and economic recovery.
-

## 2.1 Current economic developments

The after-effects of the Great Recession of 2008-2009 continue to dominate the economic prospects of the UNECE economies in 2011. By mid 2011, despite two years of economic recovery, national income levels in most of the region's economies were only returning to what their peak levels were prior to the crisis. This is not particularly surprising given the depth of the crisis and the historical observation that recoveries from financial crises are generally much less vigorous than recoveries from more normal recessions. Unemployment in many countries remains elevated and is likely to stay that way for perhaps another two years. Sovereign debt levels have increased substantially in most of the advanced economies and have become problematic in some including, most notably, those in the periphery of the eurozone. As a result, economic policy has shifted towards austerity, which is further weakening the recovery. In the eurozone, the sovereign debt problems of several peripheral economies have raised fundamental issues about the design, operation and even the viability of the euro. The housing market busts in the US and several European countries (such as Ireland and Spain), which were at the core of the global crisis, have yet to stabilize. The Japanese earthquake, tsunami and nuclear catastrophe have disrupted manufacturing supply lines in some key technology industries worldwide. World trade flows, which declined dramatically in late 2008 and 2009, have expanded rapidly in 2010 and 2011. Uncertainties surrounding sovereign and housing debt and the need to further tighten monetary and fiscal policy pose significant downside risks for the region's economies in 2012 and beyond, although most analysts expect the recovery to strengthen gradually. The rapid appreciation of asset prices in China also poses the possible threat of a bursting bubble in that economy, which would have global implications.

In 2011, all UNECE economies are expected to have positive growth except for Greece and Portugal, which are implementing substantial austerity measures because of their high sovereign debt levels. Ireland, which is in a similar situation, is expected to have positive but meagre growth of about 0.6% in 2011. For the UNECE region overall, growth is expected to be 2.5% in 2011, which is roughly similar to the level in 2010 and to what is being forecast for 2012 (table 2.1.1). Thus, the region appears to have stabilized on a low growth path; between 1999 and 2007 growth averaged a somewhat faster 3.1%. This low growth path is too slow to create jobs for all of those who became unemployed during the crisis years of 2008 and 2009 and means that living standards will not be increasing as fast as they had been. The fastest growing of the UNECE subregions in 2011 is likely to be south-east Europe but this is due primarily to a robust 6.1% growth

forecast for Turkey. The remaining (non-EU) south-east European economies are likely to grow only about 2.3%, in line with the UNECE average. Growth in the CIS is expected to be reasonably strong at about 4.6%, led by the central Asian economies with slightly lower growth of about 4.3% in the Russian Federation. Growth in the EU-27 is expected to be 1.8% led by the EU new member states (NMS) with weak or negative growth in the southern and western periphery of the eurozone. Growth in North America should be higher at about 2.5%; however, after controlling for this region's higher population growth, its per capita growth is likely to be quite similar to that of the EU. Average growth in the non-UNECE economies is expected to be about 6.1% in 2011 or over twice the UNECE average. In 2011, solid growth at this level should allow most developing countries to make substantial progress towards achieving the Millennium Development Goals.

Given the duration and depth of the crisis, as well as the varying strength of the recoveries, it is useful to compare countries' GDPs in 2011 to those in 2007 before the crisis, to get an overall picture of the growth effects of the crisis (see table 2.1.1). For the region as a whole, GDP in 2011 is only 2.3% above that in 2007; this compares to an increase of over 23% for the rest of the world. Some UNECE countries, however, did remarkably well. The CIS, excluding the Russian Federation, has grown 12.6%, led by Turkmenistan (41.4%), Uzbekistan (37.7%) and Azerbaijan (33%). Seventeen or approximately one-third of the UNECE economies will have lower GDPs in 2011 than in 2007. The largest declines occurred in Latvia (-19.1%), Estonia (-11.6%), Ireland (-11.2%), and Greece (-9.2%).

After declining by 0.6% in 2009, global GDP growth rebounded to 5.0% in 2010 and is forecast to be 4.4% in 2011 and 2012, a respectable figure by historical standards. As in the decade before the crisis, growth is expected to remain considerably higher (over twice as fast) in the world's emerging economies than in the advanced economies. This two-speed recovery has created a number of policy tensions around the world. The emerging economies are focused on raising interest rates to slow growth while the advanced economies are still dependent on keeping interest rates as low as possible to encourage private investment. In the US, interest rates remain at historic lows, near zero. Although the European Central Bank (ECB) began to slightly increase eurozone rates in early 2011, they nevertheless remain very low. As a result of this interest rate differential, capital flows have surged from the low interest rate advanced economies to the higher interest rate emerging economies. This has resulted in the appreciation of currencies in the emerging economies, which has negatively affected their international competitiveness. Consequently, policy

disagreements have developed as countries find the actions being taken by other governments to be detrimental to their own economic interests. This has increased the need for global macroeconomic policy coordination, but at the same time has made achieving it much more difficult. A similar two-speed recovery has developed within the European Union and has created a similar policy conflict. The healthy centre (led by Germany) is fixated on inflation and the need for macroeconomic constraint while the periphery is suffering from extremely high unemployment and, in some cases, negative growth and needs further expansionary policies.

The global financial crisis and the advanced economies' slow recoveries have a number of important long-term economic consequences for the UNECE region. Most generally, the crisis further accelerated several longer-term trends. Much of the emerging world, especially in Asia, had been growing significantly faster than the advanced economies in North America and Europe. As a result, the share of the world GDP accounted for by the UNECE economies had been slowly declining. Due to the crisis, the growth rate in the advanced economies has declined significantly (and was even negative in 2009) for several years while the decline in the emerging world has been far more moderate. Consequently, the share of world GDP accounted for by the UNECE economies has declined even more markedly. It now is below 50% and is expected to continue to decline in the coming decades as its population and per capita income continue to grow more slowly than in the rest of the world. Therefore the region's political power and influence in shaping global developments is expected to continue to decline.

### **2.1.1 Unemployment, inflation and exchange rates**

At the peak of the crisis, unemployment increased to over 10% in all of the major areas of the UNECE – the US, eurozone, the Russian Federation and Turkey. The recovery has been too subdued to reduce this appreciably as unemployment remains above 9% in each of these except for the Russian Federation where it declined relatively quickly and was only 7.2% by mid-2011. Just as there has been large variation in the GDP growth rates in the eurozone, unemployment rates also varied: in some economies (i.e., Austria, Denmark, Netherlands) unemployment rates were below 5% in mid-2011 while they were above 10% in Greece, Ireland, Portugal and Slovakia, and above 20% in Spain. Unemployment rates have also been rather high in several of the EU New Member States (NMS) that are not in the eurozone. They are over 10% in Bulgaria, Estonia and Hungary, and well over 15% in Latvia and Lithuania. Given the very

steep economic decline in the UK, the increases in its unemployment rate have been surprisingly small; UK unemployment in the first half of 2011 was slightly above 7%. Unemployment, which was quite high in south-east Europe even before the crisis, remains relatively high with rates above 10% in most countries and above 20% in Bosnia and Herzegovina and The former Yugoslav Republic of Macedonia. In the CIS, unemployment has been especially severe in Georgia, which has a rate above 15%.

The current unemployment problem is more severe than the rate commonly reported. Official unemployment rates only measure those actively looking for work. If those who are working part-time but want to work full time, and those discouraged from looking, are also considered, then the unemployment rates may be 50% higher than the reported figures. Along with the increase in unemployment there has been a more than proportional increase in long-term unemployment. In the US, the unemployed have on average been out of work for 40 weeks, and more than 4 million (out of 14 million) have been unemployed for more than a year. In most countries of the UNECE region, the unemployment rates are two to three times higher for youths than for adults. This reflects the limited work experience of young job seekers and their greater vulnerability to economic downturns. The unemployment rates for disadvantaged ethnic minorities and indigenous groups are also especially high. The high levels of unemployment are a significant factor in explaining the difficulties in some UNECE housing markets, but it is also the case that the causality runs the other way as housing busts increase unemployment. When houses are underwater (i.e., the market value is less than the mortgage), owners cannot afford to sell them and thus are not able to move to new geographical regions where job opportunities might exist.

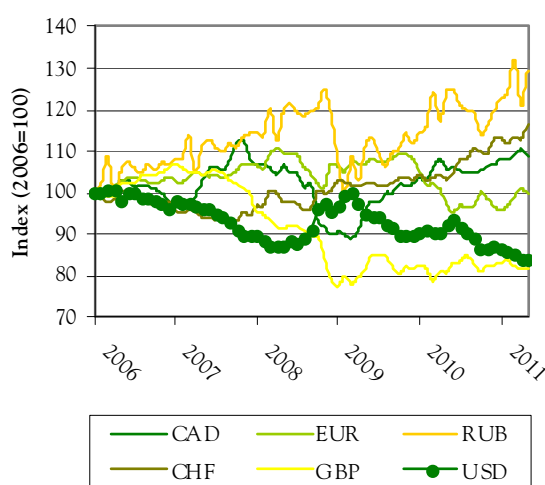
As a result of the rapid growth in the developing economies, the demand for some key commodities has increased sufficiently to raise their global prices substantially. Noteworthy for the UNECE region have been the large increases in the prices of oil and gas which have been especially beneficial for the energy-rich CIS. As a result, those countries have experienced a rapid bounce-back in GDP growth, declining unemployment and improving fiscal situations. The higher commodity prices, however, have been a negative development for the advanced economies as they are beginning to face inflationary cost-push pressures. Headline inflation in both the US and eurozone is likely to be above their central bank targets of around 2% in 2011. As a result, several central banks, including most importantly the ECB, have felt compelled to begin monetary tightening despite the economic slack and high unemployment in their economies. Some of this tightening seems

premature, however, as inflationary expectations remain low. As a result, the increases in headline inflation have not translated into wage increases. Thus, the current price increases are most likely one-time price adjustments caused by changing conditions in world commodity markets and are unlikely to signify the beginning of a sustained increase in core inflation. In the CIS, however, inflation is in the high single digits, due to their more robust recoveries and higher food prices. Food represents a much larger proportion of expenditure in the CIS than in the advanced economies. Inflation is a valid concern for these central banks and further monetary tightening is likely.

Since the beginning of the global economic crisis there have been significant movements in the exchange rates of the major currencies (graph 2.2.1). During the peak of the crisis, somewhat perversely, the dollar appreciated as part of a global flight to safety, even though the US was at the epicentre of the financial crisis. With the stabilization of global capital markets and the beginning of the recovery, the dollar has been in continuous decline. Although this may be due partly to concern about the longer-term health of the US economy and its increasing sovereign debt, it is primarily the result of widening interest rate differentials favouring other currencies. The real value of the US dollar has now fallen to a level last seen in the 1970s. As the world's primary reserve currency, it is held in large amounts as a store of wealth, so that this depreciation poses some risks to the stability of the world economy.

GRAPH 2.2.1

Exchange rate indices of selected currencies, 2006-2011



**Notes:** CAD = Canadian dollar, EUR = Euro, RUB = Russian rouble, CHF = Swiss franc, GBP = British pound and USD = United States dollar

**Sources:** Bank for International Settlements and UNECE, 2011.

Relative to the US Federal Reserve, the ECB has been more conservative in its monetary policy. It reduced interest rates more slowly as the crisis developed, kept them higher at the height of the crisis, and began to raise rates earlier. As a result, the euro is expected to continue to strengthen relative to the dollar. The Swiss franc has appreciated even more than the euro as it is insulated from the eurozone debt crises. These exchange rate movements have been particularly significant for housing markets in central and eastern Europe, where foreign-currency denominated loans were widespread. As a result of the appreciation of the franc, the cost of servicing these mortgages in the local currency has increased substantially. This may result in increasing default rates, which could put additional strains on local banking institutions. Compared to the US or eurozone, interest rates have remained significantly higher in the faster growing UNECE emerging economies as well as in most developing countries. Consequently this interest differential has created strong capital inflows into these economies and their currencies have appreciated, often to undesirable levels. A significant exception to this pattern has been the Russian Federation which has continued to experience capital flight despite its economic recovery. Nevertheless, the rouble has appreciated on the strength of oil prices. The Canadian dollar, which depreciated sharply during the crisis, has strengthened considerably since 2009, as commodity prices have increased.

The globally coordinated fiscal expansions undertaken at the beginning of the crisis were a central component in averting a second Great Depression. Almost as soon as the fiscal expansions were implemented, however, concerns developed about the rising levels of sovereign debt, especially in the advanced economies. The average debt of the UNECE advanced economies is likely to increase by over 50% due to the crisis. This is due to both increased stimulus discretionary expenditures and reduced tax revenues. Although significant increases in debt are typical of countries experiencing financial crises, they have been particularly problematic for the UNECE advanced economies because, even before the crisis, there were fiscal concerns due to their ageing populations. In 2010, the sovereign debt of 14 of the EU's 27 members exceeded the 60% of GDP limit incorporated into the EU's own Stability and Growth Pact. In Greece and Italy, debt was above 100% of their GDPs. Of the 10 former transition economies in the EU, only Hungary was over the limit. The debt of the US was 98% of its GDP in 2010 although approximately one-third of this debt was owned by the government, largely in its Social Security Trust Fund. Canada's gross debt increased to 77% of its GDP in 2010. Like the US, Canada's net debt is much lower. The result of these concerns is that the advanced economies have significantly scaled back their fiscal

policies. During a period when their economies need macroeconomic stimulus, the authorities instead are imposing contractionary monetary and fiscal policies. This explains why the medium-term outlook for the advanced economies is so weak and that a resolution of their employment and debt problems is expected to take so long. Although austerity might appear to be the logical response to growing indebtedness, there is nothing more detrimental to reducing debt than an extended period of slow growth. To the degree that the austerity reduces growth, which it appears to be doing, the austerity can ultimately prove to be counterproductive - not only is debt not reduced, but output is also lost.

### **2.1.2 The eurozone crisis**

The sovereign debt problems of several of the periphery economies of the eurozone reached a crisis level in late 2010 and 2011; these included Greece, Ireland, and Portugal. Concerns about a possible default by these three countries caused their interest rates to increase to such a degree that they were forced to obtain rescue packages from the EU and the IMF. There were growing concerns about Spain, Italy and, perhaps, Belgium. The severity of the problem for all of these countries was due to several factors which differed by country. However, they shared two characteristics: their debt levels were particularly high and they were in the eurozone. It was their membership of the eurozone that exposed a serious design defect of that monetary union. Eurozone membership increases the default risk for sovereign debt because member governments do not have access to the usual policy options (depreciation, monetary easing, or a lender of last resort) for dealing with debt problems. To address this shortcoming and come up with alternative mechanisms for addressing debt problems, there has been quite significant institutional reform about the obligations and benefits of belonging to the eurozone and further initiatives are still to be agreed upon. More specifically the EU and IMF jointly established a European Financial Stability Facility to provide emergency financing for these economies although significant conditions were imposed on fiscal expenditures and taxes. In 2013, this temporary facility will be replaced by a permanent European Stability Mechanism with the objectives of reducing the possibility of future sovereign debt crises and providing a funding mechanism, if one should nevertheless occur.

Despite these institutional reforms and the assistance provided, it remains unclear if the sovereign debt of these countries will be fully repaid on the original terms. Ultimately the debt will be paid by either the taxpayers of the affected country, the taxpayers of the entire eurozone or the bondholders (through default). There is currently a disagreement amongst all the important participants about the amount each of these will contribute; there are serious

downside risks to each option. Additional fiscal tightening (higher taxes and reduced spending) in the affected countries will only further depress their economies and, by lowering their growth, may actually reduce their ability to repay. If the eurozone were a normal monetary union, there would be a corresponding fiscal union. As a result, the taxpayers in the rest of the eurozone would carry a significant part of the burden. In the design of the eurozone, however, every effort was made to maintain each member's fiscal autonomy and avoid creating a fiscal union. It is becoming increasingly apparent that it is not possible to have one without the other. While the economic consequences of forcing the other eurozone taxpayers to pay are fairly benign, the political repercussions could threaten the entire eurozone project. Losses imposed on bondholders, which are largely European financial institutions, to pay could further weaken the banks before they have recovered from the financial crisis and thereby trigger yet another crisis. In such a case, the banks would have to be rescued by their governments, and thus the eurozone taxpayers would ultimately pay some part of the bill. The best option, where possible, is for affected governments to sell state-owned assets; however, there are not enough of these for this to be more than a component of any comprehensive solution.

The crisis facing the vulnerable eurozone economies is more extensive than just that of a sovereign debt crisis. These economies have also been running large current account deficits which means that they have been consuming (defined generally to include investment) much more than they have been producing. As a result, there is a need for a much wider set of adjustments in addition to fiscal tightening, including reductions in wages throughout the private sector. A factor that will significantly determine the economic consequences of these crises will be whether they are resolved in an orderly pro-active manner or if things are allowed to spin out of control and result in the type of market chaos that followed the collapse of the Lehman Brothers bank.

### **2.1.3 Additional macroeconomic risks**

The dire situation of the EU periphery economies caused some to believe that a similar fate might arise for other indebted, advanced UNECE economies, including the UK and the US. As a result, political pressures developed in these countries to implement significant fiscal retrenchments. This viewpoint focused on their similarities with the EU periphery economies in their debt profiles. It failed to appreciate the role that being a member of the eurozone played in the crisis. In addition, it incorrectly interpreted the still difficult economic conditions as a sign that the expansionary policies had not been effective, when in fact they had been – given the severity of the economic shock, they simply were

insufficient. As a result, these non-eurozone economies are currently undertaking needless austerity measures and reduced growth that will make it all the more difficult for them to address their very real longer-term debt problems associated with demographic developments. By taking the economic stance that monetary policy needs to be tightened to address global commodity price increases and that fiscal policy needs to be tightened to address debt concerns, despite the current state of high unemployment, governments effectively leave themselves without any macroeconomic policy tools. This situation creates a significant downside risk for the economic recovery in 2012. If the private sector is unable to substantially increase current levels of spending, or if there should be some unexpected shock (perhaps a eurozone default), a double dip recession would appear to be inevitable. This is, in fact, what happened during the 1930s and it will represent a considerable policy failure if the world were to repeat its previous mistake.

While the medium-run objective of the advanced UNECE economies is primarily to reduce unemployment and lower sovereign debt levels, the emerging market economies are more focused on structural reforms that are needed to diversify their economies out of natural resource sectors and into dynamic knowledge-based manufacturing and service sectors. Progress in this regard has been rather limited in the Russian Federation and central Asia as high energy prices have kept the incentives tilted towards resource production. Their dependence on commodities, however, is creating vulnerability for their development efforts, especially if the current global commodity boom turns out to have been a bubble. In addition, at current production levels the Russian Federation has only 20 years of oil reserves left, so there can be no delay in this transition process.

The housing sector remains a significant drag on several UNECE economies, especially the US economy. There is a significant oversupply of homes in the US which continues to depress home construction. In April 2011 seasonally adjusted housing starts declined by 10.6% from March to an annual rate of 523,000. Housing starts, a quintessential leading economic indicator, are now lower than when the recovery began two years ago. And it is all the more striking given the historically low interest rates and the fact that housing is one of the most credit-sensitive sectors. At June 2011, there are about 10 million vacant homes in the US. Housing prices have fallen 32% nationally from their peak in 2006, which is a greater decline than occurred during the Great Depression of the 1930s. Not all the excess supply of housing is actually due to overbuilding as there has been a significant decline on the demand side as well, due to high unemployment, difficult credit conditions and a hesitancy to buy, as long as housing prices continue to

decline. An additional factor reducing demand, has been a substantial decline in the creation of new households, as people temporarily move in with friends and family. As a result there is developing a significant pent-up demand that at some point in the future will lead to rapid household formation and an above average demand for housing. A similar excess supply of housing exists in several European economies including most notably Spain. During the crisis, property prices fell considerably in many of the UNECE emerging economies, such as the Russian Federation where they fell 40% between 2007 and 2009. The Russian housing market, however, has recovered over the last two years in part because there is a strong relationship in Moscow between real estate and oil prices.

In conclusion, the economic situation in North America and Europe is particularly perilous at this time. Growth is positive but subdued, and as a result, unemployment, which is currently quite high, is likely to stay that way for some time. In addition, the region is facing some difficult challenges, such as addressing rising sovereign debt levels and commodity inflation, which will weaken the ability of government efforts to promote growth and employment. However, growth prospects are higher in eastern, central and south-east Europe and the CIS. The UNECE region's financial sector remains weak, and proposed tighter regulation may further limit its ability to restore investment levels in the coming year. Thus, the overall macroeconomic situation is not particularly supportive for a strong rebound in either the housing sector or for forest products more generally. The one bright spot remains the solid growth in emerging markets outside the region, and especially those in Asia.



Source: D. Torgerson, 2011.



TABLE 2.1.1  
UNECE region real GDP growth rates (%), 2010-2011

Country	2010	2011 <sup>f</sup>	% Change 2007 to 2011	Country	2010	2011 <sup>f</sup>	% Change 2007 to 2011
Albania	3.9	3.5	19.7	Portugal	1.3	-2.2	-3.4
Bosnia and Herzegovina	0.9	2.5	6.0	Slovakia	4.0	3.5	8.4
Croatia	-1.2	1.1	-4.0	Slovenia	1.2	1.9	-1.7
Montenegro	-1.8	4.5	3.4	Spain	-0.1	0.6	-2.4
Serbia	1.5	2.9	6.8	Eurozone	1.7	1.6	-0.6
TfYR of Macedonia	0.7	2.5	7.4	Bulgaria	0.2	2.8	3.4
Turkey	8.9	6.1	10.8	Czech Republic	2.3	2.0	2.5
South-east Europe (non-EU)	7.2	5.3	9.4	Denmark	2.1	1.7	-2.6
Armenia	2.6	4.3	-1.7	Hungary	1.2	2.7	-2.3
Azerbaijan	5.0	4.6	33.0	Latvia	-0.3	3.3	-19.1
Belarus	7.6	3.9	23.5	Lithuania	1.3	5.0	-6.6
Georgia	6.4	5.2	10.2	Poland	3.8	4.0	15.4
Kazakhstan	7.0	6.4	19.0	Romania	-1.3	1.5	-0.2
Kyrgyzstan	-3.5	7.1	14.6	Sweden	5.7	4.2	3.7
Republic of Moldova	6.9	4.6	12.7	United Kingdom	1.3	1.7	-2.1
Russian Federation	4.0	4.3	5.1	EU – 27	1.8	1.8	-0.1
Tajikistan	5.5	5.0	23.6	Iceland	-3.5	1.5	-7.5
Turkmenistan	9.2	10.4	41.4	Norway	0.3	2.7	2.0
Ukraine	4.2	4.6	-5.5	Switzerland	2.6	1.9	4.5
Uzbekistan	8.5	7.7	37.7	Israel	4.2	4.0	13.8
CIS	4.6	4.6	7.2	Europe – 31	1.8	1.8	0.2
Austria	2.0	2.4	2.6	Canada	2.9	2.9	3.8
Belgium	2.2	2.4	2.7	United States	2.9	2.6	2.8
Cyprus	1.0	1.5	4.4	North America	2.9	2.6	2.9
Estonia	3.1	4.9	-11.6	<b>UNECE – 52*</b>	<b>2.7</b>	<b>2.5</b>	<b>2.3</b>
Finland	3.1	3.7	-0.9	Memorandum items			
France	1.5	1.8	0.4	South-east Europe (except Turkey)	0.6	2.3	4.0
Germany	3.6	2.6	2.3	CIS (less Russian Federation)	5.9	5.5	12.6
Greece	-4.5	-4.0	-9.2	EU-pre 2004 - 15	1.7	1.6	-0.8
Ireland	-1.0	0.6	-11.2	EU NMS-12	2.1	3.1	5.5
Italy	1.3	1.0	-4.3	UNECE emerging economies**	5.3	4.8	7.8
Luxembourg	3.5	3.4	4.6	World	5.0	4.4	12.1
Malta	3.7	2.0	7.6				
Netherlands	1.8	1.9	1.6				

**Notes:** f = forecast. \*This total excludes four countries within the UNECE region: Andorra, Liechtenstein, Monaco and San Marino which do not report GDP. \*\*This total includes CIS and south-east Europe.

**Sources:** UNECE secretariat, 2011.

## 2.2 Construction sector developments

### 2.2.1 United States construction market review

The US housing market is still reeling from the recession and the global economic crisis. Between the peak of 2006 and May 2011, existing US home prices fell by roughly 41%, with new home values falling by 17.5% from 2007s high. Between 2010 and 2011, about 75% of US homes lost value and prices have now fallen for 58 consecutive months (Humphries 2010a, 2011b). This collapse also has erased 8 years of price gains.

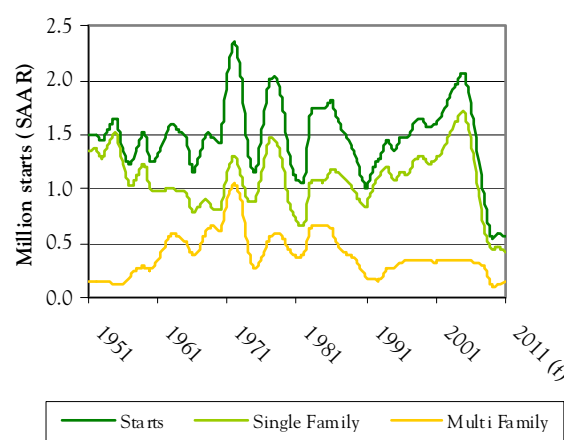
As valuations have continued to fall, there has been an increase in the numbers of homeowners falling behind with their mortgage payments (so-called ‘delinquency’), reaching almost 10% of all mortgages by the end of 2010; even prime loans had a delinquency rate approaching 7% (Alexandre 2011). The term ‘underwater’ has been coined to describe the circumstance in which the value of a home is less than the mortgage remaining on it. There are various estimates of the number of properties currently ‘underwater’ (negative equity). By the first quarter of 2011, roughly 12 million or 28.4% of all mortgages were underwater. An outcome of negative equity is often foreclosure; from April to June 2011, nearly 2 million homes were in the foreclosure process, with another 1.5 million homes seriously delinquent (Humphries 2011b). US mortgage lenders own more than 872,000 foreclosed homes, and are in the process of foreclosing an additional one million homes, and may take possession of millions more in future years (RealtyTrac, 2011). It is estimated that there are over 5 million additional homes that could be placed on the market, if conditions were better (Humphries 2010a).

In April 2011, the US registered the lowest home sales since record-keeping began in 1963. By May 2011, existing US home sales declined approximately 27.3% from the 2005 high and new home sales have fallen 76.6% from their 2005 peak (SAAR). The National Association of Realtors reports that 37% of existing home sales in April 2011 were foreclosed homes (NAR 2011a, b). In a historical context, US housing starts are at levels not witnessed since the Great Depression and are lower than the 1950s (graph 2.2.1). It is not all dismal, as reports indicate that home prices in 20 US States increased in May 2011, though these data do not include REOs<sup>10</sup> (CoreLogic, 2011a).

<sup>10</sup> “Real estate owned” or REOs are properties that are owned by the mortgage lender. This is typically a lending institution, such as a bank, government lending institution or loan insurer.

GRAPH 2.2.1

US housing starts, 1951-2011



Note: SAAR = Seasonally adjusted annual rate.

Sources: US Census, 2011.

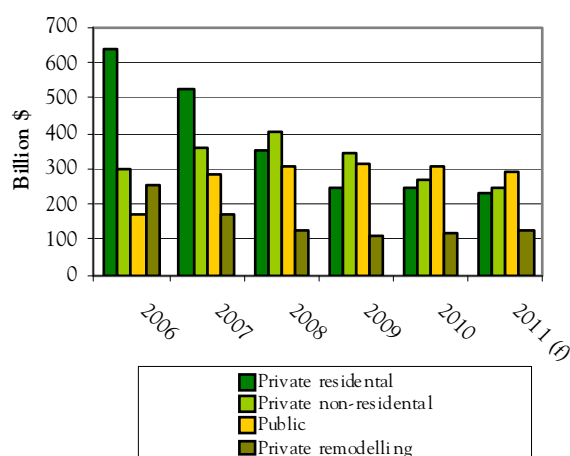
### 2.2.2 US construction outlook

Overwhelmed consumers, unemployment, inflation, fewer new households being formed, mortgage delinquencies, shadow inventory, stricter mortgage lending requirements, continuing foreclosures, and a potential for rising interest rates are all acting against any immediate revival in the fortunes of the housing market. Foreclosures drive down existing home prices substantially and so, all home sales and starts suffer due to the intensely competitive market. New housing starts data for April 2011 were disappointing, projecting an annual rate of  $\pm 550,000$  units – the smallest number of starts for more than 60 years (graph 2.2.1). A key factor holding back housing starts and sales is the scale of ‘shadow’ homes: these are properties where the mortgage lender has foreclosed on a property but not yet placed it on the market. Estimates suggest there are between 1.8 and 5.1 million homes in the ‘shadow’ homes category (CoreLogic, 2011b; Ricciardi, 2011). Job losses among first-time home-buyers and would-be renters, coupled with a housing supply inflated by owners and banks trying to rent or sell repossessed homes is adding to an already difficult situation. A June 2011 report indicated that mortgage applications decreased by 3% in May 2011 and by 15% in the 12-months prior (Mortgage Bankers Association, 2011). A sub-sector with growth potential is multi-family housing and the construction of rental units; multi-family starts dipped below the past 40-years average in the past decade. Many may look more favourably on renting than owning in the present circumstances. Yet, all indicators suggest that housing may be in a ‘double-dip’ recession and that there is unlikely to be any significant recovery in the short-term.

Unsurprisingly, with housing starts at a record low, spending on residential construction has continued to fall (graph 2.2.2). Total private residential construction spending fell 8% to \$ 238 billion during the 12 months from March 2010 to March 2011, a fall of \$ 426 billion from a high of \$ 664 billion in 2006 (US Census, 2011c). The Leading Indicator of Remodelling Activity (LIRA) estimated that \$ 491.5 million was spent on remodelling in 2011, up 0.2% from 2010 (LIRA 2011). This appears to be another opportunity area, as 43.6% of US homes are 51 years or older (56.7 million units) and the median age of a home is 37 years. Nearly 25% of the US housing stock is 20 years old or less (32.3 million homes) and 31.6% of homes are 21 to 50 years old (41.1million units) (US Census, 2011d).

GRAPH 2.2.2

## US housing spending trends, 2006-2011



Notes: f = forecast. Based on the most recent US Census data.

Sources: US Census, 2011.

### 2.2.3 North American construction materials

Historically, home construction and remodelling have been the primary market outlets for sawn softwood and structural panels; with prices typically tracking home starts. It has been estimated that, traditionally, the new housing sector consumed 40% of sawn softwood and 53% of structural panels' production (Schuler, 2010). Currently, industrial markets consume more sawnwood than new housing, about 35%, and new construction is nearly 22%.

The volume of sawn softwood used in new construction was estimated to be 20.3 million m<sup>3</sup> in 2010, roughly 25% of the volume used in 2005. Estimates for other sectors are: repair and remodeling 26.8 million m<sup>3</sup>, non-residential 2.0 million m<sup>3</sup>, and industrial 28.3 million m<sup>3</sup> in 2011. Western sawnwood output was 26.8 million

m<sup>3</sup> in 2010, an increase of 9.2% from 2009 and Southern pine production increased 3.9% to 28.9 million m<sup>3</sup> from 2009 (Random Lengths 2011b). Sawnwood imports from Canada increased 8.9%, to 8.9 million m<sup>3</sup>. Random-length composite dimension sawnwood prices improved marginally from \$222 in 2009, to an average \$285 per thousand board feet in May 2011 (Random Lengths, 2011c).

### 2.2.4 Canadian housing construction market

The Canadian housing market continues to rebound from the effects of the recession, with 189,930 new starts recorded in 2010, reflecting the strength of the Canadian economy, which escaped the problems that beset the US and many other countries (Canada Mortgage and Housing Corporation (CMHC), 2011). CMHC forecasts 179,500 starts in 2011 (range: 166,600 to 192,200) and 185,300 for 2012 – with increases in British Columbia, Alberta, and Ontario. Of this total, 82,700 single-family and 96,800 multi-family starts are projected for 2011. Overall, 452,100 existing home sales are expected in 2011 (range: 398,500 to 485,500) and 461,300 in 2012. Mortgage rates are expected to average 3% to 3.7% for 2011 and 3.5% to 5.5% in 2012. Employment is estimated to increase; reducing the unemployment rate from 7.6% to 7.3% in 2012; generally, new mortgages are 25-year instruments (CMHC, 2011).

### 2.2.5 European construction market

#### 2.2.5.1 Review and outlook

The European housing market is at best a 'mixed bag.' House prices increased in 2010 in Belgium, France, Germany, Norway and Sweden, while prices in Greece, Hungary, Ireland, Portugal and Spain all fell and considering their economic situation, are expected to continue falling (Ball, 2011). In the UK, which also experienced an economic decline, home prices inexplicably rose by 9% between March 2009 and March 2010, and prices have continued to rise slightly in 2011 (O'Donnell, 2011). In the 10 years from 1998 to 2008, when the global recession struck, European house prices appreciated more than in the US, and have declined much less since the crisis began. It seems likely that European homes may be overvalued, and this poses a possible risk to Europe's housing and economic recovery (Just and Mayer, 2010). The level of mortgage debt in the majority of countries remains high (Ball, 2011). As in the US, housing sales and starts with variable rate mortgages may weaken rapidly if interest rates rise (e.g., Ireland, Spain, Sweden and the UK) (Just and Mayer, 2010). The prospect of Europe leading any international recovery appears fragile. However, Germany and Poland both have

prospects of strong economic growth (Euroconstruct, 2010).

Throughout Europe, home construction is sluggish and lagging behind the overall recovery in most places (Ball, 2011). Between 2008 and 2010, European residential construction shrank by more than 20%, to \$795.5 billion (€555.2 billion) (December 31 2010 basis), with the gains of the preceding 13 years effectively erased in only 3 years. In 2009, demand in all construction sectors fell, but especially in the residential sector, resulting in an overall decline of Euroconstruct area building volumes (-8.4%, about \$2.0 billion (€ 1.4 billion)). By comparison, the GDP for all Euroconstruct's<sup>11</sup> members declined on average by 4%. The severity of the slump differed among countries with Poland and Switzerland recording increased building activity; while Ireland and Spain suffered collapses of -32.2% and -21.5% respectively (Euroconstruct 2010). Current conditions indicate little signs of improvement; between March 2010 and March 2011, construction values dropped by 4.9% in the EU-17 countries and by 2.7% in the EU-27 (Allen 2011).

Nearly 75% of all home construction is in five European countries: France, Germany, Italy, Spain, and the UK. In contrast to 2006, France, Germany, Italy, and the U.K. have increased slightly and Spain's share declined by 50% in 3 years (Euroconstruct, 2010). The overall value of the European construction market is steady; however, housing completions may soon decline to 1998 levels (206 million). Of great concern is the deterioration in Spain's housing market – where nearly 20% of Europe's home construction occurred during the housing boom. The collapse in Spanish housing construction is the foremost cause of the decline housing completions. In 2007, Euroconstruct region completions were more than 2.5 million units but are projected to fall to 1.4 million in 2011. In 2009, new residential construction as a percentage of investment in the construction sector was 40%, compared with more than 50% in 2006. Residential construction contracted by more than 20% (\$741.5 billion or € 554 billion), between 2008 and 2010 (Euroconstruct, 2010). In Europe, the home crisis was a result of several factors: 1) many homeowners used their homes as a source of cash (e.g., second mortgages and home equity loans, using the house

as collateral), some purchased property beyond their ability to make payments. Once the real estate bubble burst, many owners were stressed financially. Thus, the housing overproduction in the past decade is likely to have a negative impact on new starts in the future (Euroconstruct, 2009).

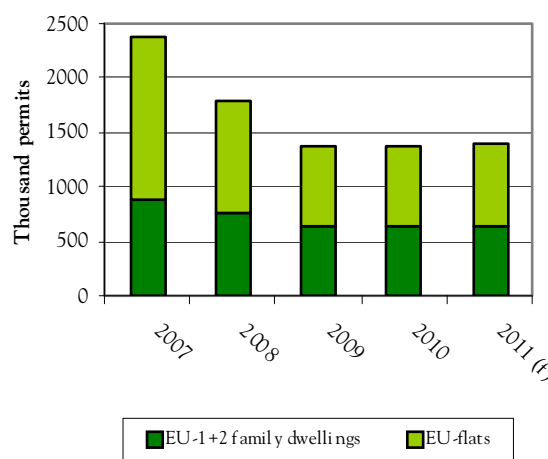
## 2.2.6 European construction trends

### 2.2.6.1 New housing

New home construction in the Euroconstruct region is following the same downward trend as in the US (graphs 2.2.3 and 2.2.4). Economic conditions, which include a mixture of weak and strong economies in the EU, persistent high unemployment, consumer uncertainty, a potential for rising interest rates; are hindering a recovery in new home starts. Reviewing 2006 data, a record 2.38 million homes were completed: 1.55 million multi-family (flats) and 836,800 1+2 family homes. In 2011, it is projected that about 623,000 (927,000 fewer units, ±60% decline) multi-family units and 523,000 (314,000 fewer units, ±37% decline) 1+2 family dwellings are to be built, as compared to 2006. Projections for 1+2 family dwellings and flats are not expected to approach 2006-2007 levels in the near future. New residential construction growth clusters may arise; for instance, Germany, where nominal starts occurred in the past decade. In the medium-term, Germany may realize an increase in new home construction – from 153,700 in 2009 to a projected 218,000 units in 2013; \$190 billion (€131.1 billion) to \$209.4 billion (€144.5 billion) (Euroconstruct, 2010).

GRAPH 2.2.3

European building permits, 2007-2011

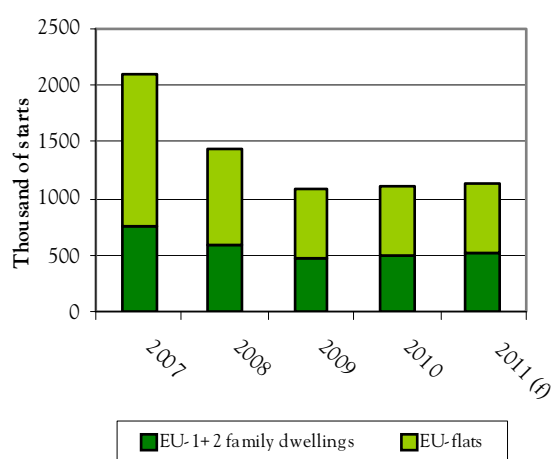


Note: f = forecast

Sources: Euroconstruct, 2010.

<sup>11</sup> The Euroconstruct region is comprised of 19 countries. The western region includes EU-17 member states (Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, the Netherlands, Poland, Portugal, Slovakia, Spain, Sweden, and the United Kingdom), and Norway and Switzerland. Euroconstruct's western European countries are not the EU-27, but the first 17 countries listed above. Euroconstruct's analysis of eastern European construction also is based on the Czech Republic, Hungary, Poland and Slovakia.

GRAPH 2.2.4  
Euroconstruct region housing starts, 2007-2011



Note: f = forecast.

Sources: Euroconstruct, 2010.

Future house building in Europe will be mixed, with construction flourishing in some areas while others flounder. In spite of the economic threats, a thin housing recovery is forecast for 2011 (1.6% to 2% gain), somewhat greater for 2012 (2½% to 3% gain), and the share of new home building will not increase significantly by 2013. In absolute terms, the 2013 housing market is expected to be \$815.2 billion (€602 billion), 8% less than in 2008 (Euroconstruct, 2010).

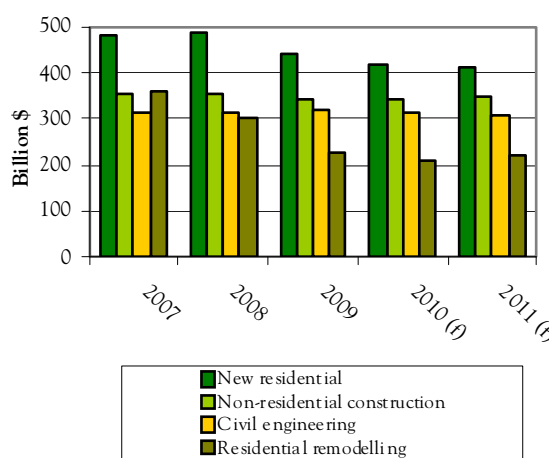
After a 3% decline in 2009, housing renovation and modernization is expected to improve in the next few years with growth of between 1% and 2% per year projected (Euroconstruct, 2010). Historically, renovation and home remodelling have been steady, and renovation and home remodeling have been supported by government renovation programmes. As in the US, caveats to home building are: housing may be susceptible to increasing interest rates in areas with housing needs; new home supply has been reduced greatly and current building is at low-levels; mortgage restrictions (loan ratios, reduced or elimination of government aid) affect several markets. The Royal Institute of Chartered Surveyors in its, “2011 European Housing Review” provides comprehensive detailed information about the housing situation in several European countries (Ball, 2011). Additional threats to a Euroconstruct housing recovery are the fiscal austerity moves by Greece, Ireland, Portugal and Spain.

### 2.2.6.2 Non-residential buildings and civil engineering

The outlook for non-residential building in 2011 is negative, as overall spending on construction is forecast to fall by 5.1%, \$591.2 billion (€411.7 billion). Minimal growth in the non-residential sector is projected to begin in 2012 and by 2013, total nonresidential output is predicted to increase 2.5% from the 2010 level (Euroconstruct, 2010).

Activity in all construction sectors declined after the 2008 recession, though the residential sector suffered the greatest fall, with non-residential and civil engineering less affected. Spending in the non-residential building and civil engineering sectors is forecast to change little in 2010 and 2011 (graph 2.2.5). In the non-residential sector, the commercial, office, and industrial markets are projected to decrease substantially (combined, they are greater than 50% of this sector); while the miscellaneous, health, agricultural, and storage markets are projected to have a minimal decrease. Educational building is the only sector projected to increase over the next few years. Slight increases in the remodelling and civil engineering sector are projected through 2013. By 2013 civil engineering is projected to be the driver for all construction sectors in the Euroconstruct region, to \$452.2 billion (€314.9 billion). Home renovation was 27% of the total construction value in 2010 and is forecast to be \$515.7 billion (€ 359.1 billion) by 2013. Projections are for slow growth in all sectors (Euroconstruct, 2010).

GRAPH 2.2.5  
European construction spending trends, 2007-2011



Note: f = forecast.

Sources: Euroconstruct, 2010.

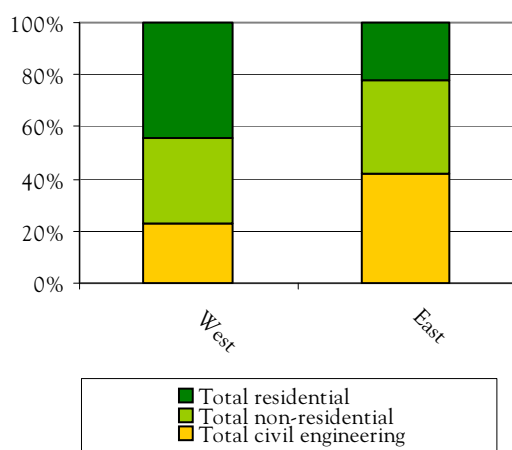
### 2.2.6.3 Construction sector shares and growth in western and eastern Europe (Euroconstruct regions)

Total residential construction in western Europe, is predicted to increase from \$770.4 billion in 2010 (€575.5 billion) to \$837.1 billion by 2013 (€625.4 billion), compared to the four eastern European countries, where the projected increase is to \$23.5 billion (€17.5 billion) from \$20.8 billion (€15.5 billion). As a proportion of overall construction, residential construction is projected to fall slightly from 2010 levels, from 43 to 40% in western Europe and by 1% in eastern Europe, by 2013 (Euroconstruct, 2010).

Civil engineering projects have been less affected by the recession than other parts of the construction sector. As a result the share of overall investment has increased in percentage terms, though not in absolute spending, since 2006. The three main factors leading to this change are the overall poor state of housing markets, an increasing need for civil engineering projects and the use of large infrastructure projects to give a stimulus to the economy. The same trend can be seen in eastern Europe, where spending on civil engineering and non-residential projects now accounts for 78% of all construction investment (graph 2.2.6) (Euroconstruct 2010).

GRAPH 2.2.6

#### Construction in Western Europe vs. Eastern Europe, 2010



Sources: Euroconstruct, 2010.

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## 3 Policy developments, 2010-2011

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### Highlights

- The General Assembly of the United Nations declared 2011 the International Year of Forests, to raise awareness of the importance of forests for people and their livelihoods and thus the need for conservation and sustainable management.
  - Efforts to combat illegal logging continue: the EU Timber Regulation was published in November 2010 and, in addition, several Voluntary Partnership Agreements have been established under Forest Law Enforcement, Governance and Trade (FLEGT), and there have been examples of the Lacey Act being enforced in the US.
  - The Russian log export tax, features in the negotiations for entry of the Russian Federation to the World Trade Organization (WTO), though the taxes may only change after WTO entry.
  - At the United Nations Climate Change Conference in Cancún, countries agreed the overall design of a REDD+ mechanism, but detailed discussion on how it will work, has been deferred to the COP 17 meeting in Durban, in late 2011.
  - Investment in research and development related to biomass energy continues to gain momentum based on national climate change and energy security policies.
  - Policies promoting renewable energy, especially based around biomass, are raising demand and increasing the competition for wood supplies with industrial wood processors.
  - Sustainable design (green building) is the only construction sector that has shown resilience through the recession; in the US, commercial building under the Leadership in Energy and Environmental Design standard has expanded, despite the overall building slump.
  - Policies that favour wood are being adopted throughout the UNECE region: the US Department of Agriculture, for example, announced recently a strategy to promote wood as a green building material.
  - China's impact on global forest products markets continues to grow, helped in part by government economic stimulus packages.
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### 3.1 Introduction

The General Assembly of the United Nations declared 2011 the International Year of Forests, setting the stage for regional and national activities designed to raise awareness of forests and the importance of managing them sustainably.

Many government policies today are directly affecting forest products markets. As a result of policies on climate change and energy security, for instance, hundreds of millions of dollars have been invested in biomass and other renewable energy technologies. Official incentives are also encouraging the development of alternative energy, leading to a growing demand for wood.

Sustainable design or “green building” is continuing to gain momentum in the marketplace. In the United States, the Green Building Council’s LEED certification system (Leadership in Energy and Environmental Design) now has a solid hold on the commercial market. The Council supports only FSC certification (Forest Stewardship Council), notwithstanding concentrated efforts by the forest products industry to open LEED up to other systems. In spite of the dire housing situation in that country, green building is increasing in the residential market.

China, with its economic stimulus packages, together with its fast-paced growth, is continuing to have a major impact on global markets. For instance, landowners and manufacturers on the west coast of North America have been significant beneficiaries of Chinese demand, especially for log and sawnwood exports.

Initiatives to promote wood have been adopted throughout the UNECE region in 2010 and 2011, especially in Canada (British Columbia), France and the United States (Oregon) (see also 3.2.3).

### 3.2 Trade-related policies

Countries continued to try to control illegal logging through limits on trade in 2010. The EU Timber Regulation, banning the trade of illegally-sourced timber and wood products, was formally approved and will enter into force in March, 2013. The Regulation states that operators who place timber or timber products on the EU market for the first time need to have a due diligence system in place to minimize the risk that the products may have been illegally harvested. That system should consist of measures and procedures that provide access to relevant information, use this information for risk assessment and, unless the risk is found negligible, mitigate the risk. And to ensure the traceability of timber and timber products, traders who buy and sell these products need to be able to provide basic information on the seller and buyer of the products.

Detailed rules for the due diligence system, which can be developed either by operators or by monitoring organizations granting operators the right to use it, are expected to be adopted in June 2012. National-level competent authorities will monitor its operation. Not included in the Regulation are recycled timber and timber products. And timber and timber products that are covered by the CITES and FLEGT Regulations are considered to be legally harvested.

This new legislation works in conjunction with the FLEGT licensing system, which develops voluntary partnership agreements and provides licences for importing timber into the EU. Cameroon, Congo and Ghana have ratified these agreements and other countries are negotiating them (e.g. Viet Nam, Democratic Republic of Congo), or have agreed to them but have not yet ratified the final versions (e.g. Central African Republic, Indonesia and Liberia).

As we reported in last year’s *Review*, Phase IV of the United States Lacey Act was implemented in April 2010. Much debate continues about enforcing it for fibre-based composite wood products (i.e. particle board, medium density fibreboard). The US Department of Justice is still actively investigating the Gibson Guitar Corporation for an alleged violation of The Lacey Act, involving illegally-sourced ebony from Madagascar. The Department is currently involved in a civil case against Gibson and Theodore Nagel GMD & CO KG, a supplier to Gibson. In 2010, in conjunction with a Lacey Act enforcement on a shipment from Peru, the US Fish and Wildlife Service seized pallets made of tropical hardwoods, as they entered a port in Florida.

A Chatham House report of July 2010 indicates that illegal logging has decreased and credits this in part to legislation such as The Lacey Act (Lawson and MacFaul 2010).

#### 3.2.1 Russian log export tax

The Russian export tax on unprocessed logs, introduced in 2007, at €10/m<sup>3</sup> resulted in a dramatic decline in log exports: from 51 million m<sup>3</sup> in 2006 to about 22 million m<sup>3</sup> in 2009 and 2010. A proposed increase to €50/m<sup>3</sup> in 2009 was not imposed. During the first quarter of 2011, Russian log exports increased significantly to China and Japan and, especially, to Finland, (Wood Resource Quarterly 2011). The Russian log export tax features in the negotiations linked to the Russian Federation’s application to be admitted to the WTO. Under decree 1190/2010, the tax will remain at the 2010 level until Russia joins the WTO. There are some reports that, once membership is attained, the export tax on softwood logs could fall to half the existing rate and that the rate for hardwood logs could fall by 65%



(Wood Markets, 2011). The magnitude of Russian softwood supply heavily influences production and markets in northern Europe. Lower cross-border trade in logs makes more material available to Russian sawmills that are increasingly investing in modern processing technology.



Source: Vapo, 2009

### 3.2.2 Sanitary and Phytosanitary (SPS) Standards

The WTO has moved forward in dealing with private-sector standards for food safety and animal and plant health, and taken the first steps towards harmonizing the approach to such standards. The SPS Measures Committee agreed on five actions that cover the definition of private standards and increasing communication and collaboration both among SPS organizations and between member countries and private operators. It is also following the International Plant Protection Convention's work on standards, "minimizing pest movement by sea containers and conveyances in international trade". These standards, which could have a major impact on international trade, may be agreed upon in up to three years if enough funds are available (WTO 2011).

### 3.2.3 Softwood Lumber Agreement

Disputes continue between the US and Canada over the 2006 Softwood Lumber Agreement. In early 2011, the US initiated arbitration under the Agreement about pricing practices in the British Columbia interior. The issue focused on the increased volume/proportion of Grade 4 logs, which are defined as mostly unsuitable for merchantable sawnwood.

The US-based Coalition for Fair Lumber Imports, while recognizing that much of the increase is a direct result of the mountain pine beetle infestation, claims that

these grades of logs are typically being sawn and therefore should not be valued at the Grade 4 level. The dispute will be settled through commercial-type binding arbitration via the London Court of International Arbitration. In January 2011, the Court ruled on an earlier dispute, finding that subsidies by the Ontario and Quebec governments violated the terms of the Agreement.

As part of the Agreement, the Binational Softwood Lumber Council was formed by the US and Canadian governments, designed to achieve long-term sustainable growth in demand for sawn softwood. The Council has worked to establish a programme for the North American sawn softwood industry for the general promotion of sawn softwood, which will be funded by a levy on producers and traders. According to the Council's website, the objectives of the programme are to stop erosion of market share in the single-family residential market, to increase wood's share in multi-family and residential markets, and to defend and rebuild market share in the outdoor living market.

## 3.3 Climate and energy-related policies

According to an assessment by the Executive Secretary of the United Nations Framework Convention on Climate Change, nine main objectives came out of the Cancún, Mexico, meeting, in late 2010. One of these is to protect the world's forests, which are a major repository of carbon (UNFCCC, 2011a). The Report of the Conference of the Parties, refers to encouraging developing-country Parties to reduce emissions from deforestation and forest degradation, to conserve forest carbon stocks, to practise sustainable management of forests, and to enhance forest carbon stocks (REDD+) (UNFCCC 2011b).

The Cancún Agreement was a key step towards a global REDD+ mechanism and included a decision on REDD+ with confirmation of its scope and an outline of principles and safeguards against negative social and environmental impacts. REDD-Readiness progress is ongoing in over 40 developing countries, with the process bringing about changes in governance frameworks, as well as in national and regional policies (COP 16, 2010a).

The Durban Conference of the Parties, taking place from 28 November to 9 December, 2011, is expected to agree if the setup of the REDD+ mechanism should be market- or fund-based or a mix of the two. Another objective from the Cancún Conference, closely related to forests, addresses funding for developing countries to enable them to take greater and more effective action. A commitment was made to create a Green Climate Fund

to support these countries. Governments also agreed to “launch concrete action on forests in developing nations”. This may become important for REDD+ as it could have what is called a “thematic funding window” under the Green Climate Fund (FIELD, 2011).

Also important for forestry, was discussion on the accounting rules for Land-use, Land-use Change and Forestry (LULUCF). The debate was on whether forest management should be mandatory in developed countries’ national greenhouse gas accounting in the 2<sup>nd</sup> commitment period of the Kyoto Protocol and, if so, how the accounting should be done.

The decision on LULUCF accounting and offset rules may improve forest management and increase forest-based mitigation in developed countries as well as influence the level of developed countries’ emission reduction commitments (COP 16, 2010b).

### 3.3.1 *Developments in the United States*

The global recession has killed any momentum around federal-level cap and trade and other legislation related to climate change. However, in 2007, the Supreme Court had decided that, greenhouse gases, including carbon dioxide, are pollutants covered by the Clean Air Act. A final rule was issued in May 2010 defining when permits are required.

The issuing of permits is focused on facilities that produce nearly 70% of greenhouse gas (GHG) emissions from stationary sources. These are mostly power plants, refineries and cement production facilities. Smaller operations will generally not be covered.

In January 2011, step 1 of the Clean Air Act permit requirements for GHGs was implemented. Step 2 occurs between July 2011 and June 2013 when permits will be required either for new projects that emit at least 100,000 tonnes per year or for any modifications to existing facilities that increase emissions by 75,000 tonnes per year.

The US House and Senate introduced a number of acts on renewable energy in early 2011, but it is too soon to predict the outcomes. The House Appropriations Committee recently eliminated funding for the Biomass Crop Assistance Program in 2012, but the Agriculture Committees will likely try to reinstate it. The government supports many energy programmes, including the Biorefinery Assistance Program (Section 9003 of the 2008 Farm Bill), which provides loan guarantees to entrepreneurs. A \$250 million loan guarantee was provided to Coskata, Inc in Alabama to construct and operate a cellulosic ethanol biorefinery facility with a 55 million gallon/year capacity.



Source: M. Fonseca, 2011.

### 3.3.2 *Developments in the European Union*

More countries in the EU have taken adaptation measures into account in their policies, specifically via their National Adaptation Strategies (NAS), which are submitted to the European Environment Agency. As countries prepare their strategies, the principles are increasingly being used and included in the development of other national policies. By mid-2011, the Commission should have finalized an assessment of the eligibility of the LULUCF credits to the EU’s GHG reduction commitments, implemented mainly through EU-ETS (for trading sectors) and ESD (for non-trading sectors). Based on the assessment, the Commission may decide to propose including emissions and removals from LULUCF (within and/or outside the EU) in the EU’s GHG reduction commitments (DG CLIMA, 2010).

#### 3.3.2.1 *EU Renewable Energy Source Directive*

The European Commission, in its Renewable Energy Roadmap, originally outlined a long-term strategy for securing future energy sources in Europe. It saw biomass as playing an important role in meeting the 20% share of total energy use to be met by renewable energies by 2020. European leaders endorsed this target, which required each of the 27 countries to increase its share of renewables. The Commission has given countries a specific target for 2020 for their share of renewables. Wood energy in Europe is expected to almost double in the coming decade (EUwood, 2010).

#### 3.3.2.2 *Renewable Energy Directives (RED) – Standards*

The European Committee for Standardization (CEN), is responsible for drawing up voluntary technical specifications to help achieve the Single Market in Europe, and the European Commission has asked it to draft standards for the Renewable Energy Directives (RED).

In December 2010, its Technical Committee 383 published a first draft for public comment. At the same time, Member States were already implementing the Directive at the national level. These standards, EN 16214, harmonize the definition of residues as distinguished from waste, which is an essential distinction for calculating GHG emissions. They also set out the criteria, verifiers, and templates of data provision lists, as well as methods to assess the sustainability claims of biofuel suppliers. Audit would include the chain of custody, information submitted by economic operators, and implementation of the mass balance method of chain of custody management (CEN, 2011).

### 3.3.2.3 EU national biomass action plans

Competitiveness, sustainable development and security of supply are to be the pillars of a new European energy policy to counteract Europe's increasing dependence on imports. The Commission urged Member States to develop biomass action plans that would address this matter and most countries have either completed them or started the process.

## 3.4 Environment-related policies

### 3.4.1 Forest Europe Ministerial Conference 2011

Ministers from 42 countries convened the Forest Europe Ministerial Conference on the Protection of Forests in Europe, in Oslo from 14-16 June 2011. At the conference, they adopted two documents; the Oslo Ministerial Mandate for Negotiating a Legally-Binding Instrument on Forests in Europe, and the Oslo Ministerial Decision: European Forests 2020.

The Ministerial Mandate established an Intergovernmental Negotiating Committee with a mandate to produce a holistic, legally-binding framework agreement to ensure the protection and sustainable management of Europe's forests. The Committee is expected to start its work in 2011 and have it finished by June 2013.

The Ministerial Decision on European Forests 2020, outlines a shared vision, goals and targets for 2020. The following are some of the targets:

- To have developed and implemented national forest programmes and strategies that take into account climate change adaptation and mitigation.
- To have substantially increased the supply of wood and other forest products from sustainably managed forests.
- To have increasingly reflected in national policies and market-based instruments, the full value of ecosystem services.

- To have halved the rate of loss of forest biodiversity.
- To have taken effective measures to eliminate illegal logging and associated trade.

The Chairman of the Forest Europe process 2008-2011, Mr Lars Peder Brekk, regards the adoption of these two documents as a "major step towards creating the necessary structure for a coherent approach to the continent's forests". He also expects them to shape the development of European forest policy over the next decade (Forest Europe, 2011).

### 3.4.2 EU Common Agricultural Policy

The Common Agricultural Policy (CAP) is to be reformed by 2013. For that purpose, the European Commission DG Agriculture and Rural Development conducted a survey of EU citizens and stakeholders during the first half of 2010. Although it was hard to draw definite conclusions from the great variety of responses, the Commission was able to identify 12 directions including some that will influence forest management:

- "Continue to push the competitive and potentially competitive sectors of European agriculture towards operating in a market context, giving more importance to innovation and dissemination of research;
- Transform market intervention into a modern risk- and crisis-management tool;
- Recognise that the market cannot (or will not) pay for the provision of public goods and benefits. This is where public action has to offset market failure;
- Bear in mind that the correct payment to farmers for the delivery of public goods and services will be a key element in a reformed CAP;
- Protect the environment and biodiversity, conserve the countryside, sustain the rural economy and preserve/create rural jobs, and mitigate climate change (European Commission, 2011a)."

The November 2010 Commission communication "The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future", launched the institutional debate (European Commission, 2011a).

## 3.5 Green-building policies

Sustainable design continues to act as a driver for building with wood. Following the lead of Canada (British Columbia), France, and New Zealand, several other Wood-First initiatives are being considered, including in the Canadian Province of Quebec, and in Oregon (US). The impact of the Wood First Initiative in British Columbia, begun in 2009, is not well known but

benchmarks and a tracking system are being established that will allow it to be determined.

In the United States, accusations of anti-competitive behaviour and preferential promotion of FSC-certified material by the Green Building Council's LEED programme continued in 2010. In 2009, a coalition of forest products companies filed a complaint with the Federal Trade Commission against the Council. This resulted in the credit for certified wood being reviewed by the Council and a proposal was made to adopt benchmark criteria for certification standards. When the proposed changes were put to a vote, the measure was not approved. The LEED rating system will therefore continue to offer credit for wood certified by FSC only.

In June 2011, LEED added "Pilot Credit 43: Certified Products", which may have implications for non-structural wood products. To receive credit, products must either be certified to approved standards, or manufacturers can offer product data in approved formats, including life-cycle analysis.

The National Green Building Standard, a residential green building standard resulting from a partnership between the National Association of Home Builders and the International Code Council, is developing a new version to be called the "2012 National Green Building Standard". It is expected to be approved in early 2012. As at January 2011, more than 1,800 projects had been certified and more than 4,500 projects were in process under the standard.

As we reported in last year's *Review*, the International Code Council (ICC) is developing code language to guide development of green commercial buildings in the US. Public version 2.0 was released in November 2010 and the final version is expected in March 2012.

The Living Building Challenge (LBC), launched in 2006 by the Cascadia Green Building Council and the International Living Building Institute, is gaining momentum in the Pacific Northwest region of the US. This is a performance-based standard and claims to be, "the most advanced measure of sustainability in the built environment possible today and acts to diminish the gap between current limits and ideal limits and ideal solutions."

The US Federal Trade Commission has been evaluating the general principles of environmental marketing claims. In October 2010, it issued "Guides for the Use of Environmental Marketing Information", which are currently under review. These new "green guides" will impact advertising claims of forest certification, renewable materials, renewable energy, and green-building programmes. They could affect the way that marketers describe their products and, potentially, even the LEED rating system, particularly relating to

claims made about LEED buildings having reduced impacts on the environment.

In March 2011, the US Department of Agriculture announced a new strategy to promote wood as a green building material. Several key components may have impacts on wood markets. For instance, according to the strategy, the US Forest Service will:

- preferentially select wood in construction of new buildings, while maintaining a commitment to green building standards;
- enhance research efforts focusing on green building materials;
- explore opportunities for the demonstration of wood as a green building material in all new structures larger than 10,000 square feet.

### 3.5.1 Energy-efficient buildings

"Energy-efficient buildings PPP", published by the European Commission in 2010, is part of the European Economic Recovery Plan. It was prepared by an ad hoc industrial advisory group with representatives of 12 Member States (EUR 24283). The plan will devote approximately €1 billion over the period 2010-2013, contributed equally by the private sector and the Seventh Framework Programme for Research (FP7), to reduce the energy footprint and CO<sub>2</sub> emissions related to new and renovated buildings." The industrial advisors developed a "Multi-Annual Roadmap and Longer Term Strategy" to create more efficient districts and cities, while improving the quality of life of European citizens.

The Roadmap shows research priorities and strategy, pointing out that the construction sector has a large environmental impact in the European Union due to consuming about 40% of energy and emitting about 36% of the CO<sub>2</sub>. Extended service life, more efficient use of raw materials, more recycling, as well as greater use of renewables are needed to reduce energy and carbon loads. Lightweight materials and systems can reduce the environmental impact of the construction process, which has the potential to positively benefit wood products. Research priorities were set on the basis of reductions in energy consumption, decreases in GHG emissions, and expected impacts in line with the provisions of the European Economy Recovery Plan. The priorities for research should be considered immediately in the EU's FP7 and, in the longer term, in industry strategy (European Commission 2010b).

## 3.6 Economic stimulus-related policies

The economic stimulus policies implemented throughout the UNECE region which were reported in last year's *Review* have mostly ended, but there is still very

little information about their direct effect on forest-products' markets. However, anecdotal evidence suggests that there were indeed impacts in specific markets, including significant temporary increases in North American demand for products such as railroad ties (sleepers).

China's economic stimulus policies have been focusing significantly on the forest sector. According to the government strategy, "Forest Products Industry Revitalization Plan" (State Forestry Administration, 2009), China is setting ambitious goals to maintain its industry's position as the world's largest producer and exporter of furniture, wood-based panels, wood flooring, and wood door products. The national strategy calls for industry growth at 12% annually, through support of vertical integration and overall efficiency in specialized industry clusters. China's State Forestry Administration expects the commercial value of its forest products in 2011 to reach RMB 2.4 trillion (USD 364.7 billion). During the 2006 to 2010 five-year programme, China invested RMB 297.9 billion in forestry, an 80% increase over the previous five-year period (The Economic Times, 2011). In the eurozone, worries about a slowdown in industrial growth appeared justified in the spring of 2011 because of a deceleration in commodity prices and a decrease in the preliminary commodity-price index (The Economist, 2011). In view of growing demand for legal and sustainable timber products in international markets, the Chinese government is actively preparing and promoting Chinese national forest certification standards.

### 3.7 Research and development-related policies

#### 3.7.1 Research in the European Union

In July 2010, the European Commission announced its research and innovation annual budget of nearly €6.4 billion for its FP7. It had planned a total budget of €50.5 billion for the entire period 2007-2013. Calls were issued for proposals for research to meet the goals of the "Europe 2020 Strategy for Growth, Competitiveness, and Employment". Awards are to be granted to research organizations, universities, and industry. Small and medium-sized enterprises receive special attention and are also targeted by the "Competitiveness and Innovation Framework Programme", which supports innovation and provides better access to finance and business support services.

The European Research Area (ERA) encompasses all European R&D programmes and policies that have a transnational perspective. ERA-NET is to improve coordination of research programmes and also to make available limited additional EU financial support to

participants who create a common fund for the purpose of joint calls for proposals among national and regional programmes ('ERA-NET PLUS'). Of special interest for forest products is WoodWisdom-Net 2, a European network of 12 countries funding national programmes assisting the ERA with strategic joint calls (European Commission, 2011c).

A "European Knowledge Based Bio-Economy" is a newly revised goal to be reached by bringing together science, industry and other stakeholders, to exploit new and emerging research opportunities in social, environmental, and economic fields. Two new topics are particularly important "Towards a sustainable bio-industry – Biotechnology for renewable chemicals and innovative downstream processes" and, "BioWASTE – Novel biotechnological approaches for transforming industrial and/or municipal biowaste into bioproducts", budgeted for €9 million and €3 million respectively (European Commission, 2010e).

Eracobuild, the second ERA-Net dealing with the construction and operation of buildings, is an important component of a European innovation system. It aims to develop cooperation and coordination between national funding bodies across Europe and increase the quality and impact of research in the construction sector.

To celebrate its twentieth anniversary, in 2010, The EC-US Task Force on Biotechnology Research, arranged a major conference in Barcelona, Spain. Among the many topics discussed were, improved technologies and potentials for converting cellulose to ethanol. Short-rotation coppice of willows, poplars, and eucalyptus, show promise; however, grasses, especially miscanthus and switchgrass, appear more advantageous as bio-energy feedstock on marginal temperate land. This Task Force evaluates research results every five years (European Commission, 2010f).

#### 3.7.2 Research in the United States

In April 2011, the Department of Agriculture and Department of Energy announced up to \$30 million over 3 to 4 years to support R&D in advanced biofuels, bioenergy, and high-value bio-based products. The projects, which are funded through the Biomass R&D Initiative, will help create a diverse group of economically and environmentally sustainable sources of renewable biomass. They will also increase the availability of alternative renewable fuels and bio-based products.

In May 2011, grants totalling \$47 million were awarded from the previous round of competition. Among the recipients was the Rocky Mountain Research Station of the US Forest Service, and the Domtar Paper Company, LLC. Separately, an announcement was made about research grants awarded to spur production of

bioenergy and bio-based products that will lead to the development of sustainable regional systems and help create jobs. The long-term goal for the research projects is to put in place sustainable regional systems that materially deliver liquid biofuels for transport to help meet the country's Energy Independence and Security Act goal of 36 billion gallons of biofuels per year by 2022.

### 3.8 Policies on Corporate Social Responsibility

Our 2008-2009 and 2009-2010 *Reviews* reported developments from the International Organization for Standardization (ISO) and the new ISO 26000 standard, "Guidance on Social Responsibility", which was published in late 2010. In conjunction with ISO 26000, the Global Reporting Initiative released guidance on the use of its Guidelines. It also announced updated sustainability reporting guidelines (G3.1) and that it has begun developing its next generation sustainability reporting guidelines (G4).

Other organizations have developed tools to support the implementation of ISO 26000. For example, a small NGO in Vermont (ECOLOGIA) has published a handbook targeted specifically at small- and medium-sized businesses wishing to implement ISO 26000 (ECOLOGIA 2011). There is no indication yet of the reaction of forest industry companies to the release of the ISO 26000.

Changing perceptions in society drive companies to review and change their corporate social responsibility focus. The results of a McKinsey Global Survey suggest that biodiversity is in the public eye today, in much the same way that climate change was in 2007 (Bonini and Oppenheim 2010). Executives taking part in the survey saw biodiversity as more of an opportunity than a risk, largely through enhancing their corporate reputation by protecting biodiversity. Even so, biodiversity occupied the tenth position in the issues respondents identified as most important to them. Climate change and energy efficiency ranked highest in the list. If concern about biodiversity loss continues to grow, it could become especially important for forest industry companies to show how their activities maintain or even enhance biodiversity.

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## 4 Wood raw material markets, 2010-2011

*Lead Author, Håkan Ekström*

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### Highlights

- Despite the continued global economic crisis, demand for most forest products was up in most of the UNECE, including wood raw material, sawnwood, wood-based panels and paper products.
  - Higher demand for forest products resulted in an increase of timber harvests in the UNECE by about 8% compared with 2009 but, despite this, timber harvests in 2010 were the second lowest recorded since 1966.
  - Consumption of softwood industrial roundwood in the UNECE was almost 8% higher in 2010 but 17% lower than in 2007.
  - An estimated 950 million m<sup>3</sup> of the total timber harvest was used for industrial purposes: fuelwood was estimated to be about 200 million m<sup>3</sup>.
  - Almost 10% of the UNECE timber harvests were exported in 2010: a majority within the region but also substantial shipments from the US and the Russian Federation to Asia.
  - The total wood-fibre consumption by the pulp industry in Europe was 147 million m<sup>3</sup>, up 8% from 2009 but still below the peak of 160 million m<sup>3</sup> in 2007.
  - Increased use of woody biomass has intensified competition for small logs, wood chips and sawdust the past few years.
  - Prices for sawlogs rose during 2010 and 2011 because of higher sawnwood production and increased log trade: the Global Sawlog Price Index increased for the eighth consecutive quarter and is just marginally lower than the all-time high in the first quarter of 2008.
  - The strong pulp market and tight supply of sawmill chips pushed pulpwood and wood chip costs upward in most regions around the world, with softwood and hardwood fibre costs close to record levels in many markets.
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## 4.1 Introduction

Although the global economic and financial crisis continued in 2010, and had a negative impact on the demand for a limited segment of the forest products market, consumption of most forest products increased in all UNECE subregions in 2010 after having declined for three straight years. The consumption of sawnwood (+8%) and panel products (+5%) were up the most, while demand for paper and board increased by only 4% from 2009 to 2010. The higher demand for sawnwood, panels, pulp and paper products had few exceptions throughout the UNECE region. The biggest surprise was that sawnwood consumption in the CIS region fell 1.5%.

Approximately 200 million m<sup>3</sup> of roundwood, or almost 18% of total removals, was estimated to be used for fuel in the UNECE in 2010. However, the data for volumes removed from forests for fuel are highly unreliable, as few countries have consistent methods of collecting relevant data for this increasingly significant end-use<sup>12</sup>. Therefore, this chapter focuses on production, consumption and trade of industrial roundwood rather than that of total roundwood (which would include fuelwood). The wood energy market is discussed more extensively in chapter 9.

The higher demand for forest products had the consequence that timber harvests increased by about 8% last year. Despite this increase, harvests of industrial roundwood in 2010 were still the second lowest recorded since 1966.

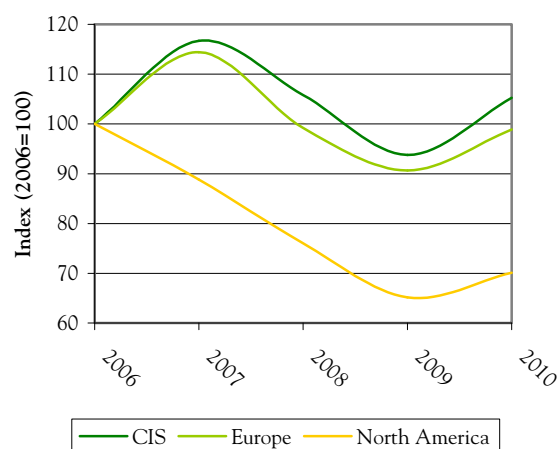
Last year's turnaround in consumption was probably a starting point for an upward trend in roundwood demand. With the outlook for higher consumption of wood products both within and outside the UNECE region, higher timber harvest levels should be expected over the next few years.

Consumption of softwood industrial roundwood in 2010 was almost 9% higher in the UNECE region compared with the previous year, but still 16% lower than in 2006 (graph 4.1.1). The biggest decline was in North America, where consumption was 30% lower in 2010 than in 2006. The trend for hardwood industrial roundwood consumption has not been so dramatic (graph 4.1.2). UNECE-region consumption increased 6% from 2009 to 2010 and is 13% lower than in 2006. The steep increase in consumption shown in the CIS, between 2009 and 2010, is from a low base.

<sup>12</sup> The UNECE/FAO, directed by the Joint Working Party on Forest Economics and Statistics, is working to improve this by developing the Joint Wood Energy Enquiry. More information is available at <http://www.unece.org/forests/outlook/woodenergy.html>

GRAPH 4.1.1

### Consumption of softwood industrial roundwood in the UNECE region, 2006-2010

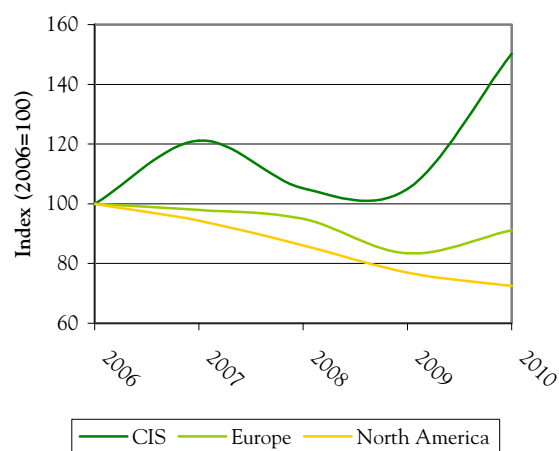


**Note:** Industrial roundwood excludes woodfuel.

**Source:** UNECE/FAO TIMBER database, 2011.

GRAPH 4.1.2

### Consumption of hardwood industrial roundwood in the UNECE region, 2006-2010



**Note:** Industrial roundwood excludes woodfuel.

**Source:** UNECE/FAO TIMBER database, 2011.

An estimated 950 million m<sup>3</sup> of industrial roundwood was harvested in the UNECE region in 2010. This was 8% higher than in 2009 but over 15% lower than in 2006. The trend in industrial roundwood removals over the past five years has been quite different in the three subregions of the UNECE. In Europe, harvest volumes were up 10% in 2010 from the previous year and actually reached the third highest level in the past decade. In contrast, North American timber harvests last year were the second lowest of the past 30 years and as much as 30% lower than in 2006. In the CIS subregion, where the Russian Federation is the dominant timber producer, harvests were up 20% in 2010 from 2009 but about 7% lower than in 2005.

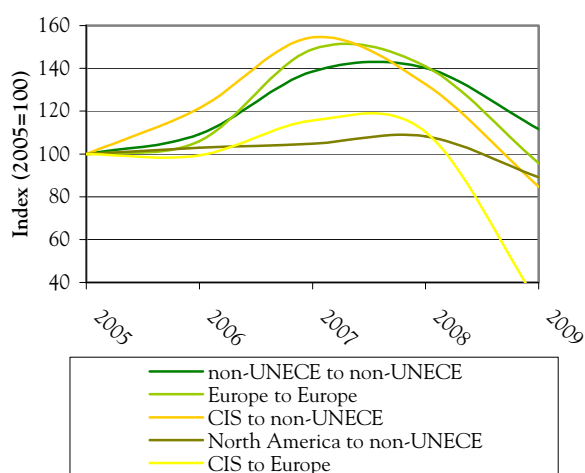
A striking development in the past five years has been the decline in North America's timber harvests as compared with Europe/CIS. In 2006, the North American harvest of industrial roundwood exceeded that of the other two UNECE subregions combined by 80 million m<sup>3</sup>. However, in 2010, Europe and the CIS exceeded the North American harvest by an estimated 100 million m<sup>3</sup>.

Both Canada and the US harvested about 29% less volume in 2010 than in 2006. The major reason for the reduced demand for logs has been the low operating rates at many sawmills on the continent. Lumber production has declined substantially because the major market for sawnwood, house construction, has been extremely weak. In 2006, the number of new houses that were being built reached 1.8 million, which can be compared to a mere 585,000 starts in 2010.

Log exports as a percentage of industrial roundwood removals in the UNECE region increased from 8% to 10% between 2009 and 2010, reversing the trends seen through 2009 (graph 4.1.3). A majority of the shipments were between countries within the UNECE region but substantial volumes were also shipped from the US and the Russian Federation to Asia last year. By volume, the biggest increases in exports in 2010 were from Canada, France, Latvia, Slovakia and the US. New Zealand, the major log-exporting country outside the UNECE, substantially increased its exports to China last year. Imports by China from New Zealand have replaced a proportion of the log supplies that China imported formerly from the Russian Federation, before Russia imposed export duties on logs.

GRAPH 4.1.3

Top five international trade flows of roundwood by value, 2005-2009



**Note:** Drop in the CIS to Europe is due to \$700 million reduction in imports by Finland from Russia in 2009 compared with 2008. Total value of world imports for 2008-2009 was \$27 billion.

**Source:** UN COMTRADE, 2011.

## 4.2 Europe subregion

### 4.2.1 Industrial roundwood markets

Timber harvests were up by nearly 10% in Europe in 2010 because of an increase in sawnwood production to meet higher demand both in Europe and outside the continent. This, together with higher consumption of wood-fibre by the region's pulp mills, resulted in the third highest harvest level in 10 years. The total harvest of 386 million m<sup>3</sup> was split between 76% softwood (predominantly sawlogs) and 24% hardwood (predominantly pulpwood). The largest increases in volume occurred in Finland (+9.3 million m<sup>3</sup>), Sweden (+5.1 million m<sup>3</sup>) and Slovakia (+5.0 million m<sup>3</sup>). Total removals, including fuelwood, were 480 million m<sup>3</sup>, the highest level since 2007 (table 4.2.1). The rough estimate of wood used for fuel was in the region of 102 million m<sup>3</sup> in 2010, up 4% from 2009 (however, this may reflect improved statistics rather than an actual change).



Source: Metsäliitto, 2010.

TABLE 4.2.1

Roundwood balance in Europe, 2009-2010 (1,000 m <sup>3</sup> )			
	2009	2010	Change %
Removals	439 221	480 219	9.3
Imports	45 830	57 036	24.5
Exports	33 111	48 403	46.2
Net trade	-12 719	-8 633	
Apparent consumption	451 940	488 853	8.2
of which: EU27			
Removals	394 043	428 835	8.8
Imports	43 058	53 822	25.0
Exports	30 172	45 166	49.7
Net trade	-12 887	-8 656	
Apparent consumption	406 929	437 491	7.5

**Source:** UNECE/FAO TIMBER database, 2011.

Although most countries increased both production and consumption of industrial roundwood in 2010, there was one country that did not conform to the trend.

Production of roundwood fell by about 2.5 million m<sup>3</sup> in Germany partly because of reduced demand for small hardwood logs by the medium-density fibreboard (MDF) industry. Hardwood log consumption fell from 10.4 million m<sup>3</sup> in 2009 to 6.9 million m<sup>3</sup> in 2010. Not only did Germany fall from being the largest hardwood log consumer in Europe in 2009 to the fifth largest in 2010, but it also saw its lowest consumption level since 2002.

During 2010, sawmills in Finland increased production by over 17% as compared to 2009. As a result of the high operating rates in the forest industry, consumption of logs went up substantially. Most, but not all, of the increase in demand has been met by domestic supply. Total timber sales from private forests almost doubled, rising to 45 million m<sup>3</sup> in 2010. In addition to higher usage of domestic logs, pulp mills in Finland also increased imports, of hardwood pulpwood in particular. In 2010, Finland imported 120% more hardwood logs than in 2009. The Russian Federation is still the largest supplier, but shipments from Latvia and Estonia increased the most.

Timber harvests in Latvia increased by 33% in 2010 over the previous year. Almost 60% was harvested on state-owned land, while the remainder was on private and locally owned public land. Not all of the additional log supply ended up at domestic sawmills and pulp mills. About 25% was exported to neighbouring countries around the Baltic Sea including Sweden, Finland and Estonia. It is debatable whether current timber harvests in Latvia are sustainable; private forest landowners especially may have to reduce harvest levels in the future.

As reported in last year's *Review*, the storm "Klaus" hit southwestern France and northwestern Spain in January 2009 resulting in over 40 million m<sup>3</sup> of damaged timber, most of which was pine. By the end of 2010, 26 million m<sup>3</sup> had been removed but not necessarily consumed. As much as 8 million m<sup>3</sup>, or 42% of softwood log consumption, in 2010 were in storage because of limited demand.

Another storm, "Xynthia", crossed Europe in February 2010, with Germany being most affected. An estimated 4 million m<sup>3</sup> of timber were damaged, 3.5 million m<sup>3</sup> of that in Germany, although the impact on the German log market was small.

European wood consumers are not concerned about the short-term supply of wood on the continent. There is currently a sufficient supply of both industrial roundwood for the forest industry and woody biomass for the energy sector. However, the situation may well look quite different by the year 2020, with a substantial supply/demand imbalance if demand for woody biomass for energy keeps increasing. In 2010, the Centre of Wood Science of the University of Hamburg, Germany, led a wood resource balance study (EUwood) to compare the

demand for wood for energy and industry with the potential supply from forests and other sources in the EU-27<sup>13</sup>. The study examined the impact on wood availability, based on three scenarios using different assumptions about future political decisions, environmental constraints and technical constraints. All scenarios showed shortages of wood supply in the future unless there were to be a major mobilization of additional wood-fibre supply from non-traditional sources, such as urban wood, forest waste and short-rotation plantations<sup>14</sup>.

#### 4.2.2 Roundwood trade

As a sign of improving markets for forest products in 2010, global trade of softwood logs (sawlogs and pulplogs) increased by almost 20%, compared with 2009. An estimated 80 million m<sup>3</sup> of softwood logs were traded in the world in 2010, which compares with more than 95 million m<sup>3</sup> in the record-setting year of 2007.

The biggest rises in softwood log imports were in western Europe and Asia: the increases in imports were greatest in Belgium, Germany, China and the Republic of Korea. After two years of declining trade, 2010 may well have been the turning point when global log trade started growing again. However, growth is not of such magnitude that would allow global shipments soon to reach the pre-financial crisis levels seen in 2006 and 2007.

European imports were up 28% to 52 million m<sup>3</sup> in 2010 and exports increased 51% to 44 million m<sup>3</sup>. So although Europe continues to be a net importer of wood raw material, the log trade deficit has been constantly shrinking from 28 million m<sup>3</sup> in 2005 to 12 million m<sup>3</sup> in 2009 and only 9 million m<sup>3</sup> in 2010. Softwood imports accounted for 65% of the total import and 72% of exports. Practically all trade was within UNECE's Europe subregion, although three CIS countries - Belarus, the Russian Federation and Ukraine - supplied logs to the Europe subregion.

The biggest increases in log exports in 2010 were from Slovakia, France, Latvia, Estonia and the Czech Republic, in ranking order, while Germany, Finland, Sweden, Belgium and the Czech Republic recorded the biggest rises in imports.

France exported 64% more logs by volume (by value, the increase was 53%) from 2009 to 2010 because the domestic forest industry was unable to absorb the sudden surge in log supply after the storm "Klaus". The ports of Bayonne and Bordeaux, in particular, enjoyed increased traffic in the export of logs and chips.

<sup>13</sup> [http://cordis.europa.eu/fetch?CALLER=NEWSLINK\\_EN\\_C&RCN=32950&ACTION=D](http://cordis.europa.eu/fetch?CALLER=NEWSLINK_EN_C&RCN=32950&ACTION=D)

<sup>14</sup> The forthcoming European Forest Sector Outlook Study II, due to be published in October 2011, analyses this issue in more detail.

### 4.2.3 The pulp industry in Europe increased wood-fibre consumption by 8% in 2010

The pulp and paper sector in Europe improved its operating rates in 2010, resulting in higher demand for wood raw material. Wood-fibre consumption in 2010 increased by 8% over 2009, to 147 million m<sup>3</sup>, the first increase for three years. However, this was still below the record year of 2007, when consumption was more than 160 million m<sup>3</sup>, according to industry organization the Confederation of European Paper Industries (CEPI). All the largest pulp-producing countries increased their fibre consumption last year except for Sweden. Pulp producers in Austria, Finland, Norway and Poland increased fibre consumption most.

Almost 24% of fibre consumption was of co-products from sawmills and plywood plants, a slightly higher share than in 2009. The availability of sawmill co-products increased as a result of higher sawnwood production in much of Europe during 2010 and early 2011.

Roundwood continued to be the most important virgin fibre source for the pulp industry and the share has slowly increased over the past decade. In 2010, almost 40% of the total harvest of industrial roundwood was destined for the pulp sector, compared with 37% in 2006.

## 4.3 CIS subregion

### 4.3.1 Industrial roundwood markets

Total removals of industrial roundwood in the CIS region were up 17% to approximately 148 million m<sup>3</sup> in 2010. Total removals (including fuelwood) increased by 13% (table 4.3.1). The increase was steeper for hardwood species than for softwood. The accuracy of the harvesting data is somewhat uncertain, since in addition to the official estimate, there is also an acknowledgement by the Russian Government that there is undocumented timber harvesting in the country. Also, a number of CIS countries, including Ukraine, have not provided information for the past four years.

TABLE 4.3.1

Roundwood balance in the CIS, 2009-2010  
(1,000 m<sup>3</sup>)

	2009	2010	Change %
Removals	178 809	201 989	13.0
Imports	824	850	3.1
Exports	27 173	27 063	-0.4
Net trade	26 349	26 212	-0.5
Apparent consumption	152 460	175 777	15.3

Source: UNECE/FAO TIMBER database, 2011.

### 4.3.2 Log exports

The Russian Federation for many years has been by far the largest exporter of logs in the world. When the country announced a log export tax of 25% in 2007 and the intention to increase this tax to 80% in 2009, many forest companies in Asia and Europe decided to reduce their reliance on Russian logs. As a result, total log exports from the Russian Federation fell from 51 million m<sup>3</sup> in 2006 to about 22 million m<sup>3</sup> in 2009 and 2010. The log export market is still very important to many companies and their employees in the Russian Federation, as about 19% of the softwood and 10% of the hardwood harvests are shipped out of the country.

This downward trend, however, appears to have broken in 2011. During the first few months, total softwood and hardwood log exports were up over 10% compared with the same period in 2010. Much of this increase in shipments has been to China, Finland and Japan. The recent upward trend can be expected to continue during 2011 and 2012, albeit less dramatically, as Russian log export taxes are likely to be reduced.

During discussions between the Russian and EU representatives in December 2010, it became apparent that the Russian Federation had been pressured to reduce log export taxes as part of the bi-lateral negotiations for joining the World Trade Organization (WTO). However, it is still not clear exactly what the new log export taxes may be and when they will be introduced. Softwood log taxes may fall to somewhere between 5% and 10% of the value of the logs, and hardwood log taxes will probably be lower than those for softwood. The lower tax rates are not likely to be implemented until the Russian Federation becomes a full member in the WTO, which may take place in early 2012.

Russian log exports to Finland, which are predominantly birch pulp logs, may very well increase over the next few years, thanks to lower export taxes, but they will probably never again reach the high levels of 2005, when they hit an incredible 7 million m<sup>3</sup>; by comparison, Finland imported 1.8 million m<sup>3</sup> hardwood logs in 2009 and 3.9 million m<sup>3</sup> in 2010.

## 4.4 North America subregion

### 4.4.1 Industrial roundwood markets

The total timber harvest in North America increased in 2010 to 473 million m<sup>3</sup>, made up of 430 million m<sup>3</sup> industrial roundwood and 43 million m<sup>3</sup> fuelwood (table 4.4.1). This was the first recorded increase in removals of industrial roundwood for five years. Removals in the US were 300 million m<sup>3</sup> and in Canada 130 million m<sup>3</sup>. Even so, removals are still 31% lower than in the record year of 2005. The increase in demand has come mainly as the

result of higher sawn softwood production in Canada (+18%) and the US (+7%), but also from a 49% increase in exports to Asia, mainly China. The export market has provided a welcome boost to timberland owners along the western seaboard. The higher demand for logs from Asia has been of immense benefit to the forest sector in the west during 2010, as domestic log demand was weakening.

In Canada, consumption rose 11% in 2010 compared with the previous year. Much of the increase was in the western province of British Columbia, where sawmills have been running at high operating rates because of strong exports to Asia and the availability of large volumes of beetle-killed timber. It is estimated that 850 million m<sup>3</sup> of timber have been affected by the mountain pine beetle in the province and that large volumes of lower-grade timber will be available in the next few years. Longer-term, harvest levels will decline as the quality of the timber deteriorates and the province reduces its annual allowable cut.

TABLE 4.4.1

**Roundwood balance in North America 2009-2010**(1,000 m<sup>3</sup>)

	2009	2010	Change %
Removals	450 783	473 116	5.0
Imports	6 898	6 255	-9.3
Exports	13 529	20 136	48.8
Net trade	6 631	13 881	109.3
Apparent consumption	444 152	459 234	3.4

Source: UNECE/FAO TIMBER database, 2011.

**4.4.2 Log exports**

Since 2006, the flow of trade in the Pacific Rim has changed in value, volume and direction. The total value of logs exported from North America to Asia rose from \$790 million in 2006 to almost \$1.2 billion in 2010. The total volume shipped in 2010 to Asia was 10.6 million m<sup>3</sup>, which was over 70% higher than in 2006. A majority of the trade five years ago was Douglas-fir sawlogs shipped from western US to Japan. Although Japan is still an important market for US log exporters, China has become the number one destination for exported logs, surpassing Japan in 2010. In the first quarter of 2011, this trend continued and a record 58% of all Asia-bound logs from the US went to China.

Log exports from the US have been surprisingly stable at approximately 10 million m<sup>3</sup> from 2005 through 2009. However, this changed in 2010 when shipments jumped 52% to 16 million m<sup>3</sup>, of which approximately 60% were softwood logs. Canada for a long time had been the major

destination for exported logs from the US and accounted for approximately 40% of the total shipments in 2009. In 2010, this share fell to about 30% because of the change in demand in Asia.

Canada's log export volumes are much lower than the shipments from the US and reached just over 4 million m<sup>3</sup> in 2010, up 48% from 2009. Although more logs were sent to Asia last year, the US continues to be the most important market for Canadian log exporters.



Source: J. Calkins, 2011.

**4.4.3 Woody biomass markets**

There has been an increased interest in the use of woody biomass for energy in the US from both politicians and energy consumers in the past 5-6 years. This has led to federal and regional policies meant to encourage the use of alternatives to fossil fuels. These new policies, together with high oil and natural gas prices, resulted in both higher demand and higher prices for all forms of biomass during 2007 and 2008.

Prices for woody biomass, whether it was sawmill byproducts, forest residues or urban wood waste, were lower in 2010 than the previous year in most regions throughout the US. This was mainly the result of low prices for fossil fuels, which reduced the interest in switching to more expensive green energy. However, compared with five years ago, biomass prices have increased in most regions of the US. Competition for wood chips and smaller logs between pulp mills, composite board manufacturers and energy producers is likely to push wood costs upward in the coming years.

The EU has set a target to meet at least 20% of its total energy consumption by 2020 from renewable energy sources. In an effort to reach this target, many countries have increased consumption of woody biomass in the form of wood chips and pellets over the past few years. In 2010, over 11 million tonnes of wood pellets were consumed, which was about 7% higher than the previous year.

Demand for wood pellets in some European countries, including Sweden, the Netherlands, Belgium, Italy,

Denmark and the UK, has outpaced domestic production over the past few years. This has resulted not only in increased imports from neighbouring countries but also from North America. Over the past 10 years, Canada has been the major overseas supplier of pellets to Europe, reaching about 1 million tonnes in shipments in 2010. The US did not start exporting pellets until 2008 when 85,000 tonnes were shipped to the Netherlands, but exports have since taken off, reaching almost 600,000 tonnes in 2010. In fact, the total shipments from the US and Canada have almost doubled in just two years.

The majority of North American pellets have been shipped to the Netherlands, the UK and Belgium, with occasional shipments to Sweden and Denmark. In 2010, almost 50% of the Atlantic trade was destined for the Netherlands, while one third went to ports in the UK.

Increased demand for wood chips, sawdust and smaller logs from pellet manufacturers and energy companies has started to have an impact on wood-fibre prices in some markets in both Europe and the North America.

## 4.5 Wood raw material costs

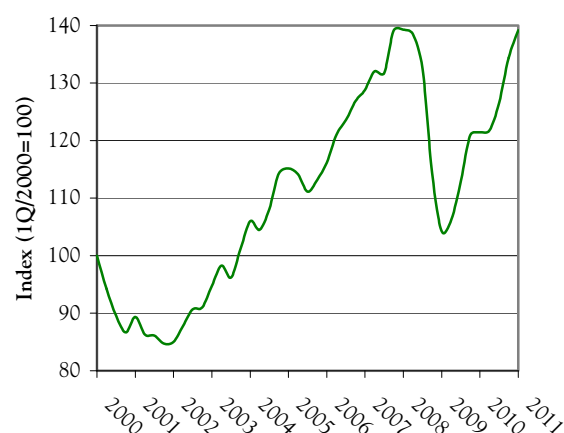
### 4.5.1 Softwood sawlog prices

Higher sawnwood production, increased log trade and a weak US dollar were three factors that pushed sawlog prices up in dollar terms worldwide during 2010 and early 2011. In many regions, prices reached their highest levels in 15 years. The Global Sawlog Price Index (GSPI) increased for the eighth consecutive quarter in the first quarter of 2011 to an all-time-high (\$88.1 per m<sup>3</sup>) (graph 4.5.1). The Index, which is based on prices for logs suitable for processing into construction and better-grade sawnwood, is a weighted average of sawlogs traded on the open market in 19 key regions worldwide. In two years, the index has gone up by 33%, which is substantially more than the increases in global pulpwood price indices.



Source: M. Fonseca, 2011.

GRAPH 4.5.1  
Global softwood sawlog price index, 2000-2011



**Note:** Price Index based on delivered sawlog prices in 19 key regions worldwide.

**Source:** *Wood Resource Quarterly*, Wood Resources International LLC, 2011.

Sawlog prices in 2010 increased throughout the UNECE region. The biggest price increases were in the Nordic countries and eastern Europe, while prices in Canada and the US rose somewhat less (graphs 4.5.2 and 4.5.3). The only region that currently has lower log prices than two years ago is the US South, where prices have fallen 3% since early 2009.

Sawmills in North America, Latin America and Oceania generally have lower costs for wood raw material than sawmills in Europe and Japan. The lowest sawlog prices in 2010 were in western Canada, Chile and northwest Russia, while Austria, Germany, Japan and China stand out as the high-cost countries of the world. These regions have been at the high-end of the price spectrum ever since the publication *Wood Resource Quarterly* started tracking sawlog prices in 1995.

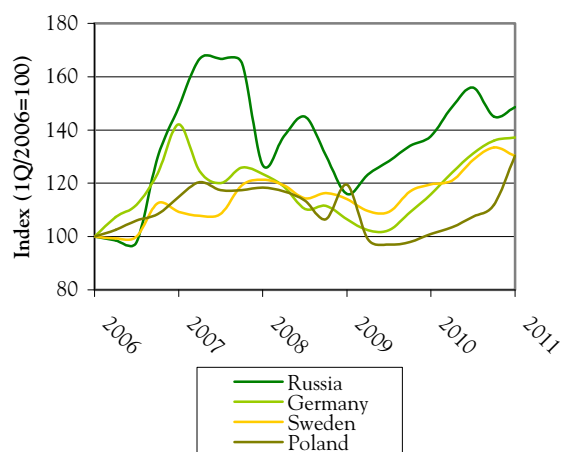
With higher raw material prices and declining sawnwood prices throughout Europe in 2011, profitability for many sawmills has been squeezed and, as a result, operating rates declined during spring and early summer.

Russian sawlog prices also began to climb during 2010 to reach their highest levels in over two years. In Siberia, conifer sawlog prices rose sharply because of forest fires that led to a shortage of logs. Sawmills in Siberia have had higher log costs than mills in the northwest provinces of Russia for over two years, and the price discrepancy is currently the highest in 10 years.

Forest fires in northwest Russia also interrupted the log flow during August and September 2010. However, the severe winds that felled large areas of timber in this area led to a larger available log supply and the overall impact on prices was therefore less than that seen in Siberia.

GRAPH 4.5.2

## Softwood sawlog prices in Europe and Russia, 2006-2011

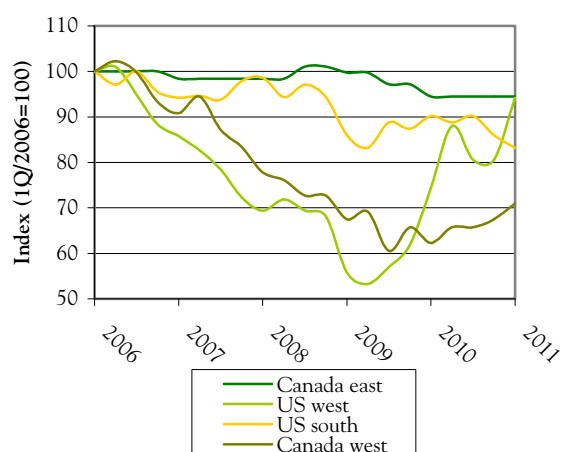


**Note:** Price index based on delivered log price per m<sup>3</sup> in local currency. 2011 figures are only for Jan.-Mar.

**Source:** *Wood Resource Quarterly*, Wood Resources International LLC, 2011.

GRAPH 4.5.3

## Softwood sawlog prices in North America, 2006-2011



**Note:** Price index based on delivered log price per m<sup>3</sup> in local currency.

**Source:** *Wood Resource Quarterly*, Wood Resources International LLC, 2011.

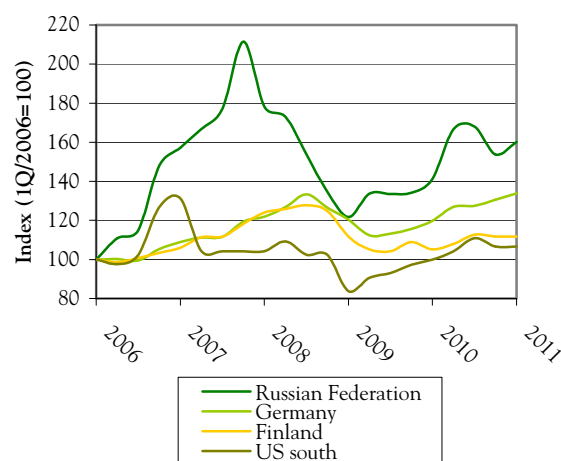
## 4.5.2 Pulpwood prices

The cost of manufacturing pulp has trended upwards in most regions of the world in the past two years. Much of the increase has been the result of higher wood-fibre costs which, depending on pulp grade and region, currently vary between 48% and 72% of the total variable production costs, according to Fisher International. The cost of wood is the cost component that often decides a pulp mill's competitive advantage in the global market place. Wood-fibre costs (in US dollar terms) have gone up because of high fibre demand due to strong pulp markets, tight supplies of sawmill co-products and a weakening US dollar against most other currencies.

The Softwood Wood Fibre Price Index (SFPI) increased 1.9% in the first quarter of 2011, reaching \$105.60 per oven-dry metric tonne, the highest since the third quarter of 2008, just before the financial crisis. This Index is a weighted average of delivered wood-fibre prices for the pulp industry in all regions tracked by *Wood Resource Quarterly*. These regions together account for 85%-90% of the world's wood-based pulp production capacity. Western Canada, western US and a number of countries in Europe saw the biggest softwood fibre price increases during 2010 and early 2011, while there were only modest price changes in the US South and in eastern Canada (graphs 4.5.4 and 4.5.5).

GRAPH 4.5.4

## Softwood pulplow prices in Europe and North America, 2006-2011



**Note:** Price index based on delivered log price per oven-dry metric tons in local currency.

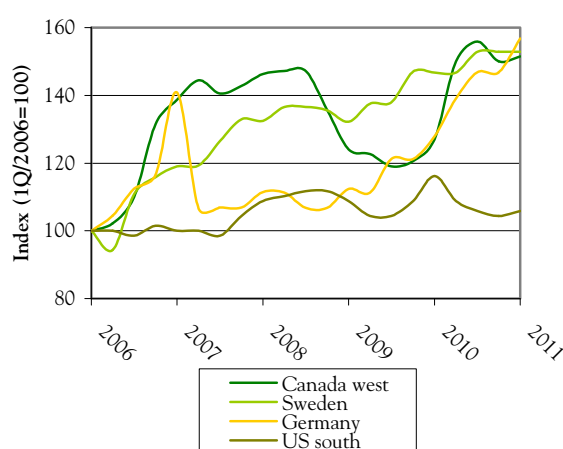
**Source:** *Wood Resource Quarterly*, Wood Resources International LLC, 2011.



Violent storms, flooding and wildfires resulted in reduced pulp production in the US South during 2011. These temporary reductions in fibre demand cancelled out reductions in fibre production, which occurred as a result of the natural disasters. While salvaging is difficult and costly, the sheer volume of wood that is under pressure to be brought to consumers before it deteriorates will bring a surge of supply to the market.

GRAPH 4.5.5

#### Softwood wood chip prices in Europe and North America, 2006-2011



**Note:** Price index based on delivered wood chip price per oven-dry metric tonne, in local currency.

**Source:** *Wood Resource Quarterly*, Wood Resources International LLC, 2011.

The Hardwood Wood Fibre Price Index (HFPI) also was up 1.9% from the fourth quarter of 2010, and is now close to an all-time high of \$110.33. Fibre prices were up in many of the same markets as those for softwood fibre, with the highest increases in Europe, Australia and Chile, and only small upward price adjustments in Canada and the Russian Federation. Hardwood fibre costs even declined in the US South. Both the SFPI and HFPI were almost 20% higher than two years ago.

Since the launching of the wood-fibre indices in *Wood Resource Quarterly* in 1988, the softwood price index has been higher than the hardwood price index. This relationship was inverted in late 2008, and the hardwood price index is now 4.5% higher than the softwood price index. In the short-term this margin may narrow, but will likely widen again by 2013-2014.

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## 5 *Sawn Softwood Markets, 2010-2011*

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### Highlights

- In line with the general global economic recovery, 2010 was characterized by increases in consumption of sawn softwood in most UNECE subregions with the main exception being the CIS subregion, which was unchanged. Consumption in North America and Europe increased by 8.8% and 12.6%, respectively.
  - The European softwood sawmilling industry also developed positively in terms of production volumes, prices and demand in 2010 and early 2011, resulting in moderate optimism among industry players for 2011.
  - Financing remains the dominant challenge for the sawmilling industry in Europe, as European raw material markets drive up log prices that are impacting profitability in several countries, especially in central Europe.
  - The high cost structure of many European sawmills, compared to other parts of the world, coupled with unfavourable currency exchange rates, is eroding their international competitiveness in export markets. Conversely, Canadian and US sawmills have increased exports to offshore markets due to low costs and favourable currency exchange rates.
  - In 2010, Russian export volumes increased by 8.2% compared with 2009, as business conditions in export markets improved after the global financial crisis.
  - North American consumption improved in 2010, by 8.8% to 72.7 million m<sup>3</sup>, driven by a modest turnaround in US housing, improved repair and remodelling activity, and a strong rebound in the market for building materials in Canada.
  - Exports in 2010 accounted for almost one third of the 8.5 million m<sup>3</sup> production increase of North American sawnwood, led by exports to China, which were 80% higher than in 2009, having increased by 2.1 million m<sup>3</sup>.
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## 5.1 Introduction

Since its first session over 60 years ago, when sawnwood was rationed after the Second World War, the UNECE Timber Committee has closely followed market developments as an indicator of general market health. Unfortunately, in mid-2011 the sector is still suffering somewhat from the global economic and financial crisis of 2008-2009. Nevertheless, it seems that the corner has been turned in some markets and other markets should continue to improve, along with the key demand determinant, housing construction and its multipliers.

In line with the general global economic recovery, 2010 was characterized by increases in consumption of sawn softwood in most UNECE subregions with the main exception being the Commonwealth of Independent States (CIS). A recovery in sawn softwood consumption occurred in most UNECE subregions (table 5.1.1 and graph 5.1.1), with consumption in North America and Europe increasing by 8.8% and 12.6% (although consumption in the CIS remained the same as in 2009). The recovery was replicated in both production and trade, with increases in production of 11.8% in North America, 9.1% in Europe and 4.2% in the CIS. Against the background of often significant losses from investment projects over the last few years, refinancing and recapitalization remain the predominant challenges for the sawmilling sector. While demand and prices continued to pick up in the first half of 2011, soaring raw material costs posed a threat to sawmill profitability in several parts of Europe, as well as the US west coast. The analysis of the drivers behind these trends is described in the following sections.

Following earlier steep declines in demand for sawn softwood in North America and Europe, mills responded positively to increased demand in 2010, but had to match production to fragile consumption in most markets.

TABLE 5.1.1

Apparent consumption of sawn softwood in the UNECE region (1,000 m<sup>3</sup>)

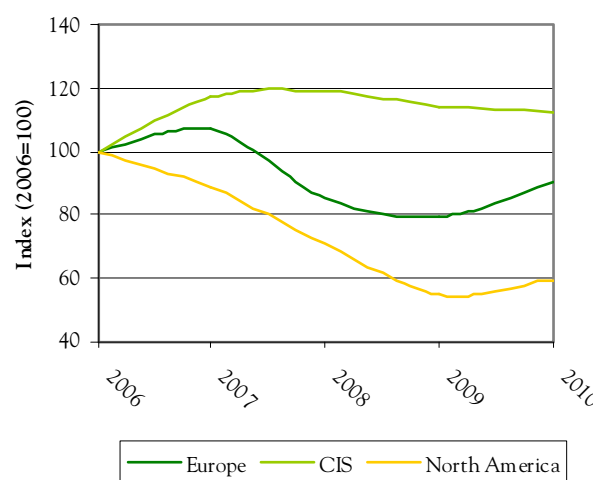
	2006	2007	2008	2009	2010	% Change 2009 to 2010
Europe	101 687	108 832	86 682	78 202	88 089	12.6
CIS	12 117	14 081	13 711	15 561	15 556	0.0
North America	122 210	108 358	86 594	66 774	72 672	8.8
Total	236 013	231 270	186 987	160 537	176 316	9.6

**Note:** CIS apparent consumption represents a secretariat estimate.

**Sources:** UNECE/FAO TIMBER database, 2011.

GRAPH 5.1.1

Consumption of sawn softwood in the UNECE region, 2006-2010



**Sources:** UNECE/FAO TIMBER database, 2011.

In Europe, production increased by 9.1% to 98.9 million m<sup>3</sup>; which compared closely with an 11.8% improvement in North America to 80.1 million m<sup>3</sup>. Increased demand for sawn softwood also increased the demand and prices for logs, which tended to erode sawmill margins. Sawmill earnings in many UNECE countries remained close to zero by the end of 2010 and into 2011, with many mills experiencing small losses. Improved building activity in key markets allowed mills to selectively divert production to the highest margin markets throughout the year. However, mills remained cautious about bringing on-line any new production, as expensive log prices continued to be a major negative force throughout Europe.

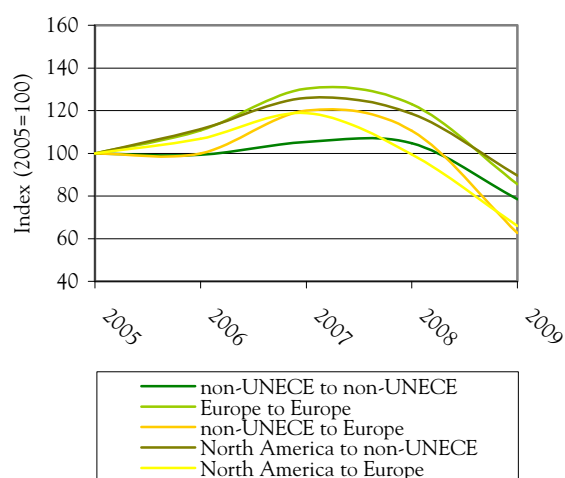
In the CIS, consumption remained unchanged in 2010, as the recovery continued to be slowed by high inflation and interest rates. The ongoing effect of the global market collapse continued to most evident in the CIS, where timber industry workers and communities continued to be impacted particularly hard.

North American mills struggled against uneven consumption and sluggish housing starts. Cost pressures continued to keep mills from adding extra capacity, and curtailments were an ongoing feature in the market. A major bright spot was soaring demand from China, which allowed west coast producers to take advantage of large volume orders and often favourable prices.

Sawn softwood trade flows were all on a downward trend in 2009 (graph 5.1.2). Based on export and import data (without the specifics of regional flows), trade flows in 2010 show a reverse of this trend for many regions, however, these data will not be available until next year.

GRAPH 5.1.2

**Top five international trade flows of sawn softwood by value, 2005-2009**



Sources: UN COMTRADE, 2011.

## 5.2 Europe subregion

After the global financial collapse of 2008-2009 negatively affected European softwood sawmills, 2010 turned out to be a year of recovery for the sector. In line with the global economic rebound, European sawmills enjoyed an improvement in overall market conditions in 2010 and moderate optimism prevails among industry players for 2011. Increased production, however, is modest compared to past volumes. With consumption levels expected to remain well below the peaks of 2006, it is evident that the industry may experience further consolidation.

Recapitalization remains the predominant challenge for the European sawmilling sector. Given the often significant losses from timber-processing investment projects over recent years, banks are hesitant to allocate funds. Private investors also are reluctant to invest in softwood sawmill enterprises due to the weak profit potential and limited exit options. As a consequence, a lack of financial resources hampers the industry's efforts to modernize and innovate.

Financial challenges varied regionally, however, with the Nordic countries showing the fewest constraints. The positive development in this region can be attributed mainly to industry consolidation and because most sawmills and other wood product companies became profitable again in 2010. Favourable sawmill efficiency and higher export prices improved the financial performance of the sector. Swedish sawmills, in particular, have taken advantage of beneficial currency-exchange rates and the availability of lower cost, wind-thrown logs. As a consequence, new investments have been made and

new processing capacity, predominantly in the southern parts of Sweden, has been added. It still remains to be seen whether or not the Swedish sawmill industry will be able to avoid the problems that occurred after the investment boom of 2000-2008 in parts of central Europe, where sawmill capacity now exceeds projected log availability.

In contrast to the Nordic countries, sawmills in central Europe have had to contend with tougher constraints on finance. The main reason is low profitability, resulting from sharply increased log prices that were not offset by higher sawnwood prices. Although prices for sawn softwood were above the historical peaks of 2007 in several markets, they were not high enough to compensate for steep price increases for sawlogs. This has affected sawmills in southern Germany and Austria especially, because newly installed sawmill capacity is exceeding log availability. These newer sawmills have to operate close to their planned capacity to keep their unit costs under control. Thus many sawmills had to secure raw material, almost regardless of the cost, which simply pushed up log prices. Added to this, demand from wood energy plants has continued to climb. This situation of short wood supply is expected to persist for some years. Against this background, sawmills have intensified efforts to achieve greater operational efficiency and have revised their log-sourcing strategy.

With domestic log prices on the rise, many central European players increased their efforts to procure logs from eastern Europe. The cost-efficiency programmes being implemented by many eastern Europe state forest administrations mean that logs are sold increasingly to the highest bidder, which favours buyers from sawmills in central Europe. As a result, it has become more difficult for the (often financially weaker) eastern European players to meet their sawlog needs. This has reduced profitability of most local sawmills so that many mills have been forced to curtail production using measures ranging from shift reductions to temporary, and possibly even permanent, mill closures. Under these circumstances, it has become increasingly difficult to attract direct foreign investment and to finance investments for efficiency improvements. Moreover, the gloomy construction market outlook for many eastern Europe countries, after a period of strong growth, has further reduced foreign new and replacement investments.

While higher raw material prices in some parts of Europe posed a threat to sawmill profitability, the industry continued to benefit from the increased use of wood for energy. Demand for sawmill byproducts, for heat and electricity generation, continued to push up prices and hence income. In addition, strong demand from the

classic customer groups – pulp and paper and wood-based panel industries – further increased the co-product prices.

In 2010, sawn softwood production in Europe recovered significantly, totalling 99 million m<sup>3</sup> (table 5.2.1). Production volumes were 9.1% higher than in 2009 but still 12.4% below the peak in 2007. The rise in production was widespread across the major producer countries. The scale of the increases varied regionally, with Finland (17.5%), the Czech Republic (15.8%) and Austria (13.9%) showing the largest gains. As no significant industry consolidation has yet taken place in central Europe, the production output of many companies is still approximately 10-15% less than before the crisis.

TABLE 5.2.1

**Sawn softwood balance in Europe, 2009-2010**  
(1,000 m<sup>3</sup>)

	2009	2010	% Change 2009-2010
Production	90 719	98 950	+9.1
Imports	33 250	33 924	+2.0
Exports	45 767	44 785	-2.1
Net Trade	12 517	10 860	-13.2
Apparent consumption	78 202	88 089	+12.6

**Source:** UNECE/FAO TIMBER database, 2011.

The upward trend in production was reflected in sawn softwood consumption in Europe and due to decreased net exports consumption was higher than production. However, countries that before 2007 had had high levels of construction, i.e. Ireland, the Netherlands and Spain, lagged behind. And Italy and Portugal, which were severely affected by the financial turmoil, were not able to follow the growth path they had been on before the crisis.

With an increase of 12.6% to 88.1 million m<sup>3</sup> in 2010, consumption in Europe outpaced production. Demand from the second most important softwood consuming sector, packaging (using sawn softwood for the production of crating and pallets), has been recovering strongly, in line with the economic rebound and increasing transport volumes.

However, as the largest consumer of sawn softwood, the construction sector still gives cause for concern in many countries. Without a Europe-wide recovery in that sector, a substantial recovery in consumption seems unlikely.

In line with the recovery of domestic demand, European sawmill companies have been trying to build up export markets based on their pre-crisis export success. Given the higher regional labour and log prices, however, the European sawn softwood sector in general has a high

cost structure compared with its competitors in other parts of the world. Consequently, European producers will need to improve their international competitiveness in export markets.

European shippers have been trying to diversify their products to markets other than the US and Japan, which had been the most important export destinations for many years. Since 2007, North Africa and the Middle East have become major export destinations for European shippers. Their importance intensified further in 2010 with 9.6 million m<sup>3</sup> sold in those regions. However, with the current political instability in North Africa, demand (at least in some countries such as Tunisia and Libya) has nearly collapsed, whereas the largest market in the region, Egypt, has not been greatly affected. It still remains to be seen how the political crises in those countries will affect demand and export opportunities for European sawn softwood producers.



**Source:** Finnish Forest Industries, 2011.

European exports to the US have followed a downward path since 2006 and continued to fall in 2010 (US Department of Agriculture, 2010). With just about 195,000 m<sup>3</sup> shipped to the US in 2010, this market has lost the relevance it once had for European exporters. US imports of European sawn softwood increased by more than 28% in the first quarter of 2011 over the previous year. It is still doubtful that the US market will regain its significance for European shippers in the medium-term. The current housing glut, corresponding lack of demand and unfavourable currency-exchange rates make it likely that European sawmills will continue to concentrate on building export markets in other countries.

After stagnating at low levels in 2008 and 2009, Japan's sawn softwood imports from Europe increased in 2010. Shipped volumes grew almost 12%, to 2.3 million m<sup>3</sup>, but

lagged significantly behind 2003-2007. Austria, in particular, increased its export volumes to the Japan by 42%, totalling almost 248,000 m<sup>3</sup> in 2010. The trend towards diversifying Japan's supplier base continued, with the major exporting countries (Sweden, Finland and Austria) accounting for only 73% of all Japanese imports from Europe, down from a peak of 94% in 1998. It remains to be seen if reconstruction efforts after the tsunami will lead to larger imports of sawn softwood from Europe and begin to offset the resulting collapse in demand.

Sweden retained its position as the leading European exporter, even though 2010 exports fell to 11.4 million m<sup>3</sup>. The exporters did not succeed in maintaining export volumes owing to the appreciation of the Swedish krona and the lack of lower cost, wind-thrown logs compared with previous years. Germany and Austria retained their positions as the second and third largest exporters. Whereas Germany saw a strong decline in exports for the second year in a row (-23.5% in 2009 and -29.3% in 2010), Austria's exports increased by 6.2% in 2010, to reach 6.0 million m<sup>3</sup>.

Although many regions in central Europe might hope to secure future growth in markets such as China, such markets are currently out of reach for most producers. Competition with producers from North America and Oceania is fierce, and despite a beneficial shift towards the use of high-quality sawnwood for structural applications, demand seems limited.

Despite the current sluggish demand, the main focus for sawmills in central Europe, for the foreseeable future, is likely to be on their domestic markets. An increasing number of sawmills are trying to capture future growth by diversifying outside their primary product range, e.g. moving into cross-laminated timber (CLT), finger-jointed construction sawnwood, wood-fibre insulation materials and second-generation modified wood products as can also be seen in Chapter 13 Value Added Wood Products. Financing the corresponding investment for these products, however, will be challenging.

### 5.3 CIS subregion, focusing on the Russian Federation

Apparent sawn softwood consumption in the Commonwealth of Independent States (CIS) was unchanged in 2010, after having fallen by 13.5% in 2009<sup>15</sup> (table 5.3.1). The decline in consumption in 2010

was much smaller at 2.8%, a reflection perhaps that the Russian economy benefited from rising oil and gas prices. However, construction lagged behind overall economic growth and did not reach pre-crisis levels, as residential construction, in particular, remained below its earlier peak. In addition, timber-frame housing as a share of total individual housing declined slightly, the result of competition from brick and other materials such as foam concrete and polystyrene foam shuttering.

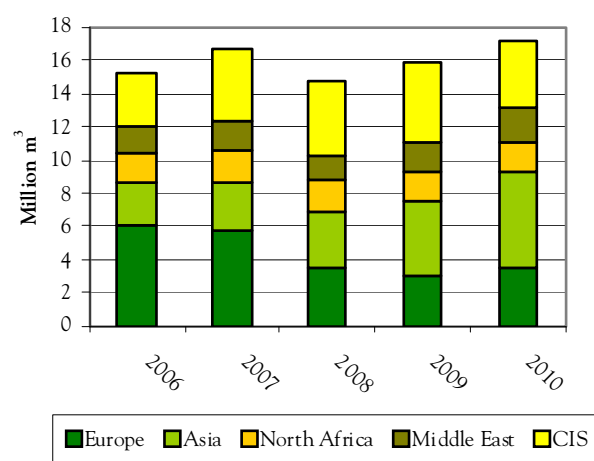
TABLE 5.3.1  
Sawn softwood balance in the CIS, 2009-2010  
(1,000 m<sup>3</sup>)

	2009	2010	% Change
Production	29 479	30 718	+4.20
Imports	3 054	3 110	+1.83
Exports	16 972	18 273	+7.66
Net Trade	13 918	15 163	+8.94
Apparent consumption	15 561	15 556	-0.04

Source: UNECE/FAO TIMBER database, 2011.

In spite of flat consumption, export volumes improved by 7.7%, which lifted production by an identical figure (7.7%). Asia has become the main destination for Russian exports, largely driven by China, though CIS countries continue to be an important export market (graph 5.31).

GRAPH 5.3.1  
Main regional destinations for Russian Federation exports,  
2006-2010



Sources: Pöyry, 2011.

<sup>15</sup> The official data for Russian sawn softwood production seem to underestimate actual production. Using these official data would have resulted in negative apparent consumption for the Russian Federation. Therefore, following the practice adopted in the 2009-2010 Review (page 58), the secretariat has estimated sawn softwood consumption based on the annual percentage change in Russian residential construction. Using 2004 as the base year, production data have been estimated to match increased consumption. The secretariat will work to

resolve these differences but will continue to use this approach, until the underlying cause of these data discrepancies is better understood.

Continuing Chinese direct investment in Russian sawmilling capacity has also fuelled export activities towards China. In general, the focus of investment has clearly shifted from western Russia towards Siberia and the Far East in recent years. However, it still remains to be seen if those Chinese investments will continue to grow steadily if the Russian Federation's WTO entry should finally be agreed and if the export duties on Russian logs are lowered. In that case, the incentives for Chinese investors of importing sawnwood in place of logs would be minimized, and urgently needed funds for a modernization of the Russian industry sector would be withdrawn.

An unreliable regulatory framework, together with conditions that inhibit rather than stimulate investment, could hinder the CIS from modernizing its forest industry. Although the Russian Federation has almost 20% of global growing stock, it continues to produce only 3%-4% of all manufactured wood products globally. Due to the uncertainties related to forest law, institutional reform and duty policies, foreign investments in sawmilling capacities have been further postponed. Consequently, the Russian sawmill industry is still characterized by local single-mill companies producing mainly with old assets. This is coupled with difficulties in funding and a lack of by-product markets that often prevents sawmills from being profitable.

The Russian industry, therefore, remains highly fragmented with the 10 most important export-oriented companies accounting for approximately 10% of the total production volume. Although high merger and acquisition activity is expected in the mid-term, modernization of the sawmilling industry will be further delayed as long as the regulatory framework does not improve significantly.

## 5.4 North America

Following four years of contracting consumption, the North American market reversed course in 2010 and experienced an 8.8% increase to 72.7 million m<sup>3</sup>, still well below the 2005 record of 128.7 million m<sup>3</sup>. Contributing to the lift in consumption was a modest turnaround in the US housing market coupled with higher demand from the residential repair and remodelling market.

While housing starts in 2010 rose 5.6% over 2009 levels to 585,000 units, they remain well below the estimated underlying longer term demand of 1.5-1.6 million units and continue to hold back recovery in North American sawn softwood production and consumption (US Census Bureau). As a direct result of the collapse in the house-building sector, residential repair and remodelling has overtaken residential

construction as the number one end use segment of sawn softwood, accounting for 40% of consumption in 2010 versus less than 30% in 2005. The share of residential construction over the same period dropped from 44% to 20%.

Fortunately for North American producers, increases in exports caused net trade (i.e. exports minus imports) to soar by 53.6% (or 2.6 million m<sup>3</sup>) which along with improved domestic consumption, enabled sawmills to increase production in 2010 by 8.5 million m<sup>3</sup> (+11.8%) to 80.1 million m<sup>3</sup> (table 5.4.1).

TABLE 5.4.1

**Sawn softwood balance in North America, 2009-2010**  
(1,000 m<sup>3</sup>)

	2009	2010	% Change
Production	71 583	80 057	11.8
Imports	15 577	16 897	8.5
Exports	20 385	24 283	19.1
Net Trade	4 808	7 386	53.6
Apparent consumption	66 774	72 672	8.8

Sources: UNECE/FAO TIMBER database, 2011.

Despite negligible demand for new housing, US apparent consumption improved somewhat in 2010, rising to 55.8 million m<sup>3</sup> – up 5.9 million m<sup>3</sup> or 7.0% from 2009. Canadian consumption also improved, climbing to 16.8 million m<sup>3</sup> (or an increase of 20.0%). In addition to the resurgence in domestic consumption, Canadian producers were aggressively pursuing export opportunities in China, Japan, the Middle East and other Asian and Oceanic markets to offset the impact of lower exports to the US.

Builders faced strong competition from the glut of unsold properties. Vacancies, foreclosures, and short sales kept adding supply to an already oversupplied housing market, creating a growing discount in the sales price of existing homes. US existing house prices are still falling in many large regional markets, and it seems unlikely that there will be an end to this turmoil soon given that, in the first three months of 2011, 22.7% of US mortgage holders had negative equity, only slightly better than the 23.1% in the same period of 2010 (Corelogic, 2011).

Record mortgage foreclosures through mid-2011 and further declines in existing home sales confirm that it is likely to take much longer before the US housing market improves (see chapter 2, Sect. 2.2 for more information).

There was a strong surge in North American sawnwood prices from January to April 2010 because of low stocks in the supply chain (graph 5.4.1). However, by June 2010, the market had become oversupplied and prices had returned to the weak levels seen in the second and third quarters of 2009. Many producers in British

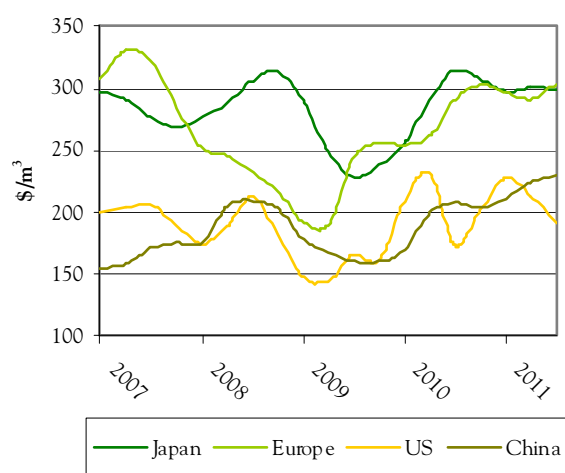


Columbia as well as the US West increased their shipments to the expanding market in China, alleviating some of the supply pressure and enabling North American sawnwood prices to trend higher, achieving more sustainable (and realistic) price levels during the earlier part of 2010. However, with China's rapidly rising demand for logs, producers along the west coast of North America have seen log prices rising faster than sawnwood prices, forcing some producers to take intermittent downtime.

A similar market development occurred in the first quarter of 2011 when prices improved and then collapsed by the second quarter to near break-even levels. Prices are expected to trade within this lower range for much of the rest of 2011 (WOOD Markets Monthly 2011).

GRAPH 5.4.1

#### Sawn softwood quarterly price trends in Japan, Europe, US and China, 2007-2011



**Notes:** JAPAN: BC W-SPF 2x4, J-Grade, C&F. EUROPE: Swedish Spruce 47x100mm, C&F. US: BC W-SPF #2&Btr, 2x4 delivered to Chicago. CHINA: SPF/Hem-Fir, Green, #3&Btr 1-7/8x4-12 C&F.

**Sources:** Wood Markets Monthly Newsletter, 2011.

US sawn softwood output in 2010 was 42.3 million m<sup>3</sup> up from 39.6 million m<sup>3</sup> in 2009, with production gains in the west (+6.2%) slightly outpacing the south (+4.0%). While US exports represent a minor part of total production (5.7%), exports in 2010 increased by 703,000 m<sup>3</sup> to 2.4 million m<sup>3</sup> (+41.0%) as US producers took advantage of a weaker dollar and rising demand in markets such as China, the Middle East, and Southeast Asia, as well as steady demand in neighbouring Canada and Mexico.

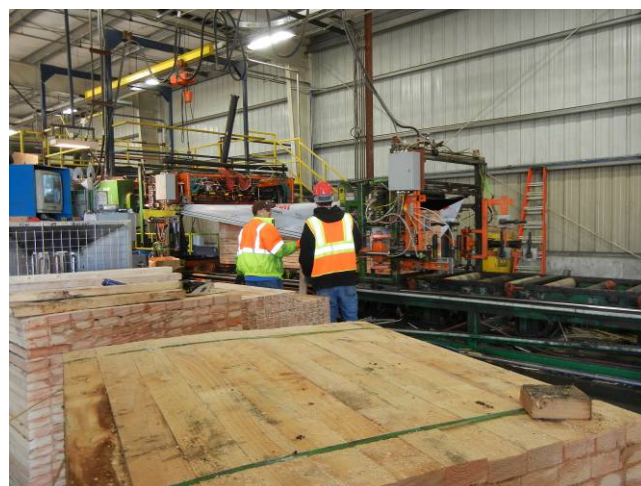
Canada remained the largest export market for the US (31.2% export share) followed by Mexico (14.0%), Japan (13.2%), Central America and the Caribbean (12.8%), and China and Hong Kong combined (11.8%).

Of note, exports to China/Hong Kong SAR in 2010 were 211,000 m<sup>3</sup> (almost triple the volume of 2009) and, based on data for the first quarter of 2011, are projected to leap to over 1 million m<sup>3</sup> in 2011, overtaking Canada to become the largest export market for US producers.

Canada's sawn softwood output in 2010 rose to 37.7 million m<sup>3</sup> from 32.0 million m<sup>3</sup> (+17.8%) in 2009 but was still well below the 2004 peak of 62.2 million m<sup>3</sup>.

Export opportunities and proactive efforts to process dead standing beetle-killed timber, mainly in the province of British Columbia (BC) but also in Alberta, enabled western Canada to increase its production at a faster rate than eastern Canada (13.4% and 12.3% respectively). For geographical and logistical reasons, eastern Canadian mills have focused on exporting to Europe and the Middle East, rather than Asia.

Another constraint for Quebec producers has been the provincial reductions in the Quebec harvest with further reductions being scheduled for 2012 or 2013 (WOOD Markets Monthly, 2011). Canadian exports to the US rose by 1.1 million m<sup>3</sup> (9%) in 2010 to 13.2 million m<sup>3</sup> (WOOD Markets Monthly, 2011). Most notable has been the rocketing rise in Canadian sawn softwood exports to China (almost exclusively from British Columbia), which exceeded 4.0 million m<sup>3</sup> in 2010 compared with 2.4 million m<sup>3</sup> in 2009. This represents more than 17% of the province's total output. In the first five months of 2011, exports were already 85% higher than in the same period in 2010 (The China Bulletin, 2011).



**Source:** M. Fonseca, 2011.

For the North American market, China's appetite for logs and sawnwood has become a new wildcard, along with currency and freight rates, and has the potential to influence the supply demand balance in North America and other global markets in 2011 and beyond.

British Columbia's interior region continued to salvage timber from trees killed by the mountain pine beetle by focusing its harvesting on the dead pine stands.

The result is that lodgepole pine timber's share of the overall harvest has increased from 40% to 60% and is higher still in some of the more severely attacked regions. Latest estimates indicate that more than 750 million m<sup>3</sup> of lodgepole pine trees covering over 17.5 million hectares have been killed, and by 2018 the figure could reach up to one billion m<sup>3</sup>, affecting about one-third of the total area of the British Columbia's interior region timber harvesting land base (BC Ministry of Forests, 2011).

Under the US-Canada Softwood Lumber Agreement (SLA) signed in 2006, Canadian exporters to the US continued to face an export duty that has remained at its maximum level since early 2007 (15% in British Columbia and Alberta, and 5% in the rest of Canada). However, for two months in the second quarter of 2010, lower export taxes were assessed when sawnwood prices exceeded the threshold minimum of US\$355 per thousand board feet. The rate is higher when market prices are lower and zero once price thresholds are exceeded.

In accordance with the January 2011 ruling by the London Court of International Arbitrations (LCIA) that certain assistance programmes put into place by Quebec and Ontario breached Canada's obligations under the SLA, the Canadian Government imposed additional 2.6% and 0.1% export charges for Quebec and Ontario, respectively, as from March 2011. In combination with a separate 10% tax penalty imposed in 2007, this brings Quebec's export tax to 17.6%, the highest in the country. The first temporary tax of 10% was due to expire around 1 July 2011; however the 2.6% (and 0.1%) tax will continue until the Government has collected US\$59.4 million. The SLA is set to expire in October 2013, with an option to renew to October 2015.

Another arbitration case currently before the LCIA involves the US Government's claim that the British Columbia Provincial Government underpriced stumpage (the harvesting rights to Crown timber) on large volumes of mountain pine beetle-attacked and killed timber that had been harvested in British Columbia. A final ruling by the LCIA is not expected until early 2012.

As part of the SLA, the US and Canadian governments have agreed to establish a fund through the Binational Softwood Lumber Council (BSLC) that is intended to promote the virtues of using sawn softwood products over steel, concrete, plastics and composites.

In June 2011, North American producers and offshore importers that were on record as supplying 15 million board feet (about 25,000 m<sup>3</sup>) or more into the US market; will now pay a levy of US\$0.35/ thousand board feet. The funds will support an effective and sustained marketing campaign targeting the residential and non-

residential building markets within North America. According to the BSLC timeline, any promotion programme is not expected to start until the third quarter of 2012.

The outlook for 2011 is for lacklustre North American sawn softwood consumption, as the US and the rest of the world emerge from the global recession. There is still strong evidence of excessive domestic sawmill capacity being available, with US sawnwood prices remaining depressed and too many mills chasing too little demand.

With the US housing market expected to make only a modest recovery for the rest of 2011 and in 2012, prospects remain challenging for domestic producers and offshore imports. A return to more normal market conditions and business is unlikely until after 2012.

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## 6 Sawn hardwood markets, 2010-2011

*Lead Author, Rupert Oliver*

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### Highlights

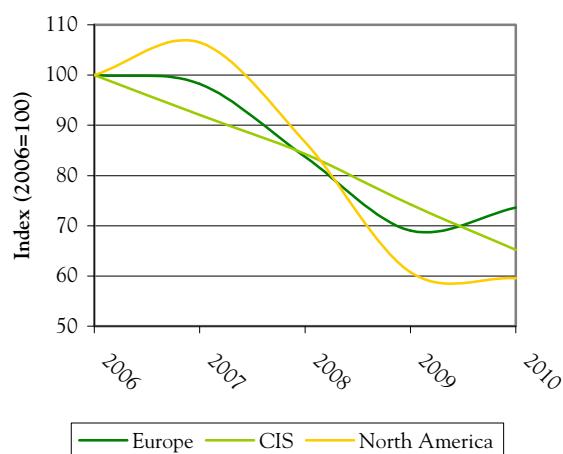
- The sawn hardwood industry took its first tentative steps towards recovery in 2010, as overall production across the UNECE region increased by 3.3% to 33.2 million m<sup>3</sup>: production was constrained by permanent loss of processing capacity and low levels of harvesting.
  - After several years of turmoil, the supply and demand for sawn hardwood in the UNECE region are now finely balanced, and prices are showing stability.
  - Consumption of sawn hardwood across the UNECE region increased by 0.7% to 31.7 million m<sup>3</sup> in 2010.
  - European production of sawn hardwood increased by 9.4% to 13.2 million m<sup>3</sup> in 2010, with production rising notably in Croatia, Germany and Turkey.
  - After falling to its lowest level in 2009, sawn hardwood consumption in Europe rebounded by 6.7% in 2010, with higher consumption in central and northern Europe but continuing low consumption in the southern and western periphery of Europe.
  - Oak consolidated its dominant market position in the European flooring and joinery sectors, as tropical hardwoods continued to lose market share, due to limited availability and the development of innovative new products for external applications.
  - Over the past decade, US hardwood harvests have fallen steadily, driven by lower consumption and a major reduction in the number of logging professionals.
  - Sawn hardwood production in North America, which stabilized at a low level of 17.3 million m<sup>3</sup> in 2010, was hampered by low logging levels in 2009-2010 due to harsh winter weather but benefited from an improved US housing market in the first half of the year and rising exports, particularly to Asia, in the second half of the year.
  - Sawn hardwood exports from the CIS rose by 45% in 2010 to 927,000 m<sup>3</sup>, primarily due to a rise in exports to China. However this only partly offsets a big decline in exports of oak logs from the Russian Federation to China.
  - Globalization in the furniture sector combined with weakness in the construction and housing sectors has led to a decline in demand for appearance-grade sawn hardwood within the UNECE region and increasing exports of these grades to other markets, particularly China.
  - The US Lacey Act Amendment and the European Union Timber Regulation place new obligations on suppliers to demonstrate “low risk” status with respect to illegal logging, which should benefit hardwood supplies in regions where there is strong evidence of good forest governance.
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## 6.1 Introduction

In line with developments in the broader economy during 2010, there was slow recovery from the dramatic downturn in the sawn hardwood industry reported in the 2008-2009 and 2009-2010 *Reviews*. Total apparent consumption of sawn hardwood across the UNECE region rose by 0.7% from 2009 (to reach 31.7 million m<sup>3</sup>) in 2010 (graph 6.1.1). This follows a 24.3% fall between 2008 and 2009. Overall production of sawn hardwood across the UNECE region amounted to 33.2 million m<sup>3</sup> in 2010, an increase of 3.3% over 2009. This follows a 22.9% decrease in 2009 over 2008.

GRAPH 6.1.1

Consumption of sawn hardwood in the UNECE region, 2006-2010



Source: UNECE/FAO TIMBER database, 2011.

While this chapter concentrates on events in the UNECE region, it is important to highlight that the long-term future of global sawn hardwood markets is becoming more dependent on events outside the region. China's role in the international hardwood trade is particularly critical. China's imports of temperate hardwood logs fell from a peak of 5.6 million m<sup>3</sup> in 2007 to under 1.7 million m<sup>3</sup> in 2009 (graph 6.1.2). This large downturn was primarily due to a significant fall in imports from Russia following the Russian government's imposition of high log export taxes designed to boost the domestic processing industry. The decline affected China's imports of birch logs for commodities other than sawnwood, notably plywood, and of oak logs for sawnwood and veneer. Russian exports of oak logs to China declined from 827,000 m<sup>3</sup> in 2008 to only 198,000 m<sup>3</sup> in 2009 and 145,000 m<sup>3</sup> in 2010. Export of Russian oak logs to China has remained at negligible levels in 2011.

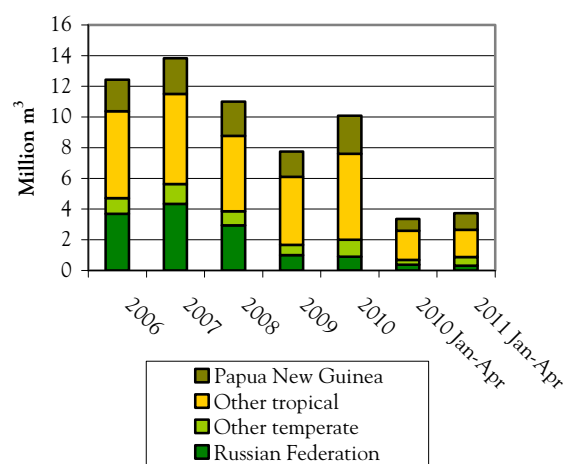


Source: H. Wilkins, 2011.

China's imports of higher-value logs from Europe and North America, for the manufacture of appearance-grade veneer and sawnwood, fell slightly in 2008 and 2009 during the economic downturn, but rebounded dramatically in 2010 to reach 1.1 million m<sup>3</sup>. This upward trend has continued into 2011, when imports by China from European and North America may well exceed 1.4 million m<sup>3</sup>, helping to offset a fall in imports of Russian oak logs.

GRAPH 6.1.2

Chinese imports of hardwood logs, 2006-2011

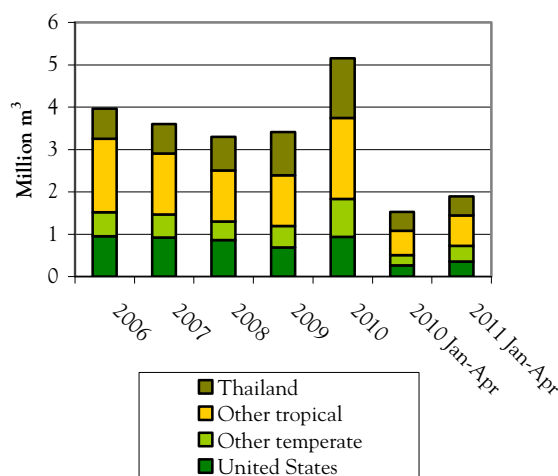


Source: Global Trade Atlas, 2011.

Despite importing large volumes of temperate hardwood sawlogs and veneer logs, China has become more reliant on imported sawn timber (graph 6.1.3). China's imports of sawn temperate hardwood declined modestly between 2007 and 2009 (from 1.5 million m<sup>3</sup> to 1.2 million m<sup>3</sup>), but have rebounded strongly in 2010 and 2011. During 2011, China's imports of temperate sawn hardwood are projected to exceed 2 million m<sup>3</sup> for the first time, with over 1 million m<sup>3</sup> coming from the United States.

GRAPH 6.1.3

## Chinese imports of sawn hardwood, 2006-2011



Source: Global Trade Atlas, 2011.

The combination of strong economic and construction growth in China and emerging markets, coupled with a tightening in supplies of Russian and tropical hardwood logs, are creating significant new opportunities for other hardwood producers within the UNECE region. Long-term, there is likely to be continuing strong demand for North American and European hardwood logs in China and Viet Nam, but also rising demand for sawn temperate hardwood in China, South East Asia and Latin America. These opportunities are all the more welcome, given signs of only slow recovery in the traditional markets of Europe and North America.

## 6.2 Europe subregion

### 6.2.1 Market developments in 2009-2010

Sawn hardwood production in Europe was 13.2 million m<sup>3</sup> in 2010, 9.4% higher than 2009 (table 6.2.1). The recovery in 2010 still leaves production well below the levels prior to the economic downturn. There were significant gains in production in Turkey (+8.8%), Germany (+6.6%) and Croatia (+5.6%) (table 6.2.2).

Despite the gains, sawn hardwood production in Europe continued to be constrained in 2010 by the global economic crisis which led to restrictions in the number of shifts and further company closures (EOS, 2010). Production was also hampered by limited log harvesting in the 2009-2010 winter season due to harsh weather and forest owners delaying timber sales awaiting better prices. Lack of credit also constrained many mills from buying logs at that time (EUWID, 2010a, 2010b, 2010c).

TABLE 6.2.1

Sawn hardwood balance in Europe, 2009-2010  
(1000 m<sup>3</sup>)

	2009	2010	Change %
Production	12 061	13 191	9.4
Imports	5 155	5 759	11.7
Exports	4 682	5 573	19.1
Net trade	-474	-186	
Apparent consumption	12 535	13 376	6.7
of which: EU27			
Production	8 578	9 494	10.7
Imports	4 690	5 254	12.0
Exports	3 835	4 536	18.3
Net trade	-854	-718	
Apparent consumption	9 432	10 211	8.3

Source: UNECE/FAO TIMBER database, 2011.

An underlying lack of consumption meant that there were no major log shortages in France and Germany in 2010. Supplies of beech logs were generally adequate throughout the year but there was pressure on supplies of oak logs, particularly with rising demand in export markets, notably from China. Oak supply problems eased in mid 2010, as a result of increased harvesting, extending from late winter 2009 to early summer 2010. However, severe weather in November and December, 2010 led to renewed concerns about log supply and reduced production in the closing weeks of the year (EUWID, 2011b).

TABLE 6.2.2

Production of sawn hardwood in Europe, 2009-2010  
(1000 m<sup>3</sup>)

	2009	2010	Change %
Europe	12 061	13 191	9.4
of which:			
Turkey	2 076	2 259	8.8
Romania	1 700	1 750	2.9
France	1 423	1 445	1.5
Germany	1 116	1 190	6.6
Slovakia	649	649	0.0
Croatia	553	584	5.6
EU27	8 578	9 494	10.7

Source: UNECE/FAO TIMBER database, 2011.

Romanian hardwood sawmills operated short shifts throughout 2010, having experienced significant difficulties sourcing logs from public forests (EUWID, 2010a). Limited supply pushed up prices for higher grade Romanian oak logs in 2010, despite low consumption. However, the availability of hardwood logs in Romania improved significantly, with the onset of the new

harvesting season in the closing months of 2010 (EUWID, 2010d).

Sawn hardwood production in Turkey, having fallen significantly between 2007 and 2008, stabilized at around 2.1 million m<sup>3</sup> in 2009 and rebounded to 2.3 million m<sup>3</sup> in 2010. This made Turkey the largest producer of sawn hardwood in Europe in 2010. Most of Turkey's production from low grade domestic timber, as well as small-dimension plantation logs, is destined for the pallet and packaging industry, with only a small proportion for export.

Patchy signs of recovery in sawn hardwood consumption in Europe emerged in 2010. Total apparent consumption in Europe increased by 6.7% during the year, significant gains being made in France, Germany, Sweden and Turkey. However consumption remained at historically low levels in many European markets, notably Italy, Portugal and Spain, and due to continuing low demand in the cabinet, furniture and parquet industries.

Sawn hardwood imports by the EU-27 group of countries fell to their lowest level in the last quarter of 2009 and then increased steadily throughout 2010. Over recent years, temperate supplying countries including Croatia, Ukraine and the United States have generally increased their share of the European sawn hardwood market, at the expense of tropical countries. This is partly explained by risk adversity and heavier emphasis on short lead-times during the recessionary period, and partly by the strong fashion for oak.

The European Federation of Parquet producers (FEP)<sup>16</sup> reported a 4.1% increase in European parquet flooring production during 2010 to 70.3 million m<sup>2</sup> (FEP, 2011). Despite the increase in 2010, production was 30% below the peak level of 100 million m<sup>2</sup> recorded in 2007. Between 2009 and 2010, significant gains in flooring production in Germany, Scandinavia and eastern Europe were offset by falling production in Belgium and Spain. Parquet flooring consumption in the FEP area during 2010 increased at a faster rate than production, by 6.8% to 92.9 million m<sup>2</sup>.

Oak further consolidated its dominant market position in European finishing sectors during 2010, increasing its share of total parquet flooring production from 56% in 2008 to over 65% in 2010 (graph 6.2.1) (FEP, 2011). The major loser last year was tropical hardwood; its share of wood flooring production in Europe has dropped from 14.7% in 2008 to only 7.5% in 2010. The 2010 data suggest that ash, beech and hard maple regained a small part of the share lost to oak in previous years.

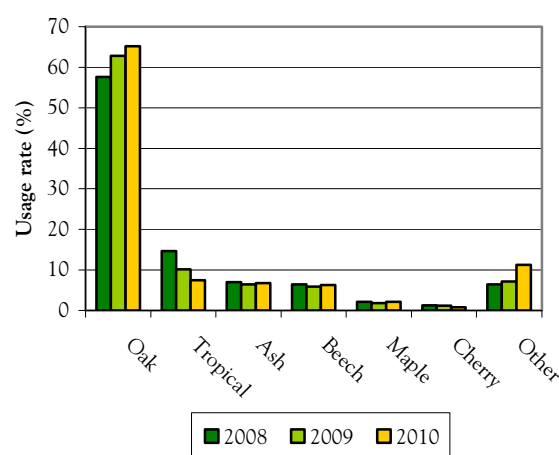
<sup>16</sup> FEP Member Countries: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, Romania, Slovakia, Spain, Sweden, and Switzerland.

Oak's increasingly dominant position partly reflects continuing strong consumer preference for this species, together with the development and application of an increasingly wide array of stain and other surface treatments that have broadened its available range of looks.

Temperate hardwoods are also benefiting from the recent growth in thermal treatment capacity, which is expanding the range of applications in Europe. Around 30 companies are now operating thermal treatment plants with a total capacity of over 300,000 m<sup>3</sup> (EUWID, 2010e). They are able to offer a widening range of heat-treated temperate hardwood and softwood products, which are being marketed as alternatives to tropical hardwood, in the external joinery and furniture sectors.

GRAPH 6.2.1

European hardwood flooring species, 2008-2010



**Note:** Other includes species with less than 3% market share: acacia, birch, chestnut and eucalyptus.

**Source:** European Federation of the Parquet Industry, 2011.

Export performance for European hardwoods was variable during 2010, with growing demand in China and Viet Nam being partly offset by log supply problems in Europe together with weaker sawnwood demand in parts of the Middle East and North Africa. Sawn hardwood exports from EU-27 countries (excluding intra-EU trade) increased by 12% to 1.28 million m<sup>3</sup> during 2010, the major destinations being China and Egypt. Significantly higher exports were recorded by Belgium, France and Germany recorded.

## 6.2.2 Market developments in 2011

Market prospects for sawn hardwood in Europe remain mixed in 2011 and mirror the strong variations in economic conditions. While the economies of central and northern Europe, including Germany, Poland, and Sweden are recovering well, the economies of several countries,

including Greece, Ireland, Italy, Portugal and Spain, remain fragile with France and the UK somewhere between.

Sluggish construction activity continues to restrict hardwood consumption across much of Europe. According to Euroconstruct, after the fall in European construction output in 2009 and 2010, output is expected to remain static in 2011, and then to grow by only 2% in 2012, and 2.5% in 2013. Recovery will vary across Europe, but is forecast to be stronger in central and eastern Europe than in western Europe (Euroconstruct, 2010).

Reports from the large French and German sawmilling sectors in mid 2011 have been generally positive, with sales in 2011 expected to be 15% to 20% higher than 2010. Domestic and most export markets, particularly in China and Viet Nam and for oak and ash, are reported to be active. In contrast, the political upheaval in the Middle East has led to a decline in demand, particularly for beech, in Egypt, Jordan, Syria, and Tunisia, all significant export markets for European hardwoods (EUWID, 2011d, 2011e). Demand in Portugal and Spain remains weak, while the important furniture sector in Italy is facing intense pressure from weak domestic consumption as well as its loss of competitiveness in export markets.

European hardwood sawmills struggled to obtain enough logs in the early weeks of 2011, due to poor weather and larger volumes of logs being diverted to export markets, particularly to Asia. Log supply problems had eased greatly by the end of the March 2011, as weather conditions improved and log exporters were less active at French and German auction sales (EUWID 2011b, 2011c, 2011e).

### 6.3 CIS subregion

Sawn hardwood production in the CIS remained stable between 2009 and 2010 at 2.8 million m<sup>3</sup> (table 6.3.1).

TABLE 6.3.1

Sawn hardwood balance in the CIS, 2009-2010  
(1000 m<sup>3</sup>)

	2009	2010	Change %
Production	2 809	2 801	-0.3
Imports	113	132	16.9
Exports	639	927	45.1
Net trade	526	796	51.2
Apparent consumption	2 282	2 006	-12.1

Source: UNECE/FAO TIMBER database, 2011.

After remaining stable between 2007 to 2009 at around 375,000 m<sup>3</sup> per annum, sawn hardwood exports from the Russian Federation increased sharply in 2010 to

515,000 m<sup>3</sup> (Global Trade Atlas, 2011). The gain was the result of a big rise in exports to China, from 260,000 m<sup>3</sup> in 2009 to 420,000 m<sup>3</sup> in 2010. The increase suggests that Russia's introduction of log export taxes may have encouraged increased domestic conversion, at least in the east. Whether this will be a long term trend, is in doubt, following the Russian Government's announcement that it proposes to reduce log export taxes, after the Russian Federation becomes a full member in the WTO, which may take place in early 2012 (EUWID, 2010f).

Ukraine's exports, which are dominated by oak, are estimated to have been around 300,000 m<sup>3</sup> in 2010, about 10% higher than in 2009. This reverses the downward trend that started in 2007, when exports were 445,000 m<sup>3</sup>. The EU is the dominant export market for Ukraine's sawn hardwood; Poland, Germany, Lithuania and Italy, in order of significance. However, between 2008 and 2010, the share of Ukrainian sawn hardwood exports destined for EU countries fell from 95% to 85%, as increased volumes are now exported to Egypt, Russia, Serbia and Turkey (Eurostat, Global Trade Atlas, 2011).



Source: T. Pahkasalo, 2009.

Sawn hardwood supply was constrained in Ukraine in 2011. Importers sourcing sawn oak from private sawmills, struggled to get supplies as the state forests gave preference in log sales to state-run mills. Several smaller and medium-sized private mills have ceased production due to log supply problems in 2009 and 2010. State-run mills will supply sawn hardwood, but a special licence is needed, which the government issues to selected companies only. With log and sawnwood supplies limited,

and transport costs increasing, prices for Ukrainian sawn oak have been rising during 2011 (EUWID, 2011a).

Imports of sawn hardwood into the CIS from outside the subregion were much less than 100,000 m<sup>3</sup> in 2010. The need for imports is limited due to the existence of a large domestic secondary processing capacity, a poorly developed importing sector and the lack of market familiarity with imported hardwoods. Intra-country trade in sawn hardwood within the CIS subregion is also negligible, with total annual flow much less than 100,000 m<sup>3</sup> between all countries. The major export flows are from the Russian Federation to Kazakhstan and Uzbekistan, and from Ukraine to the Russian Federation.

## 6.4 North America subregion

### 6.4.1 Market developments in 2009-2010

The recession in North American and external markets for wood products began to affect the sawn hardwood sector from 2007 onwards, with production falling from 27.0 million m<sup>3</sup> to only 17.3 million m<sup>3</sup> in 2009. Production stabilized at this level in 2010, assisted by a revival in export demand, particularly in China and Viet Nam (table 6.4.1).

TABLE 6.4.1

Sawn hardwood balance in North America, 2009-2010  
(1000 m<sup>3</sup>)

	2009	2010	Change %
Production	17 307	17 255	-0.3
Imports	1 287	1 691	31.4
Exports	1 912	2 594	35.6
Net trade	625	903	44.4
Apparent consumption	16 682	16 352	-2.0

Source: UNECE/FAO TIMBER database, 2011.

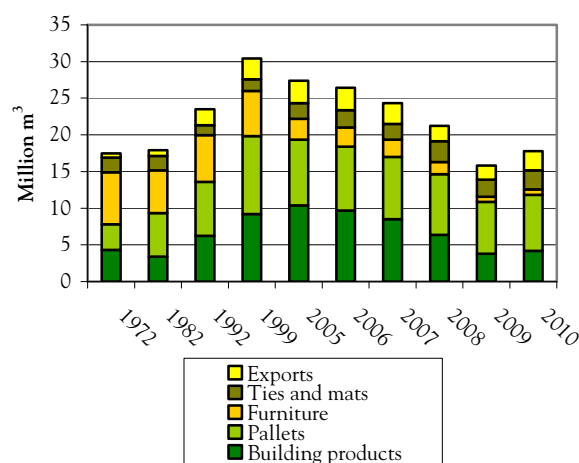
North American sawn hardwood consumption declined from 23.8 million m<sup>3</sup> in 2008 to only 16.4 million m<sup>3</sup> in 2010. Consumption was affected by reduced activity in the US construction sector, with any gains more evident in the first half of 2010 than the second half. Home completions declined sharply in 2010 in the US and the US housing market suffered a fall after home buyer tax credits ended in April 2010 (Hardwood Review, 2011). This fed through into low levels of remodelling activity that typically takes place before and after sales and is a major driver of hardwood demand (Hardwood Review, 2011).

A major structural shift has taken place in US sawn hardwood consumption over the years (graph 6.4.1). Before 1999, the furniture sector consumed between 6 million m<sup>3</sup> and 7 million m<sup>3</sup> of sawn hardwood in the US, annually. In the period from 2000, this volume fell consistently and, in

2009 consumption was only 700,000 m<sup>3</sup> (Luppold, 2011). Consumption improved slightly in 2010, to around 770,000 m<sup>3</sup> (Hardwood Market Report, 2011).

GRAPH 6.4.1

United States sawn hardwood consumption by sector, 1972-2010



Source: Author's interpretation of Luppold, 2011 and Hardwood Market Report, 2011.

During the boom years of the US construction sector, loss of consumption in the furniture industry was offset by increased consumption of building products, including flooring, mouldings, and kitchen cabinets. In 2005, this sector consumed over 10 million m<sup>3</sup> of hardwood sawnwood. However, following the collapse of the US housing market after 2008, building products' consumption fell to only 3.8 million m<sup>3</sup> in 2009. Consumption in this sector is estimated to have recovered slightly in 2010, to around 4.2 million m<sup>3</sup> (Luppold 2011, Hardwood Market Report, 2011).

As higher value appearance-grade markets in the US have declined in relative importance, an increasing proportion of sawn hardwood is being used in low value industrial applications, including pallets and railway ties (sleepers). In 2010, over two-thirds of US sawn hardwood was used in industrial applications with the remaining one-third in appearance applications. Only a decade earlier, the comparable ratio between appearance uses and industrial was 6:4 (Luppold, 2011; Hardwood Market Report, 2011).

A growing share of appearance-grade sawn hardwood has been exported but this has not been enough to offset the decline in domestic consumption. Between 1999 and 2006, US sawn hardwood exports rose from 2.8 million m<sup>3</sup> to 3.1 million m<sup>3</sup>, falling to only 1.6 million m<sup>3</sup> in 2009. In 2010, exports rose to 2.1 million m<sup>3</sup>. Between 2009 and 2010, exports to China increased from 474,000



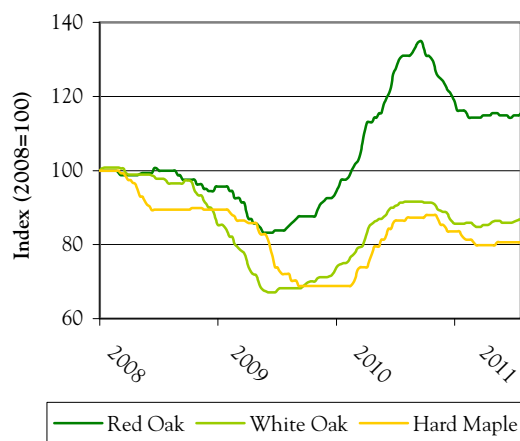
m<sup>3</sup> to 745,000 m<sup>3</sup> (Hardwood Review, 2011; AHEC, 2011a).

Since 2000, US hardwood harvests have fallen steadily, driven by lower consumption and structural changes in the forest sector. In particular, there has been a major reduction in the number of logging professionals: many have been discouraged by a combination of falling log demand, rising insurance costs, elusive financing and higher fuel costs (Hardwood Review Express, 2010a).

There were significant shifts on the supply side in 2010; logging activity in the early part of the year was constrained by severe weather and a lack of credit available to timber buyers. As a result, prices for popular hardwood species and grades increased (graph 6.4.2). Rising prices encouraged family forest owners back into the market with improved weather in spring 2010. By summer 2010, signs of overproduction were emerging and prices weakened in the second half of the year. However, prices held up better for export-oriented items than for those whose primary markets were domestic (Hardwood Review Express 2010b).

GRAPH 6.4.2

Price development for selected hardwood species in the US, 2008-2011



Source: UNECE/FAO price database, 2011.

### 6.4.2 Market developments

Domestic demand for American sawn hardwood has remained relatively weak in 2011, while export markets have continued to expand. A higher proportion of US production is now exported than at any time in the past (AHEC, 2011a). Overall supply and demand has been finely balanced – with low consumption matched by relatively limited supply. Prices in April – June 2011 have generally been stable, though with sawnwood production expected to increase gradually during the summer months

this could lead to softening prices later in the year if domestic markets don't improve (Hardwood Review, 2011).

Indications from the US construction sector suggest only very modest improvements in activity and from a very low base. Both housing starts and sales increased in March 2011 compared to the previous month but they were still well down on levels in March 2010 when home buyer tax credits were boosting demand. House prices have continued to weaken in 2011. However, remodelling activity is picking up slowly and there have been more positive indications from the furniture sector. Reports from the International Home Furnishings Market in High Point, North Carolina during April 2011 mentioned higher visitor numbers at the trade show and improved sales for several domestic factories (Hardwood Review, 2011). Meanwhile, export sales have been rebounding strongly during 2011. US sawn hardwood exports for the first quarter of 2011 reached 687,884 m<sup>3</sup>, the best first quarter performance since 2007 (Hardwood Review, 2011. AHEC, 2011a).

Market prospects for 2011 vary widely by species:

- Domestic demand for red oak remains weak and export demand to China is expected to cool slightly during the rest of 2011. However, this will be partly compensated by robust demand for red oak in Mexico and parts of the Middle East. Increased red oak production during summer 2011 is expected to lead to softening prices.
- Exports of higher grades of white oak to Europe and China are expected to remain solid and prices reasonably stable. Prices for common grades of white oak may soften slightly, with recent reports that some Chinese buyers have put shipments on hold.
- Ash is more in demand in export markets in 2011, boosted by higher prices for white oak and interest in thermal treatment. However, the emerald ash borer is expected to reduce the amount of ash eligible for export to Europe. Logging of ash has also been badly affected by widespread flooding in the Mississippi valley during 2011. Therefore, prices for ash are expected to remain firm.
- Tulipwood is becoming more popular both in Europe and China, replacing light tropical hardwood species in moulding, cabinet and furniture applications. Tulipwood is also being used with stain as a substitute for walnut which is in short supply. Prices for tulipwood, which dipped over the winter months, have been rising again in 2011.
- Prospects for red alder are mixed. Domestic demand is heavily dependent on cabinet production, which is currently slow and unlikely to increase. Much hinges

on whether recent strong demand for red alder in China will be maintained.

- At present US demand for cherry is restricted due to weak activity in the cabinet sector. Cherry is also still out of fashion in export markets so demand is not expected to get a lift at least until 2012.
- Hard maple is also out of fashion in export markets and domestic consumption is low. However production has been limited in 2011 and supplies are restricted. Even a modest increase in demand could push up prices.

Looking longer term, prospects for any significant rebound in sawn hardwood production in North America are limited. According to William Luppold of the US Forest Service, the US hardwood industry, *“permanently lost 25% to 30% of hardwood lumber production in the 24 months to March 2011.... if prices and demand were to increase tomorrow, [US hardwood] mills have the ability to crank out 10.5 billion bf (25 million m<sup>3</sup>). To do this the larger mills would have to run double shifts (80 hours a week). Problem is we do not have the loggers to supply those mills.”* (Luppold, 2011).

## 6.5 Policy and other market issues

A range of policy and other market issues are increasingly impacting on the sawn hardwood trade and industry. These include:

### Consumer country legislation targeting illegal wood

The US Lacey Act Amendment, introduced in May 2008, and the European Union Timber Regulation, introduced in November 2010, impose new obligations on suppliers to demonstrate “low risk” status with respect to illegal logging. Hardwood supplies in regions where there is strong evidence of good forest governance are likely to benefit in the long-term.

### Government timber procurement policies

These are becoming more significant, particularly in north-west Europe. While the policies aim to promote sustainable practices amongst timber suppliers, they may have unintended negative consequences. Most impose sustainability requirements on timber without imposing equivalent requirements on, generally more fossil-fuel intensive, alternative products. There is also strong reliance on sustainable forest certification systems that are better adapted to large forest estates than to the small family forest ownerships that are typical of the temperate hardwood sector.

### Green-building rating systems

These systems gained momentum in 2010 and 2011, boosted by political interest in climate change and green-tinted emergency public funding during the recession. Originally focused heavily on industrialized countries,

systems are now being developed in many emerging markets including Brazil, China, Malaysia, Mexico, and UAE.

Systems like BREEAM in the UK, HQE in France, and DGNB in Germany, which are based on a comprehensive life cycle assessment (LCA) approach to material specification, have strong potential to benefit markets for sawn hardwood. However, systems like LEED in the US, which reward environmental progress by different material sectors in an uncoordinated way, tend to discriminate against wood products. Promoting an LCA approach in green building rating systems has become a central marketing issue for hardwood trade associations. For example, in 2011 the American Hardwood Export Council (AHEC) is expected to release preliminary results of the largest LCA study ever undertaken to compare hardwoods with alternative materials (AHEC, 2011b).

### Design trends

Trends in architecture and furniture design have a considerable impact on the use of all materials. Key trends in the decorative sector, which impact particularly heavily on temperate hardwoods, include: rising interest in “sustainable design” (which for designers has many connotations and may imply, for example, greater use of recycled materials, or of natural materials, or a reduction in the use of all materials); in the “authenticity” of products; and in the “narrative” or story behind different materials. The recession is also explicitly linked to a trend towards “simplicity” in design as a reaction against the blatant materialism of the boom years. With appropriate marketing, all these trends can work strongly in favour of hardwood.

### Tariffs

Tariffs have not been a significant issue in this sector due to their limited impact on trade in temperate sawn hardwood between developed countries, traditionally the largest trade flows for this commodity. However, new issues are arising as global trade patterns change in the wake of the global recession, and with the growing importance of emerging markets. For example, in October 2010, US engineered-flooring manufacturers petitioned the US government to levy anti-dumping duties on Chinese engineered flooring sold in the US. In March 2011, the US government announced its preliminary determination that the Chinese government has subsidized exporters and set preliminary countervailing duties on imports from most Chinese companies (Hardwood Review, 2011).

### Inadequate statistics

The statistics on hardwood production, trade and consumption are of variable quality. This has immediate and serious business and political implications. Effective planning is hindered by lack of awareness of the likely

future availability of supply from one year to the next. Investment decisions in the sector may be made on the basis of incomplete or inaccurate information, on long-term wood supply and demand. This increases the risk of price volatility and unsustainable trade. These weaknesses in the statistics should be of especial concern, given the significant political and financial resources devoted to policy measures such as FLEGT and REDD, the success of which depend heavily on having timely and accurate data. Political commitments to renewable energy targets, which impose new demand to produce biomass from forest land, add to the need for reliable information. Policies based on inaccurate and misleading information may result in outcomes that may differ from those that were intended.

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# 7 Wood-based panel markets, 2010-2011

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## Highlights

- The European wood-based panels industry is slowly returning to better market conditions and improved capacity utilization.
  - The European wood-based panel industry is confronted with substantial cost increases for its essential raw materials, in particular for wood and resins, as well as rising energy and transport costs.
  - European wood-based panels industry will continue to face growing competition for wood from the renewable energy sector.
  - Following two years of contraction, MDF production in Europe decreased further in 2010, by 6.8% to 13.4 million m<sup>3</sup>.
  - Low demand for wooden furniture, in conjunction with slow housing construction, continues to undermine demand for wood-based panels in Europe.
  - Overall, consumption of wood-based panels increased by 10.6% within the CIS subregion and by 14.2% within the Russian Federation.
  - In 2010, Russian consumption of wood-based panels rose significantly: plywood increased by 46.5% over 2009, and particle board by 24.6%.
  - The US and Canadian housing markets remained weak in 2010, which is a strong factor undermining global demand for wood-based panels, with housing analysts continually revising their estimates of housing starts downward.
  - Strong growth in demand for wood-based panels in Asian markets helped to boost North American exports by almost 25%.
  - Continued weak demand led to the closure of two particle board mills (both in the US) although two MDF mills (one in Canada and one in the US) reported increasing their production volume in 2010.
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## 7.1 Introduction

The global economic crisis eased somewhat in Europe and the CIS subregion but continued to strongly affect the wood industry in North America, where housing starts remained at historically low levels. As a result, consumption of wood-based panels was mixed across the three UNECE subregions (graph 7.1.1). Wood-based panel consumption recovered in both the Europe and CIS subregions in 2010 (up by 5.3% and 15.1%, respectively, over 2009). Consumption of wood-based panels in North America remained relatively flat in 2010 (up by just 0.5% over 2009) and was well below the level in 2006.

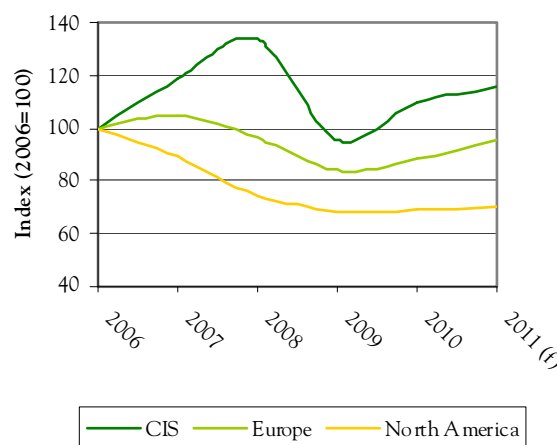
The Timber Committee forecast that wood-based panel consumption in 2011 would grow in all three subregions: While growth is expected to continue, the rate in Europe is forecast to slow to 2.9% and in the CIS subregion, a steeper drop to 6.8% is now expected. In contrast, the rate of growth in North America is expected to increase to 5.4% in 2011.

The American Plywood Association projects that demand for structural panels (OSB and plywood) will increase by 5% in 2011. Demand for non-structural wood-based panels is mixed for North America, with the Composite Board Association estimating that the demand for MDF and hardboard will increase by 3.0% and 10.3%, respectively, while particle board demand will drop by 1%. Continued strong demand for wood from the bio-energy sector will continue to exert upward pressure on global wood raw material costs throughout 2011.

The pattern of international trade has reflected the general economic downturn and especially the plummeting consumption of wood-based panels since 2007 (graph 7.1.2). The outlook for 2011 is not any brighter, particularly in Europe and North America where the rate of export growth was expected to slow considerably. US housing starts are projected to remain below 700,000 for the third year in a row while Canadian housing starts are expected to drop by 3.4%. The Timber Committee estimated that North American imports and exports of structural panels would increase. The trade situation is somewhat less optimistic in Europe and the CIS, with only small increases in trade and Europe projecting a trade deficit in panels in 2011.

GRAPH 7.1.1

Consumption of wood-based panels in the UNECE region, 2006-2010

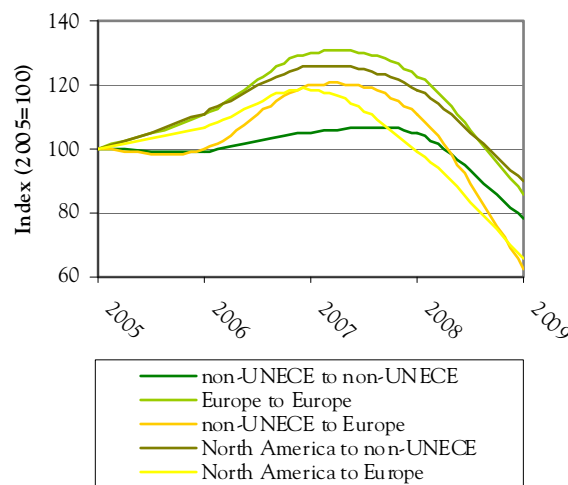


**Notes:** f = forecast. The Timber Committee's forecast trend for 2010 to 2011, made at the October 2010 session, was applied to the 2010 figure.

**Source:** UNECE/FAO TIMBER database, 2011.

GRAPH 7.1.2

Top five international trade flows of wood-based panels by value, 2005-2009



**Note:** Total value of world imports for 2008-2009 was \$55 billion.

**Source:** UN COMTRADE, 2011.

## 7.2 Europe subregion

Following the fierce economic downturn, the European wood-based panel industry is slowly but surely returning towards better market conditions and improved capacity utilization. Economic indicators have generally been improving since the second quarter of 2009 despite turbulence during the first months of 2010. Most of these economic indicators are now above their long-term average, although real consumption levels are still far below pre-crisis levels, particularly for furniture and construction materials.

The European wood-based panels industry will continue to face considerable challenges, including rising production costs, partly the result of competition for wood with the renewable energy sector as well as higher costs of resin and chemicals which reflect rising oil prices.

The overall European particle board production capacity continued to drop to 41.5 million m<sup>3</sup> in 2010. The decrease was mainly in France and Germany. In addition to some efficiency improvements, a new plant in Poland pushed European MDF production capacity to 15.5 million m<sup>3</sup> while European production capacity for OSB remained stable.

Following significant weakening in 2009, particle board imports dropped again in 2010 by 1.5%. Imports from extra-EU countries came mainly from the EFTA region and the neighbouring countries of Norway, Switzerland and Ukraine. Imports of particle board into the EU from China increased by 64% in 2010, while EU imports of particle board from Switzerland decreased by 20% and by 19% from Turkey (Eurostat, 2011). However, 97% of the trade in particle board was within Europe. Despite a significant increase in exports to the Far East, European exports declined further by 14.3%, with export volumes remaining far below their 2008 record level of 15.4 million m<sup>3</sup>. EU exports of particle board to Ukraine and the United States dropped by 24% and 13%, respectively, while exports to China increased by 33%, to Turkey by 30%, Canada 26% and to Switzerland by 22%. EU imports of particle board increased in 2010 while exports decreased, resulting in a weakened exporting position for the European particle board industry.

Particle board production increased by 5.6% in Europe in 2010, but from a low level in 2009 due to the global economic crisis. Particle board production at 38.3 million m<sup>3</sup>, remained well below its 2007 peak of 44.7 million m<sup>3</sup>. The furniture industry was the main driver behind this recovery as the construction sector continues to encounter difficulties in many European countries.

TABLE 7.2.1

### Wood-based panel balance in Europe and EU 27, 2009-2010 (1,000 m<sup>3</sup>)

	2009	2010	Change %
Production	62 726	65 608	4.6
Imports	28 439	31 275	10.0
Exports	29 596	32 075	8.4
Net trade	1 157	800	-30.9
Apparent consumption	61 569	64 808	5.3
of which: EU27			
Production	55 362	56 958	2.9
Imports	25 804	28 114	9.0
Exports	27 726	29 988	8.2
Net trade	1 922	1 874	-2.5
Apparent consumption	53 441	55 084	3.1

Source: UNECE/FAO TIMBER database, 2011.

Despite the general upturn in production, some countries experienced further declines of 3% to 5% in particle board production in response to two factors. First, some countries such as Austria were less affected by the global economic crisis but experienced production declines resulting from reduced demand from their usual trading partners. Secondly, countries such as Greece or Portugal experienced substantial production decreases as a result of having had to implement consolidation plans in response to the financial crisis and these plans had direct impacts on their domestic demand for particle board. Consequently, the recovery of the European particle board sector is expected to continue on a slow growth path during 2011. For Europe as a whole, this is forecast to result in a stabilization of particle board production in 2011.

Following two years of contraction, MDF production in Europe decreased further in 2010, by 6.8% to 13.4 million m<sup>3</sup>, with production remaining well below its 2007 peak of 15.6 million m<sup>3</sup>. MDF consumption is projected to stabilize at around 11 million m<sup>3</sup> in Europe during 2011.

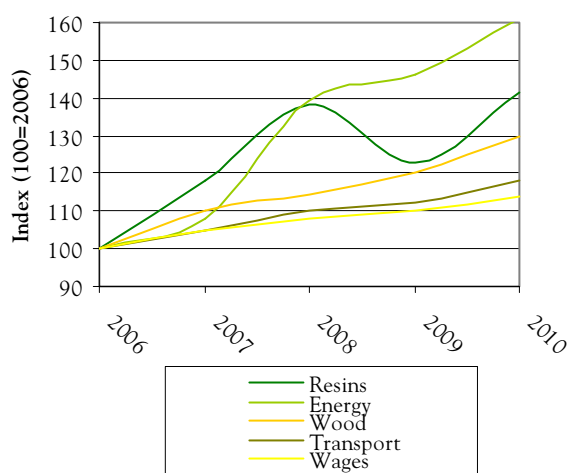
European OSB production continued to recover in 2010 with growth of 7.5% and exceeded 4.1 million m<sup>3</sup>, close to the 2007 production peak of 4.2 million m<sup>3</sup>. Demand for OSB in Europe continued to increase throughout 2010, although at a rather moderate pace since building activity remained subdued. The majority of European OSB production was traded within the EU and EFTA countries. Exports of OSB to the Far East increased substantially in 2010 and as European OSB manufacturers continue to open up new markets, the prospects for exports are positive in the mid- to long-term.

European plywood production increased by 10.7% in 2010 to 3.5 million m<sup>3</sup>. However, the European plywood industry has only partly recovered from a sharp contraction in production in 2009. For many years, the EU plywood industry has experienced severe competition from producers of wood-based panels from outside Europe. For example, since 2007, China has become Europe's largest supplier of plywood, despite the fact that the EU imposed an anti-dumping duty of 66.7% on Okoumé plywood originating from China ((FEIC 2011). This duty was extended for five years at the beginning of 2011.

Despite showing signs of recovery, the situation for wood-based panel producers remains complicated by the fact that consumers and end-users in many countries are worried about the future, causing them to postpone spending on new construction, renovation and new furniture. At the same time, the wood-based panel industry is confronted with substantial cost increases for its essential raw materials (in particular for wood and resins) as well as for energy and transport (graph 7.2.1). In Europe, the Czech Republic, Estonia, France, Poland, Slovenia and the United Kingdom experienced the highest increases in wood prices in 2010. Consequently, European panel board producers are squeezed between rising costs and weak demand. Furthermore, recent events including the political events in several North African and Middle Eastern countries, as well as the terrible earthquake and tsunami in Japan, will further impact the global economy and could affect demand for wood-based panels.

GRAPH 7.2.1

Index of primary input costs for wood-based panel production in Europe, 2006-2010



**Note:** This index is based on EPF members' answers to quarterly questionnaires, and covers some of the components of production costs of particle board, MDF and OSB panels.

**Source:** European Panels Federation, 2011.

Different initiatives at the European level emphasize the role that wood and the wood-based panel industry can play in greening the economy. For example the "Standing Forestry Working Group on public procurement of wood and wood-based products" of the Advisory Committee of the European Commission issued a report on "public procurement of wood and wood-based products" in November 2010. The working group encouraged Member States and the European Commission to work towards the use of the same sustainability criteria regardless of the end-use of wood, including biomass for energy. This means that all forest-related policies in the EU such as Green Public Procurement (GPP), Renewable Energy Sources (RES), and FLEGT should base their claims of sustainability on a commonly accepted definition of, and criteria for, sustainable forest management (including social criteria) and also legality requirements.

On 12 November 2010, the Regulation (EU) No 995/2010 of the European Parliament and of the Council of 20 October 2010 laying out the obligations of operators who place timber and timber products on the market - also known as the Timber Regulation - was published in the Official Journal of the European Union. A wide range of timber products, including solid wood products, flooring, plywood, veneered panels and similar laminated wood, cellular wood panels, pulp and paper are covered in the Regulation. Timber of species listed should be considered to have been legally harvested. The Regulation will be applicable starting from 3 March 2013 to allow sufficient time for EU operators, timber producers and Member States, as well as trading partners, to prepare for the new regulation. Both imported and domestically produced timber and timber products are covered under this legislation.

Another example of a green policy concerns the issue of wood waste. Waste from construction and demolition (C&D) accounts for approximately 25% (by volume) of all waste generated within the European Union and has been targeted as a priority area in the context of the 70% reuse and recycling target set by the Waste Framework Directive for 2020. Although the practices in this area vary greatly between Member States, the European Commission is focusing on identifying the types of construction materials and substances that will comprise the construction and demolition waste category. Wood is one of the waste fractions included in a report on 'Management of construction and demolition waste' which was released in February 2011 by the European Commission, DG Environment. The use of recycled wood for the production of wood-based panels is identified as one of the existing recovery options. However, the competition between material recovery and energy recovery from waste wood is explicitly mentioned



as a barrier to re-use and recycling wood waste. A summary of the various green economy initiatives is available in the EPF Annual Report (2011).

### 7.3 CIS subregion, focusing on the Russia Federation

The wood-based panel sector within the CIS region including the Russian Federation, showed signs of recovery in 2010, but remained below pre-recession levels of 2008 in terms of both production and consumption (tables 7.3.1 and 7.3.2). Plywood production in the Russian Federation increased by 27.1% in 2010, while particle board production increased by 20.2% and fibreboard production increased by a much smaller 5.2%. As the economic recovery continues, production of all types of wood-based panels is forecast to increase in 2011 and is expected to exceed pre-recession volumes. Wood-based panel production is still dominated by particle board, representing 55.5% of wood-based panel production, compared with 27.1% for plywood and 17.3% for fibreboard.

As part of the Russian strategy to shift away from exporting unprocessed wood raw material, the establishment of several new fibreboard factories in Russia has been announced and these are expected to come on-line in 2012 and 2013. If they are completed, these new factories would significantly increase Russian MDF production capacity and provide a lower cost raw material for domestic furniture and flooring manufacturers. To date there remains no OSB manufacturing capacity in the Russian Federation, primarily due to the adverse impact of the global economic crisis. However, it is widely expected that several projects that were previously shelved because of the crisis will be re-evaluated over the next two years, and that OSB production could start by 2015.

As the Russian economy continued to improve in 2010, consumption of wood-based panels, particularly plywood and particle board, increased substantially. Consumption of plywood increased by 46.5% while consumption of particle board increased by 24.6%. In contrast, consumption of fibreboard increased by just 2.9%. Overall, consumption of wood-based panels increased by 10.6% in the CIS subregion and by 14.2% in the Russian Federation.

TABLE 7.3.1

#### Wood-based panel balance in the CIS, 2009-2010 (1,000 m<sup>3</sup>)

	2009	2010	Change %
Production	11 146	12 834	15.1
Imports	3 417	3 669	7.4
Exports	3 272	3 511	7.3
Net trade	-146	-158	...
Apparent consumption	11 292	12 992	15.1
Of which: Russian Federation			
Production	8 613	10 193	18.3
Imports	853	971	13.8
Exports	2 433	2 641	8.5
Net trade	1 580	1 670	5.7
Apparent consumption	7 033	8 523	21.2

Source: UNECE/FAO TIMBER database, 2011.

TABLE 7.3.2

#### Wood-based panel production in the Russian Federation, 2007-2010 (1,000 m<sup>3</sup>)

	2007	2008	2009	2010
Plywood	2 777	2 592	2 107	2 679
Particle board	5 501	5 751	4 562	5 484
Fibreboard	1 903	2 023	1 626	1 710

Source: UNECE/FAO TIMBER database, 2011.

Russian net trade of wood-based panels increased by 5.7% in 2010, as imports increased by 13.8% and exports by 8.5% (table 7.3.1). The largest increase in exports was for plywood (up 13.3%), while both particle board and fibreboard exports were down in 2010 (by 14.8% and 5.1%, respectively). The largest markets for Russian wood-based panels exports in 2010 were: particle board: Uzbekistan (37.9% of Russian particle board exports) and Kazakhstan (34%); fibreboard: Uzbekistan (39%) and Kazakhstan (12.6%) and plywood: the US (13.3%), Egypt (10.6%) and Germany (10.3%).

In 2010, Russian imports of plywood and fibreboard declined by 20.8% and 8.8%, respectively while imports of particle board increased by 18.9%. The major suppliers of wood-based panels to the Russian Federation in 2010 were China (35.9%) and Germany (23.1%) for fibreboard, and Latvia (24%), Germany (18.3%) and Poland (16.4%) for particle board.



Source: H. Inhaizer, 2009.

Currently, the European Bank for Construction and Development (EBRD, 2010) is considering a major investment in Belarus. The proposal is to build an integrated wood-processing complex that would include a particle board plant and a furniture plant. The project would be developed in partnership with a major furniture retailer and a leading Lithuanian company that manufactures particle board and furniture. The forest products industry is one of Belarus's most important sectors, which is recognized as needing wide-scale restructuring if it is to compete. A development of this type would act as showcase and may well stimulate other inward investment.

## 7.4 North America subregion

The demand for panels in North America is strongly linked to housing construction and remodelling, which is weak. However, consumption of wood-based panels was up slightly (0.5%) in 2010 (table 7.4.1 and graph 7.4.1). Despite weak domestic demand for structural panels in general, strong offshore demand for plywood resulted in the re-opening of three plywood mills in the US, with a capacity of 372,000 m<sup>3</sup>. The combination of reduced production and weak home sales kept structural panel prices relatively flat throughout 2010. Structural panel consumption in the new housing sector increased from 7.9 million m<sup>3</sup> in 2009 to 8.6 million m<sup>3</sup> in 2010, and the American Plywood Association (APA) projects that North American consumption of structural panels in the residential construction sector, will increase to 9.4 million m<sup>3</sup> in 2011 (APA 2011).

With unemployment and mortgage foreclosures remaining a concern, and home values continuing to decline in many major US cities, home owners have remained reluctant to invest in home remodelling projects. As a result, structural panel consumption in this sector remained stagnant, at a relatively low volume of 6.6 million m<sup>3</sup> in 2010 (down from 6.7 million m<sup>3</sup> in

2009). APA projects that consumption will rebound slightly in 2011 to reach 6.9 million m<sup>3</sup>. Structural panel consumption dropped by 16% (3.5 million m<sup>3</sup>) in the non-residential market in 2010 but rebounded in the industrial market, increasing by 6% to 6.4 million m<sup>3</sup>. The APA forecast shows that consumption of structural panels is expected to increase by 4% in the industrial market in 2011, whereas the non-residential construction market will begin to stabilize in 2011 with consumption off by just 1% (APA 2010).

TABLE 7.4.1

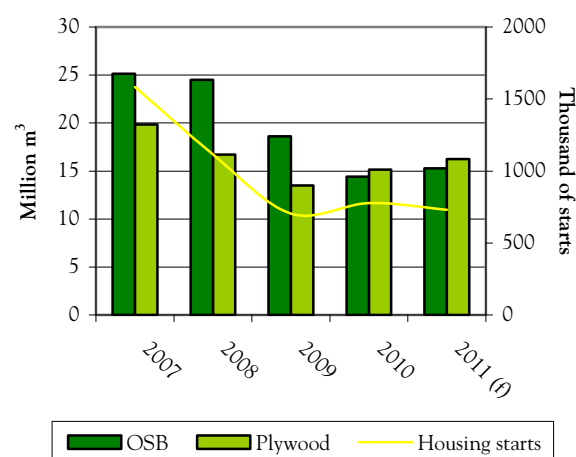
Wood-based panel balance in North America, 2009-2010  
(1,000 m<sup>3</sup>)

	2009	2010	Change %
Production	43 526	43 235	-0.7
Imports	10 792	12 058	11.7
Exports	6 529	7 272	11.4
Net trade	-4 263	-4 786	10.6
Apparent consumption	47 789	48 020	0.5

Source: UNECE/FAO TIMBER database, 2011.

GRAPH 7.4.1

North American consumption of structural panels, 2007-2011



Note: f = forecast.

Source: UNECE/FAO TIMBER database, 2011.

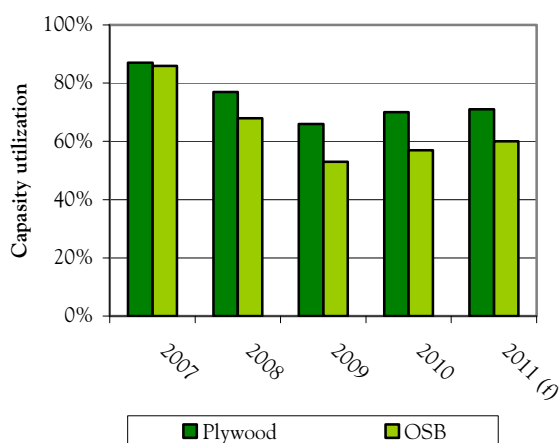
Despite the weakness in the housing market, production of plywood and OSB panels recorded their first increase since the housing downturn began in 2005. The decline in new residential construction continued to have a significant impact on the structural panel market, with the share of panels consumed in the residential construction sector falling from a peak of 57.5% in 2005, to 31.4% in 2009 and to only 26.8% in 2010.

For the first time since 2007, there were no structural panel mills closures reported in North America while

three plywood mills were re-opened in the US. The addition of these three plywood mills resulted in a net gain of 195,800 m<sup>3</sup> in plywood production capacity. Given the continued weak demand for structural panels in North America in 2010, structural panel manufacturers reported only slight increases in production capacity utilization, increasing from 66% to 70% in the plywood industry and from 53% to 57% in the OSB sector. As demand for structural panels continues its slow recovery, capacity utilization is forecast to increase from 70% to 71% in the plywood sector in 2011 and from 57% to 60% in the OSB industry (graph 7.4.2).

GRAPH 7.4.2

North American structural panel capacity utilization, 2007-2011



Note: f = forecast.

Source: APA – The Engineered Wood Association, 2011.



Source: APA – The Engineered Wood Association, 2011.

The relatively strong recovery in global demand for structural panels, in combination with the continued weakness of the US dollar, provided a welcome outlet for US producers. US exports of structural panels, which

slumped in both 2008 and 2009, showed substantial growth in 2010, increasing by 59%. Plywood exports were up by 42.4% while OSB exports jumped by about 70% (APA 2011). The majority of plywood trade is between the US and Canada although the US exported substantial volumes of plywood to Mexico (17.7%) and Australia (8.9%) in 2010. Similarly, while the bulk of North American trade in OSB is within the region, Russia imports a substantial proportion of Canadian OSB exports (36.4%) while Mexico imported 20.6% of US OSB exports. North American exports of fibreboard were down by 3.2% in 2010 while particle board exports were up by 17.3% in 2010 (table 7.4.2). Similar to the trade in structural panels, trade in fibreboard and particle board is primarily within the North American region.

TABLE 7.4.2

North American exports of wood-based panels, 2006-2010

	(\$US million)					Change % 2009 to 2010	
	US	2006	2007	2008	2009		2010
<b>Plywood</b>		210	251	292	211	351	66.9
<b>Fibreboard</b>		244	228	242	219	243	11.0
<b>Particle board</b>		352	326	322	221	234	5.7
<b>Sub-total</b>		621	668	757	548	745	35.9
<b>Canada</b>							
<b>Plywood</b>		494	414	311	199	183	-8.3
<b>Fibreboard</b>		467	416	344	277	237	-14.4
<b>Particle board</b>		789	772	624	548	668	22.0
<b>Sub-total</b>		3 120	2 201	1 503	1 105	1 293	17.0
<b>North America</b>							
<b>Plywood</b>		704	665	603	410	534	30.3
<b>Fibreboard</b>		711	643	586	496	480	-3.2
<b>Particle board</b>		1 141	1 098	946	769	902	17.3
<b>Sub-total</b>		3 741	2 868	2 260	1 652	2 037	23.3

Source: Global Trade Atlas, 2011

The weak recovery in the US in 2010, coupled with stronger economic growth in Canada, resulted in the first increase in wood-based panel imports since 2007 (GTA 2011). In the US, wood-based panel imports increased by 16.3% to reach \$3.04 billion, while imports by Canada increased by 22.7% to \$821 million. In the US, approximately half (50.6%) of panel imports are plywood with fibreboard (23.8%) and particle board (25.6%) sharing the remainder of imports. In Canada over half of panel imports are fibreboard (54.8%) followed by plywood (35.9%) and particle board (9.3%). The continued weakness of the US economy has resulted in the US share of North American wood-based panel imports dropping from 91.3% in 2005 to 78.7% in 2010.

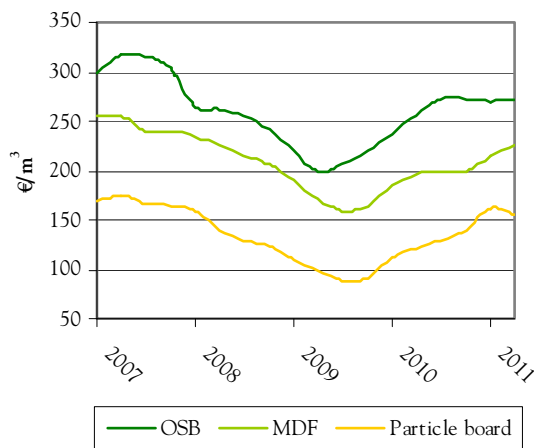
North American production of non-structural wood-based panels continued its decline from 11.9 million m<sup>3</sup> in 2009 to 9.9 million m<sup>3</sup>, a 16% decrease. The production of both MDF and particle board decreased by 20% and 16% in 2010 while hardboard production was essentially stable. The production volumes for particle board, MDF and hardboard in 2010 were 6.9 million m<sup>3</sup>, 4.1 million m<sup>3</sup> and 816,000 m<sup>3</sup>, respectively. Continued weak demand led to the closure of two particle board mills (both in the US) although two MDF mills (one in Canada and one in the US) reported increasing their production volume in 2010.

## 7.5 Panel price trends

Panel prices in the EU bottomed out during the first half of 2009 (graph 7.5.1). However, they recovered strongly during the second half of 2009 and throughout 2010, and by early 2011 panel prices had largely recovered back to their 2008 levels. The largest increases were observed for particle board prices which improved by more than 35% compared to 2009, although mark-ups obviously differ according to the type of boards, their previous price level and their country of origin. Interestingly, particle board producers had planned for even higher price increases to compensate for a continuous rise in production costs, notably wood and resins. However, given the general market conditions in the EU, they were unable to fully implement the price hikes as planned. This partly reflects the fact that, while the demand for particle board increased slightly, it remained at a relatively low level because demand within the furniture and construction sectors was weak.

GRAPH 7.5.1

European panel prices, 2007-2011



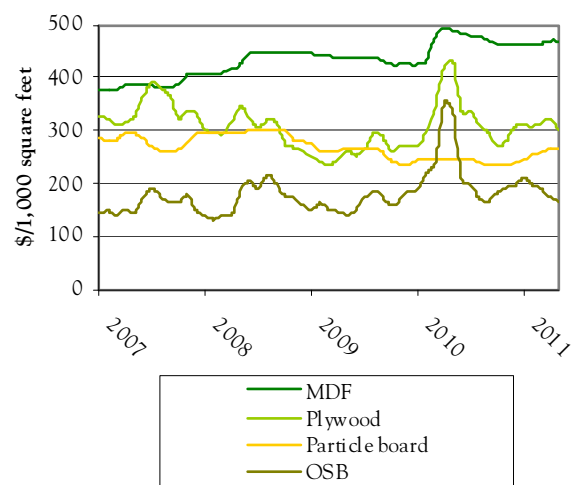
Source: EUWID, 2011.

MDF producers, faced with the same increases in raw material costs, responded by reducing the contract period which allowed them to incrementally increase prices by applying small mark-ups in price every quarter. The reduced contract period, in combination with a lower capacity utilization rate (due to poor weather conditions) and a general lack of wood availability also permitted MDF producers to realize an average price increase of 21% in 2010, compared with 2009. Finally, OSB manufacturers saw panel prices increase by 23% in 2010 in response to increasing demand and a supply constrained by production stoppages (due to weather conditions), technical reasons as well as resin shortages.

In North America, low production volumes and capacity utilization rates allowed manufacturers and wholesalers to draw down inventories of structural panels, helping to set the stage for a modest price increase that continued through the first quarter of 2010 (graph 7.5.2). Structural panel prices were also helped by an increase in single family housing that was largely driven by first time home buyers looking to take advantage of the new home buyer stimulus programme. While this helped to pull OSB prices up from near record low levels and substantially narrow the price gap between plywood and OSB, the expiration of the stimulus programme caused a rapid retreat in structural panel prices, which continued into early 2011. Meanwhile, prices for both MDF and particle board recovered in early 2010, in response to the housing stimulus programme, although prices for both types of panels weakened slightly in the second half of the year.

GRAPH 7.5.2

US panel prices, 2007-2011



Source: Random Lengths, 2011.

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## 8 Paper, paperboard and woodpulp markets, 2010-2011

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### Highlights

- Paper and paperboard output rebounded along with overall industrial production in both Europe and the United States, but has not yet fully recovered to the peak levels of 2007-2008.
  - Generally more robust market conditions prevailed from 2010 to early 2011, with higher consumption and prices for most pulp, paper and paperboard commodities.
  - Prices reached a plateau by late 2010 and may have peaked in a cycle that began with rebound from the global financial crisis of 2008-2009; but prices still remained high in early 2011.
  - The Russian Federation is seeing an almost complete recovery of pulp and paper output to the levels that preceded the global financial crisis of 2008-2009.
  - European pulp, paper and paperboard output rebounded in 2010 after declining in 2008-2009, but the production levels before the crisis have not yet been reached.
  - Similarly, US production of pulp, paper and paperboard all rebounded from the sharp declines of 2008-2009, but production levels in 2010-2011 remained below previous cyclical peak levels.
  - A major project to expand use of larch was initiated in the Russian Federation, while wood pellet output and wood energy use also expanded in the Russian pulp and paper industry.
  - The market rebound coincides with expanding industry interest in the contributions of paper and paperboard products to green and sustainable development.
  - Green and sustainable product features such as use of renewable resources and product recyclability help support sustainability initiatives and an evolving symbiotic relationship between pulp and paper market development and the green economy.
  - The theme of sustainability resonates among pulp and paper enterprises throughout the UNECE region as firms develop pathways to help achieve product innovation and market growth, such as biorefining, bioenergy production, and development of nano-cellulose technology.
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## 8.1 Introduction

A global rebound of pulp, paper and paperboard markets began soon after the global financial crisis in 2008-2009. It has continued and we are now seeing more robust market conditions in 2010 and early 2011. Marketing strategies evolved as pulp and paper producers of the UNECE region were faced with dual challenges of limited growth, or decline, in European and North American consumption and expanded global competition. One such strategy is evident in the increased emphasis on the contributions of the pulp and paper industry to the green economy.

For example, the International Council of Forest and Paper Associations (ICFPA), a worldwide network of forest and paper industry associations, formed in 2002 to promote cooperation in areas of common interest, has developed a statement of commitment to global sustainability (CEO Leadership Statement, June 8, 2006). It also recognized in 2008 that the forest products industry was an essential partner in combating climate change. Its commitment to global sustainability includes:

- Promoting sustainable forest management worldwide via sustainable forest management principles and certification systems.
- Combating illegal logging.
- Supporting recovery for recycling of paper and wood products.
- Improving environmental and energy performance.

Its membership includes leading pulp and paper industry or forest product industry trade associations within the UNECE region.

Green and sustainable features of paper and paperboard, such as the use of renewable resources and recyclability of the products, have helped support the industry's sustainability initiatives and create a symbiotic relationship between pulp and paper market development and the green economy. The industry is exploring completely new pathways to a greener economy such as integrated biorefining and production of biofuels and wood-based chemicals. More partnerships are needed among industries to fully develop green pathways, such as between forest industries and energy, chemical, textile, food, and agricultural industries. As stated by ICFPA, "In the last decade, sustainable development has become part of daily business. The challenge no longer only consists in providing goods and services required by society in a cost-effective way, but also in doing so in a sustainable manner that meets the needs of both present and future generations"<sup>17</sup>. This chapter looks at some noteworthy

examples of industry contributions to the green economy and sustainable development in the UNECE region.

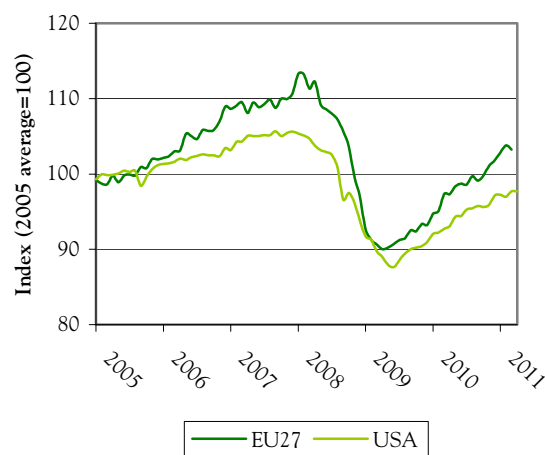
### 8.1.1 UNECE region experiences more robust market conditions in 2010-2011

Generally more robust market conditions prevailed in the UNECE region and globally from 2010 to early 2011, with relatively high market prices for most pulp, paper and paperboard commodities. Their production in both Europe and North America responded to improved industrial production in both regions following the global financial crisis. Asia's rapid economic recovery boosted export markets in 2010, particularly for pulp and recovered paper.

Industrial production rebounded in both Europe and North America from 2009 through early 2011, following steep declines precipitated by the global financial crisis, as shown by industrial production indices for the EU27 and the USA (Graph 8.1.1). Demand for pulp, paper and paperboard showed a similar pattern, leading to a rebound in prices in the second half of 2009 and early 2010.

GRAPH 8.1.1

Industrial production indices for EU-27 and US, January 2005 – April 2011



**Note:** Industrial production excluding construction.

**Sources:** EUROSTAT and US Federal Reserve, June 2011.

However, industrial production levels have not yet fully recovered to the peak of 2007-2008. Regional demand in 2010-2011 for packaging and case materials and for graphic papers used in print advertising climbed well above the depressed levels of 2009, but demand was still below earlier peaks.

In Europe and North America in 2010-2011, regional capacity shutdowns leading to tighter mill supply combined with growing demand led to higher prices for

<sup>17</sup> [http://www.icfpa.org/issues\\_statements/](http://www.icfpa.org/issues_statements/)

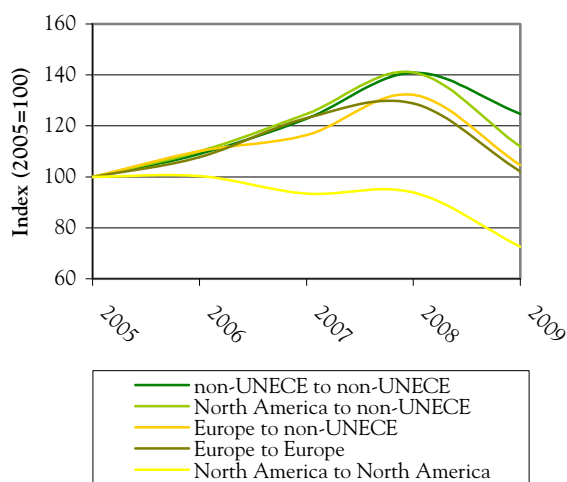


most pulp, paper and paperboard commodities. Market pulp prices for example climbed in early 2011 to just over \$1,000 per tonne, a nominal price level last seen during the historical price spike of 1995 (<http://www.foex.fi/>). However, after adjusting for inflation, real prices for market pulp were still well below 1995 peak levels. Decelerating growth in demand, the sharp downturn in industry profits in 2008-2009, and now a prospect of perhaps less than full recovery in output, are all trends that impel the sector towards more diversified green technology development, such as wood-based biorefineries and biofuels.

Paper and paperboard trade flows between UNECE subregions reflect differences in regional growth, competitiveness and shifts in currency exchange rates. The decline in trade flows of paper and paperboard between the US and Canada from 2003 to 2007 clearly reflected the decline in Canadian exports to the US as a result of the stronger Canadian dollar and negligible growth in US demand (graph 8.1.2). Expanding Asian markets and increased competitiveness of producers in non-UNECE regions is reflected in large increases in trade flows for woodpulp between Europe and non-UNECE countries, and among non-UNECE countries (graph 8.1.3).

GRAPH 8.1.2

Top five international trade flows of paper and paperboard by value, 2005-2009

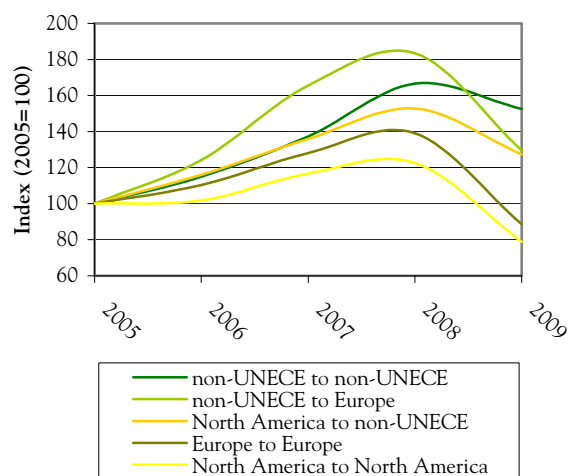


Notes: Total value of imports for 2008-2009 was \$200 billion.

Sources: UN COMTRADE, 2011.

GRAPH 8.1.3

Top five international trade flows of woodpulp by value, 2005-2009



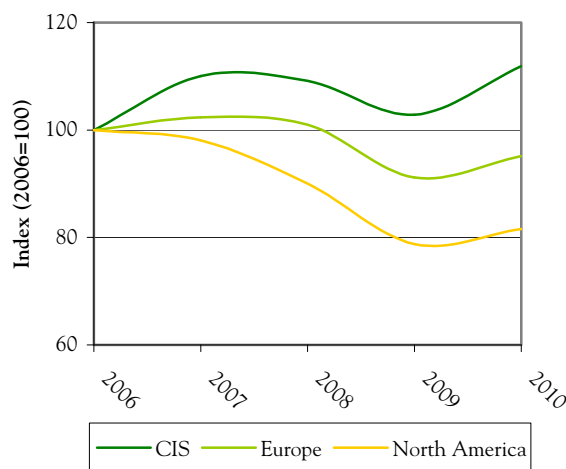
Notes: Total value of imports for 2008-2009 was \$58 billion.

Sources: UN COMTRADE, 2011.

Paper and paperboard consumption in the UNECE region rebounded in 2010 (graph 8.1.4). North American consumption increased by 3.6%, after dropping by 19.7% between 2007 and 2009. Consumption increased by 8.8% in the Commonwealth of Independent States (CIS), and by 4.3% in Europe. The rebounds were only partial reversals of sharp declines suffered during the global financial and economic crisis of 2008-2009.

GRAPH 8.1.4

Consumption of paper and paperboard in the UNECE region, 2006-2010



Source: UNECE/FAO TIMBER database, 2011.

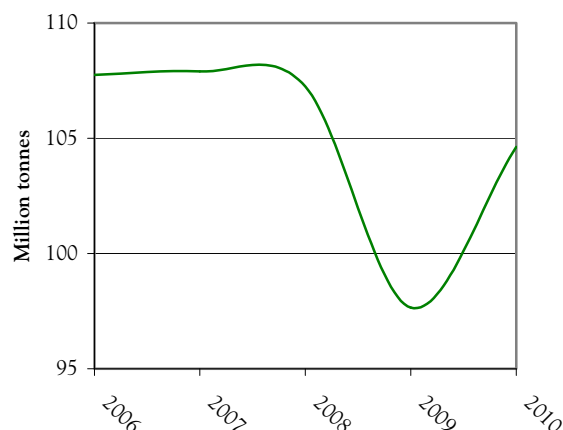
## 8.2 Europe subregion<sup>18</sup>

### 8.2.1 European paper and board output rebounds

Production of paper and paperboard in Europe rose 7.1% in 2010 but still falls short of pre-crisis levels (graph 8.2.1).

GRAPH 8.2.1

Total production of paper and paperboard in Europe subregion, 2006-2010



Source: UNECE/FAO TIMBER database, 2011.

The paper and paperboard trade and apparent consumption balances for Europe show similar trends, with exports higher by 9.6%, and an increase of 4.3% in consumption (Table 8.2.1)

TABLE 8.2.1

Paper and paperboard balance in Europe, 2009-2010  
(1,000 tonnes)

	2009	2010	Change %
Europe			
Production	97 651	104 624	7.1
Imports	53 007	55 771	5.2
Exports	60 638	66 488	9.6
Net trade	7 631	10 717	40.4
Apparent consumption	90 020	93 907	4.3
of which: EU27			
Production	88 469	94 382	6.7
Imports	48 320	51 079	5.7
Exports	58 185	63 773	9.6
Net trade	9 865	12 694	28.7
Apparent consumption	78 604	81 688	3.9

Sources: UNECE/FAO TIMBER database, 2011.

In contrast to 2009, production increased in all European paper sectors in 2010 (Table 8.2.2). Coated wood-free grades rose to 9.0 million tonnes, but was still below the annual output of 2002. The operating rate (capacity utilization ratio) for graphic papers in 2010 is calculated to be 91.2% (82.8% in 2009), indicating a much improved supply/demand balance. Graphic grades accounted for 44.2% of all paper and board produced in Europe in 2010 (43.6% in 2009, 47.4% in 2006).

In the packaging sector, production rose by 9.9% to 47.1 million tonnes. In case materials, which represent 55.5% of the packaging sector in terms of production, output increased by 8.9% in 2010, less than 1% below the 2006 peak in production of this grade. Because only tonnage variations are being measured, these volumes are affected by the continuing trend towards light-weighting (lower sheet grammage or basis weights). Production increased for all packaging grades while the operating rate for packaging papers in 2010 is calculated to be 92.7% (87.2% in 2009), indicating a clearly better supply/demand balance favouring more robust market conditions. Packaging grades represented 45.0% of all paper and board produced in Europe in 2010 (43.9% in 2009, 41.8% in 2006).

Output of hygienic papers increased in 2010 by 4.4% to 7.5 million tonnes. Hygienic papers represented 7.0% of all paper and board produced in Europe in 2010 (7.4% in 2009). Production of industrial and speciality grades rose by 8.0% (+316,000 tonnes) to 4.3 million tonnes. Industrial and speciality grades represented 4.4% of all paper and board produced in Europe in 2010 and the average annual production between 2000 and 2010 was 4.3 million tonnes.

### 8.2.2 European consumption rebounds but recovers only partially in 2010

European paper and paperboard consumption increased by 4.3% in 2010, after a reduction of 10% in 2009 and 4% in 2008. Graphic and packaging papers and paperboards have recorded increases in their consumption thanks to the rebound in manufacturing activity and advertising expenditures. Graphic papers and print media, however, are facing increased competition from alternative communication technologies (digital and electronic media and devices). Sanitary and domestic papers, related to everyday goods consumption, recorded lower growth. Detailed data for all these grades are given below, which includes data from 2006, when most products were at their peak of production and consumption (table 8.2.2).

<sup>18</sup> Information on trends and changes in this section was supplied by CEPI.

TABLE 8.2.2  
**Paper and paperboard in Europe**  
 (million tonnes)

	Production				Apparent Consumption			
	2006	2009	2010	Change % 2009-2010	2006	2009	2010	Change % 2009-2010
Paper and paperboard	107.7	97.2	104.6	7.1	98.7	90.0	93.9	4.3
Graphic papers	51.1	42.6	46.3	8.7	44.4	38.1	39.7	4.2
Newsprint	11.1	9.3	10.3	10.2	12.0	10.3	10.5	2.4
Uncoated mechanical	8.8	7.8	7.9	1.4	6.5	6.4	6.2	-1.9
Uncoated woodfree	10.4	9.1	10.0	9.9	9.7	8.6	10.1	17.5
Coated papers	20.9	16.3	18.0	10.7	16.3	12.9	12.9	-0.2
Sanitary and household papers	6.8	7.3	7.6	4.4	6.2	7.2	7.2	0.1
Packaging materials	45.1	42.9	47.1	9.9	43.8	39.7	43.2	8.9
Case materials	26.5	24.0	26.2	8.9	27.2	24.0	25.5	6.2
Cartonboard	9.7	9.3	10.3	11.3	9.0	7.5	8.0	6.4
Wrapping papers	4.6	4.3	4.6	7.5	3.5	3.3	4.0	21.8
Other papers mainly for packaging	4.1	5.3	6.0	13.7	3.9	4.8	5.6	17.3
Other paper and paperboard	4.8	4.4	3.7	-16.5	4.3	4.6	3.8	-16.9

Source: UNECE/FAO TIMBER database, 2011.

There was an overall increase in consumption of graphic grades in 2010 over 2009. The printing sector (other than newspapers) saw its activity contracting over the same period.

Demand for packaging grades rose by 8.9% in 2010 to 43.2 million tonnes. The manufacture of corrugated paper and board and of containers of paper and board expanded moderately in 2010, while industrial production rose more significantly (+6.9%) and retail trade inched up by 0.7% over the same period.



Source: Metsäliitto, 2010.

Graphic grades represented 42.3% of all paper and board consumed in Europe in 2010, equivalent to 2009. Consumption of corrugated grades accounted for 55.1% of all paper packaging materials used and packaging grades in total represented 46.0% of all paper and board consumed in Europe in 2010 (44.1% in 2009).

Hygienic grades in total represented 8.4% of all paper and board consumed in Europe in 2010 (7.6% in 2009).

The year 2010 was a return to more typical operation levels for the pulp and paper business in central and eastern Europe following the global business crisis. Although the business environment changed in other areas, the pulp and paper industry in that part of Europe had a relatively stable year, and pulp producers, in particular, benefited from high demand for their products. Newsprint and magazine paper demand fell significantly, with the ongoing development of digital electronic technology and shifts in advertising towards electronic media. It is increasingly clear that accession to EU membership has produced trends that are similar to the rest of Europe.

### 8.2.3 Market prices and wood fibre demands follow the rebound in paper and board

Market prices for pulp, paper and paperboard products, and also wood fibre demands have generally

followed the rebound in paper and paperboard output and consumption. For most of 2009, pulp and paper commodity prices registered continuous declines. This trend ended in spring 2010, and since then prices have been increasing steadily.

In 2010, production of pulp increased by 13.1% in Europe, after contracting by 13.2% the previous year. Pulp production remains 5.5% below its 2006 peak. Part of the reduction in output is related to reductions in production capacity for paper and paperboard (integrated pulp). This limits the impact on the markets for market (commercially traded) pulp. Market pulp production increased by 9.2% in 2010. The woodpulp trade and apparent consumption balance for all of Europe shows a similar trend, with exports increasing by 7.9%, and consumption by 18.1% (Table 8.2.3).

TABLE 8.2.3  
Wood pulp balance in Europe, 2009 - 2010  
(1,000 tonnes)

	2009	2010	Change %
Europe			
Production	37 120	41 966	13.1
Imports	17 109	20 902	22.2
Exports	11 623	12 547	7.9
Net trade	-5 486	-8 355	
Apparent consumption	42 606	50 321	18.1
of which: EU27			
Production	34 993	39 825	13.8
Imports	15 814	19 566	23.7
Exports	11 014	11 955	8.5
Net trade	-4 800	-7 612	
Apparent consumption	39 793	47 436	19.2

Sources: UNECE/FAO TIMBER database, 2011.

After the steep price decline of about 40% between mid-2008 and mid-2009, prices for market pulp (hardwood and softwood) jumped by nearly 80% by the end of 2010 to reach levels not seen since 2000. Since then, pulp prices have remained at a high plateau level in Europe.

Since 2009, pulpwood prices in Europe have risen on average between 10% and 25%. Policy support for biomass-based renewable energy at national and European levels may contribute to higher wood prices if overall demand for wood increases. The recent agreement between the EU and the Russian Federation ahead of the future Russian accession to the WTO opens up the possibility of easier access to Russian wood, possibly from 2012.

After falling sharply in 2008, prices for recovered paper increased steadily in Europe through 2009 and

continued to climb in 2010, reaching a high point in late 2010/early 2011 as harsh winter conditions made used paper collection difficult. In 2010, 54 million tonnes of recovered paper were collected.

#### 8.2.4 Growth likely to moderate in 2011, while corrective actions on imports are applied

In Europe, after the healthy rebound of 2010, driven largely by resumption of economic activity and replenishment of inventory stocks, 2011 is expected to see more moderate gains in production of paper and paperboard. A better outlook in emerging markets should help to support European exports, which remain partially dependent on the exchange rate of the euro as well as on responses to protectionist measures.

Late in 2009, the EU adopted, after the United States, provisional anti-dumping and anti-subsidy measures against Chinese coated woodfree exports. Definitive measures were adopted in May 2011 and will last for five years. This is the first time that the EU formally denounced these Chinese government subsidies and took corrective action. Nevertheless, according to the China Paper Association, China's production and consumption of paper and paperboard continued to expand, establishing that country as the world's leading producer and consumer of paper and paperboard since 2009, and now well ahead of the United States.

Regulation of raw material sourcing is one key question for central and eastern Europe. Regulations to avoid use of illegally harvested wood are being introduced. Generally the pulp and paper industry in that part of Europe is not thought to be using much illegally harvested wood, with any exceptions investigated by local state authorities. However, administrative demands related to implementation of such regulations could place added burdens on the industry in the whole EU, and especially in that region, possibly increasing the costs of wood sourcing significantly.

In many countries in eastern Europe, the majority of forests are owned and managed by state organizations. This situation opens up the possibility of being able to offer a sustainable supply of significant amounts of wood over the medium- to long-term. With the right support, this may attract investment and stimulate the development of wood-processing industries and wood energy production, creating employment and prosperity in what may otherwise be socially fragile rural areas.

State forest management organizations are being encouraged to place more wood on the open market via so-called public markets, mainly electronic and classic auctions, and partly also commodity exchanges. These measures help to generate competition and ensure that the forest manager receives a fair market price. However,

part of that competition arises because it allows buyers from the larger western European wood market to use such auctions as a spot market to buy additional supplies of wood as they may be needed. While the presence of such buyers may boost prices, which would be seen as a good development, it may also produce turbulence in local markets, possibly leaving local buyers short of wood.

### 8.2.5 Contributions to sustainability and the green economy gain more attention

The pulp and paper sector has been included in the EU-Emission Trading Scheme (ETS) since 2005, but binding emission benchmarks have yet to be imposed. This will change as the industry group CEPI has prepared EU industry-wide benchmarks to set the levels of emission allowances by product group. These will be incorporated into EU-ETS in Phase 3, starting in 2013. If the industry emits above the benchmark, it will need to buy European Union Allowances (EUAs) from the carbon market for compliance. This is discussed in more detail in chapter 12 Carbon. In Europe, action plans for the promotion of renewable energy have been developed in recent months by the Member States as part of the climate change and energy objectives for 2020. They will be reviewed by the European Commission and will undoubtedly impact the future availability of wood. The development of policies aiming at a low carbon – recycling economy presents challenges for the paper industry but may also offer opportunities. Some companies are turning resolutely towards the production of bio-energy and new products, particularly in organic chemistry and nano-cellulose.

The production of energy from woody biomass is high on the policy agenda in central and eastern Europe. Concern about nuclear power following the Fukushima nuclear disaster in Japan may result in even greater pressure on governments to move towards renewable energy, including energy produced from biomass. An expansion in the use of wood for energy has positive benefits in terms of rural employment, but the competition for wood can result in rises in raw material costs that may reduce profitability in some wood processing sectors. It is essential therefore for policies to be developed that take account of wood availability, the sustainable yield from forests and that consider how increased competition may affect wood processors already located in a particular area.

### 8.2.6 Textile production from wood increasing along with interest in nano-cellulose

Wood's versatility as a raw material is shown by its use in manufacturing natural cellulose-based fibres, which have a variety of names which are often registered trade names. In 2010, the textile industry experienced its largest growth in 25 years. Manufacturing volumes of both natural and man-made fibres grew by 8.6% bringing total global production to 80.8 million tonnes. The value of world imports for 2008-2009 was \$7 billion (COMTRADE, 2011).

The most well-known cellulose-based fibre used for clothing and interior fabrics, viscose, is manufactured from renewable wood cellulose made typically in Europe from birch or spruce (Forest.fi, 2010). The market for cellulose fibres is on the increase in Europe. The main market for these companies is Asia where significant new investments have been made in recent years. According to the *International Fiber Journal* (2010), viscose production, in particular, achieved a record-breaking growth of 17% in 2010. Demand for viscose is also growing rapidly in North America, and new production units are being established.

A potential future derivative of viscose pulp is a range of products that could be made with nano-crystalline cellulose (nano-cellulose). In 2010, Domtar Corporation, which operates pulp mills throughout North America, and FPInnovations of Canada announced they were forming a joint venture to build a commercial-scale nano-crystalline cellulose demonstration plant at the Windsor pulp mill in Quebec. Nano-crystalline cellulose is a renewable, recyclable fibre with potential uses in a range of sectors, including textiles. (CNW, 2011)



Source: Markus Renner, 2011.

Natural fibres can be utilized not only in the textile industry but also in other applications such as medical or hygiene products through textiles to filters or speciality papers (Kelheim Fibres, 2010). Some manufacturers are penetrating new market areas with automotive

applications such as carpets, seat covers, injection-moulded components, non-woven components and battery separators (Textile World, 2010). Alongside human-made fibres, carbon fibres are making their way to the textile market as a result of trendsetting developments in the aircraft and automotive industries (*International Fiber Journal*, 2011). While currently it may not be feasible to produce carbon fibre from wood, research is being carried out to investigate how to convert lignin, from the pulping process, to carbon fibre. If the process can be made commercially viable, a 650,000 tonne pulp mill, could, using only 10% of the lignin produced in the pulping process, manufacture 16,000 tonnes of carbon fibre. That quantity of carbon fibre would be enough to replace 40% of the steel in 160,000 cars. The aim of the research by Innventia AB of Sweden is to produce carbon fibre at a price that would make it competitive with steel. Since carbon fibre is much lighter than steel, the energy savings could be considerable.

The world textile industry is convinced that cotton prices will remain high in the future and stocks are predicted to remain below the long-term average. The growth in demand for cellulose-based fibres in 2010 was helped by a surge in cotton prices, which increased by 48% due to increased demand based on economic growth in China and shortages of cotton due to flooding in Pakistan, which is one of the world's largest cotton producers (Taloussanomat, 2010). New investments show that the market will develop in favour of wood-based fibres. Economic growth is expected to lead to increased textile consumption in 2011.

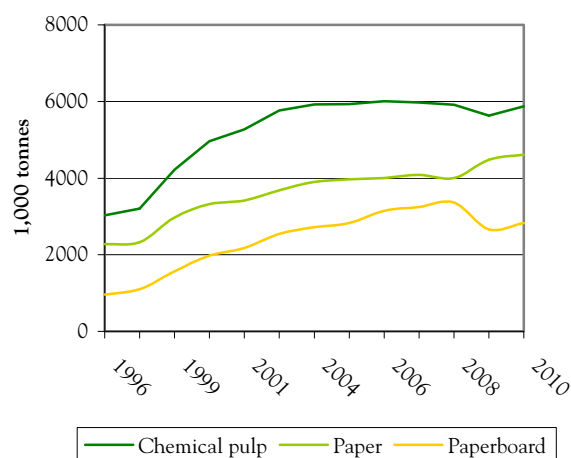
## 8.3 CIS subregion, focusing on the Russian Federation

### 8.3.1 Almost complete recovery in the Russian Federation

Demand and output of pulp and paper products increased in the Russian Federation from the late 1990s to 2007 and into the first half of 2008. However, in the second half of 2008 there was a slump in total production of pulp, paper and paperboard, coinciding with the global financial crisis and economic downturn. This setback in production continued in 2009 but recovery was under way in 2010. Pulp and paper output almost completely recovered to levels that preceded the global financial crisis, with a particularly robust recovery for paper production, while pulp production was almost fully recovered and paperboard output was on the rebound but lagging behind (graph 8.3.1).

GRAPH 8.3.1

### Output of pulp, paper and paperboard in the Russian Federation, 1996-2010



Sources: Goskomstat of the Russian Federation, PPB-express, Moscow, author's estimates, 2011.

During the downturn in 2009, the country's total output of pulp (both pulp for paper and paperboard and market pulp) fell by 7.5%, the output of market pulp by 11.9%, and the output of paper and paperboard by 2.9%. But there was a 1.0% increase in output of newsprint. With the rebound of production in 2010, output of chemical woodpulp increased by 4.3%, paper production increased by 2.9%, and paperboard production increased by 6.4% (table 8.3.1).

TABLE 8.3.1

### Output of chemical woodpulp, paper and paperboard in the Russian Federation, 2009-2010

(1,000 tonnes)

	2009	2010	Change %
Chemical woodpulp:	5 630	5 870	4.3
Paper:	4 480	4 612	2.9
Paperboard:	2 660	2 829	6.4

Source: Goskomstat of the Russian Federation; PPB-express, author's data handling, 2010.

### 8.3.2 Commonwealth of Independent States and the Russian Federation balance of trade

Exports of paper and paperboard in the CIS subregion decreased in 2010 (pulp increased), but imports of paper and paperboard increased (table 8.3.2).

TABLE 8.3.2

#### Paper, paperboard and woodpulp balance in the CIS, 2009-2010 (1,000 tonnes)

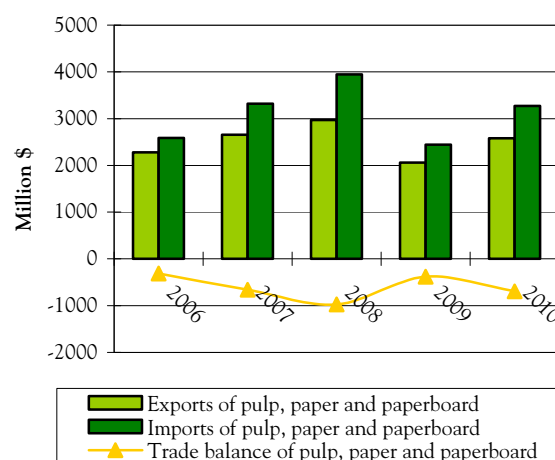
Paper and Paperboard	2009	2010	Change %
Production	9 100	9 126	0.3
Imports	2 592	3 149	21.5
Exports	3 120	2 947	-5.6
Net trade	528	-202	
Apparent consumption	8 572	9 329	8.8
Woodpulp			
Production	6 805	5 980	-12.1
Imports	195	221	13.4
Exports	1 715	1 833	6.8
Net trade	1 520	1 611	6.0
Apparent consumption	5 284	4 369	-17.3

Source: UNECE/FAO TIMBER database, 2011.

In recent years, the value of Russian paper and paperboard imports has exceeded the value of exports as demand for higher value paper and board products has expanded. In particular, the Russian Federation is importing expensive products such as high quality materials for container and packaging, coated paper, and tissue, whereas it exports lower value commodity products such as newsprint and kraft linerboard, as well as wood pulp. It has a large trade surplus in wood pulp (just over \$1 billion in 2010), but a larger deficit in the value of primary paper and paperboard trade (-\$1.75 billion in 2010). The country's annual trade deficit in total for pulp, paper and paperboard has been negative for a number of years. The total pulp, paper and board trade deficit was \$975 million in 2008, but the trade deficit dropped to \$383 million in 2009, with a larger drop in imports than exports; however, in 2010 the deficit rose again to \$693 million, with similar gains in imports and exports (graph 8.3.2).

GRAPH 8.3.2

#### Russian exports and imports of pulp, paper and paperboard, 2006-2010

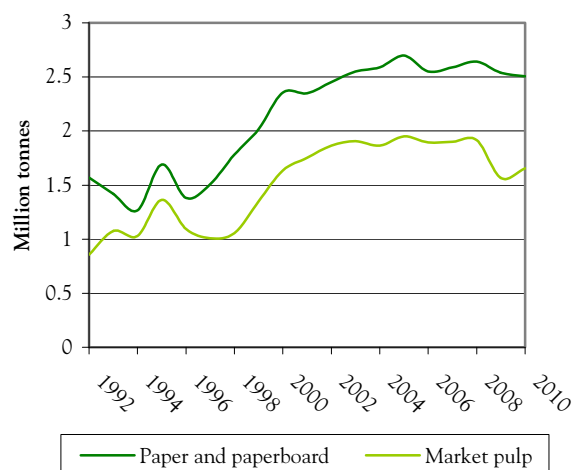


Sources: State Customs Committee, "Pulp. Paper. Board." -Magazine, PPB-express, PPB Exports, PPB Imports, author's estimates, 2011.

The Russian Federation's export volumes of market pulp, paper and paperboard all declined in 2009, but generally rebounded in 2010 (graph 8.3.3). Export volumes had been increasing since the mid-1990s but peaked around 2005. Exports have steadily comprised about 80% of Russia's output of market pulp, but have fallen from 50% of paper and paperboard output in 1998 and 45% in 2000 to just 33% in 2010, as a larger share of production serves the growing domestic market. Major export destinations for Russian products are China (market pulp, kraft linerboard), Ireland (market pulp, kraft linerboard), India (newsprint) and Turkey (newsprint).

GRAPH 8.3.3

#### Exports of market pulp, paper and paperboard from the Russian Federation, 1992-2010



Sources: Goskomstat of the Russian Federation, PPB-express, Moscow, author's estimates, 2011.

### 8.3.3 Russian projects aim to expand pulp and paper contributions to the green economy

A problem faced by the forest sector in Russia is inadequate wood processing capacity close to the regions of wood availability. This means a lack of significant numbers of jobs, reduced currency earnings, and slow growth for the green economy. However, a strategic aim is to develop more in-depth wood processing at an accelerated pace in the pulp and paper industry and also biofuels production.

Two examples of ongoing projects that support this strategy are “The Larch” project to expand use of larch wood for pulp, paper, and chemical products, and another project that has expanded output of wood pellet biofuels in conjunction with a pulp and paper enterprise.



Source: D. Torgerson, 2010.

“The Larch” project is an example of a public-private partnership that may become more common in the future. In April of 2011 the Commission of High Technologies of Russia, headed by Prime Minister Putin, approved the first 25 Russian technology platforms, among which was the Russian Forest Technology Platform (RFTP) as part of Platform “BioTech2030”.

RFTP has developed a National Research Agenda (NRA) for the forest-based sector, available in a long version (in Russian) and in a short version in Russian and English<sup>19</sup>. Technology platforms are built on the principles of public-private partnership. “The Larch” project (“Development of innovative technologies for complex processing of larch wood with conclusion of a new kind of pulp on the world market”) is a first real example of such a public-private partnership in the Russian pulp and paper industry. It is a joint project of JSC “Ilim Group” and the St. Petersburg State Technological University of Plant Polymers (STUPP). The project is designed for 2010-2012, with total project cost of 300 million roubles (over \$11 million).

The project is directed towards development and industrial implementation of innovative technologies for the sulphate cooking (kraft pulping) of larch wood, and also biorefining or chemical processing of components that can be pre-extracted as wood sugars prior to pulping, primarily arabinogalactan (polysaccharide of arabinose and galactose monosaccharides). Dahurian and Siberian larch contain between 10% and 30% of the water-soluble polysaccharide, arabinogalactan, which is considered to be a potentially valuable and promising raw material for many industries and animal husbandry.

There is an estimated merchantable volume of larch wood in the Russian Federation of up to 105 million m<sup>3</sup>. and more than 97% is localized in the Siberian and Far Eastern Federal Districts. Larch in the Russian Federation is seldom used for pulp and is not processed efficiently into pulp by traditional methods. It has high density and high arabinogalactan content, with typically low yield of cellulose and high solid content in black liquor (placing additional load on limited kraft recovery boiler capacity). Pre-extraction of arabinogalactan from larch wood presents an opportunity but also technical challenges associated with extraction and further processing into useful products.

On the other hand, larch wood has a unique set of properties that are beneficial for fibrous absorbent products. Its density is 1.5 times higher than that of pine and spruce. It has a well-developed capillary-porous structure and on condition of its fixation on the level of nano-fibril it is a promising raw material for hygienic products. “The Larch” project is thus a scientific and technological project focusing on forest sector development in the Irkutsk region and Krasnoyarsk Territory, offering hope for expanding the contribution of the Russian pulp and paper industry to the green economy.

Examples of more immediate contributions of the pulp and paper sector to the green economy are the expansions of biofuel production or biomass energy use in the pulp and paper industry. The Vyborg pulp and paper mill, for example, is starting a production line for wood fuel pellets with a capacity of 1 million tons per year, an output of biofuel that is equivalent in gross heating value to approximately 3 million barrels of heating oil. Meanwhile the Svetogorsk mill, which started up a new bark boiler in 2001, reconstructed it in 2008; while the mills at Arkhangelsk and Kotlas have done fundamental reconstruction work on their bark boilers, and similar work is also being done at other mills. Planned increases in natural gas prices in the Russian market will bring them more into line with world prices, and the increase in domestic prices for gas will likely result in considerable changes in the competitiveness of biofuels.

<sup>19</sup> Available at: [http://www.forestplatform.org/easydata/customers/ftp/files/New\\_files/NRA\\_Russia.pdf](http://www.forestplatform.org/easydata/customers/ftp/files/New_files/NRA_Russia.pdf)



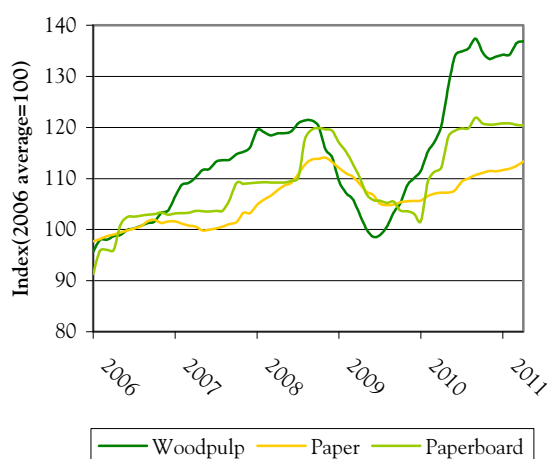
## 8.4 North America subregion

### 8.4.1 Prices on the rebound in 2010-2011

The rebound in North American market conditions can be seen in the recent trends in US price indices for wood pulp, paper and paperboard. Prices were generally on the rebound from the second half of 2009 into the first half of 2011 (graph 8.4.1). They had collapsed during the financial crisis of 2008-2009, after peaking in the third quarter of 2008. They subsequently rebounded for most pulp, paper and paperboard commodities in the second half of 2009, and the nominal price indices show that fairly robust market conditions prevailed through 2010 into 2011. Prices for fibre input commodities such as market pulp and recovered paper had more than fully recovered (to well above 2008 peak levels) by the first half of 2010. The paperboard nominal price index was also fully recovered by early 2010 and remained high into 2011. The weakest recovery was in the nominal price index for paper, generally reflecting weakened demands for graphic paper and secular declines for newsprint demand in US markets.

GRAPH 8.4.1

US monthly price indices for woodpulp, paper and paperboard, 2006-2011



Sources: US Department of Labor, Bureau of Labor Statistics, Producer Price Indices, 2011.

The fact that prices for fibre inputs such as market pulp have led the market rebound is an indicator of strong resurgence in global fibre demands, particularly in Asia, within a context of limited global fibre supply. The more modest rebound of domestic paper and paperboard prices reflects a modest rebound in domestic paper and paperboard demands. Export prices for recovered paper have also climbed well above historical averages as demands for recovered paper in China remain strong.

Factors contributing to limited global fibre supply since 2009 included generally reduced volumes of paper recovery for recycling because of reduced paper consumption in Europe and North America, the severe Chilean earthquake in February of 2010 that curtailed market pulp supplies from Chile for several months, and limited investment in pulp capacity expansion following the global financial crisis.

In general, while North American paper and board consumption and demand modestly improved, commodity prices had much improved by mid-year 2010 relative to 2009. As well as the higher prices for fibre inputs (pulp and recovered paper), the higher paper and board prices are attributable also in part to higher energy and chemical costs, capacity withdrawals and mill downtime following the global financial crisis, and a rebound in paper and board export demands.

In 2009, the tonnage of US paper and paperboard exports exceeded imports for the first time in modern memory, and the US remained a net exporter of pulp, paper and paperboard products (in total value) in 2010 and the first half of 2011. By early 2011, the Canadian pulp and paper industry achieved positive pre-tax profits for the first time in eight years according to the Conference Board of Canada (*Canada's Paper Products Industry: Industrial Outlook Spring 2011*).

North American production of paper and board increased by 5.2% in 2010 (table 8.4.1), while separately US output increased by 6.2% and Canadian output declined by less than 1%. Generally North American production, consumption and exports all experienced gains in 2010, following sharp declines in 2009.

TABLE 8.4.1

Paper and paperboard balance in North America, 2009-2010  
(1,000 tonnes)

	2009	2010	Change %
Production	84 178	88 519	5.2
Imports	13 047	13 148	0.8
Exports	19 994	21 658	8.3
Net trade	6 947	8 510	22.5
Apparent consumption	77 232	80 009	3.6

Source: UNECE/FAO TIMBER database, 2011.

### 8.4.2 Output rebounds but may have reached a plateau below previous peak levels

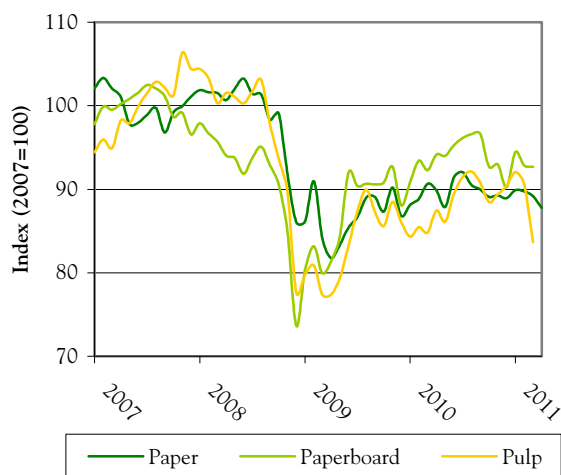
As a leading indicator of North American production trends, US production indices show that output quantities for pulp, paper and paperboard all rebounded from the sharp downturn during the global financial crisis of 2008-2009, but production levels in 2010-2011 remained below previous cyclical peak levels of 2007-

2008 (graph 8.4.2), and well below the all-time historical peaks of the late 1990s. Total US paper and paperboard production peaked in 1999, when output was more than 20% higher than output in 2010.

Monthly production indices in early 2011 were all trending downwards, a reflection of weaker US GDP growth in the first quarter of 2011 (1.8% versus average GDP growth of 2.9% in 2010). In commenting on pulp and paper market conditions on June 14, 2011, FOEX reported that the global as well as the US economy, though losing steam, were unlikely to enter a double-dip recession (<http://www.foex.fi/>). Thus, although some economists expect a return to higher economic growth in 2011, it may be that output and prices have reached a plateau and the recent market cycle may have peaked around the end of 2010 or early 2011, with output below the preceding 2007-2008 levels. If so, the long-term market trend will be in line with the declining trend in US output that has prevailed since 1999.

GRAPH 8.4.2

#### US pulp, paper and paperboard production indices, 2007-2011



Sources: US Federal Reserve, 2011.

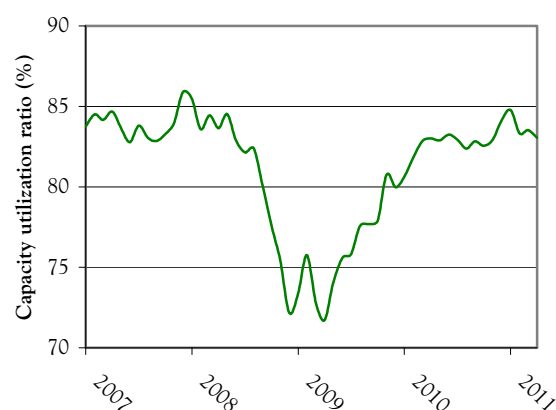
Industry capacity utilization, the industry-wide ratio of product output to production capacity, is a widely recognized indicator of the market supply/demand balance that influences market price behaviour in the pulp and paper sector. A high capacity utilization ratio generally indicates little excess supply and tight market conditions that support high prices, while a low capacity utilization ratio generally indicates excess supply (excess capacity on the market) and weak market prices. Of course, long-run shifts in capacity and shifts in product demand also influence market prices.

The recent history of capacity utilization for the US paper industry reflects frail markets and weak pricing

conditions of 2008-2009, followed by the rebound to more robust market conditions of 2010-2011 (graph 8.4.3). Because of mill shutdowns and capacity reductions, the capacity utilization ratio has nearly returned to the levels that prevailed before the 2008-2009 downturn, and prices have been high (graph 8.4.1), even though production did not return to prior levels (graph 8.4.2). Thus the market balance between demand and supply was restored and prices have rebounded despite declining trends in product demand and output.

GRAPH 8.4.3

#### US paper industry capacity utilization ratio, 2007-2011



Sources: US Federal Reserve, 2011.

### 8.4.3 Contributing to the green economy

In North America, contributions of the pulp and paper sector to the green economy continue to gain importance in terms of product development initiatives and in shaping public environmental policies. Green and sustainable features of paper and paperboard products are supporting new market strategies and an evolving symbiotic relationship between paper and paperboard market development and the green economy.

For example, policy makers in the United States have come to recognize the recyclable and compostable properties of paper and paperboard packaging as an alternative to plastic packaging materials. The state senate in California recently passed a bill prohibiting food vendors and restaurants from dispensing prepared foods in plastic polystyrene foam containers, and similar laws are already adopted by many local communities in that state (*Packaging Digest*, 6/5/2011). The laws are aimed at reducing the problem of foam plastic litter in storm drains, waterways and beaches. In this case, paper and paperboard packaging is favoured in part because

California has created easy ways for the public to recycle paper and paperboard.

At the same time, a recent business survey by Accenture of nearly 250 high-level corporate decision makers across a range of industries in the USA, UK, and China found that well over 90% are in companies that have sustainability initiatives, and over two-thirds said that resulting benefits of such initiatives have exceeded expectations. Only a “hard-core minority” (less than one-third) do not see sustainability as a critical or strategic investment (Mohan, 2011). Perhaps most importantly, three-quarters of the respondents reported that they had confidence in the financial sector to provide funding for sustainability initiatives.

Given such policy trends and corporate direction, it is not surprising that a recent survey of more than 500 packaging professionals by DuPont found the largest share (over 40%) cited “sustainability” as their leading challenge, while a smaller fraction indicated that “cost” was their biggest challenge (press release 5 May 2011<sup>20</sup>). The survey also revealed that sustainable packaging initiatives are directed mostly at recyclability or recycled content, weight reduction, use of renewable or bio-based materials, and compostable materials, all of which are goals that may be compatible with market development strategies for paper and paperboard packaging.

Not only packaging product markets, but other paper product markets in North America are also being influenced by sustainable product development initiatives. In Canada, for example, Kruger Products announced recently the receipt of the Forest Stewardship Council (FSC) Chain of Custody certification for a wide array of consumer and away-from-home tissue products, reportedly making it the first Canadian company in that market area to achieve this standard (*Pulp and Paper International*, April 2011, p. 10). Also in Canada, in 2011 Domtar Corporation, a leading pulp and paper company, was recognized by a Canadian business media magazine as among the top three corporations in Canada based on environmental, social, and governance indicators as well as assessment of how the companies manage their carbon, energy, water usage, and waste production<sup>21</sup>.



Source: M. Fonseca, 2009.

Completely new pathways to a greener economy are being explored in Canada and the United States. These include concepts for integrated biorefining and production of biofuels or wood-based chemicals at pulp mills. For example, Canada’s BioPathways Project is a bold initiative, co-sponsored by Forest Products Association of Canada and FPInnovations, aimed at investigating new opportunities to produce a wider range of bio-products from wood fibre, including possibly converting older pulp mills to produce biochemicals<sup>22</sup>. Meanwhile in the United States the concept of integrated biorefining is being actively investigated at several different pulp mill locations<sup>23</sup>.

Yet another frontier of the green economy is found in the competition between print and digital media. From a market growth and demand perspective, graphic paper grades have been facing some of the most challenging market conditions of the past decade, as advertising expenditures have shifted away from print media to electronic digital media, making deep inroads into graphic paper demands.

Recent historical trends in US newsprint consumption and newspaper print advertising expenditure, show that both have declined (graph 8.4.4). Clearly the shift of growth in advertising expenditures away from print to other media (chiefly electronic media) has led to reduced US newsprint consumption, although the declining trend was slightly moderated by the economic rebound in 2010-2011. Displacement of graphic paper demand and print media by expansion of electronic media will likely continue according to industry experts (Maine, 2011).

<sup>20</sup> <http://onlinepressroom.net/DuPont/NewsReleases/>

<sup>21</sup> <http://www.corporateknights.ca/>

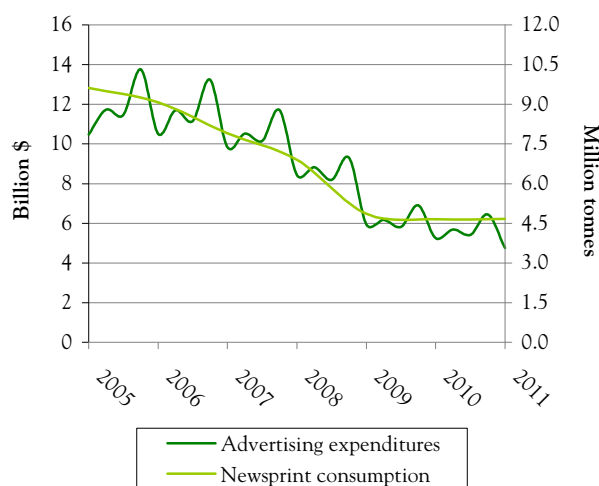
<sup>22</sup> <http://www.fpac.ca/publications/BIOPATHWAYS%20II%20web.pdf>

<sup>23</sup> [http://www1.eere.energy.gov/biomass/integrated\\_biorefineries.html](http://www1.eere.energy.gov/biomass/integrated_biorefineries.html)

However, as graphic paper demand has been increasingly challenged by electronic media, some reports have focused on the green aspects of print versus digital media. For example, the Institute for Sustainable Communication recently published a report on environmental dilemmas and choices related to print versus digital media (Carli, 2010). The report noted that a feeling of guilt and concern has been on the rise among consumers about using paper and its alleged impact on the fate of trees, forests and the environment, and that these feelings may contribute to the ongoing shift from print to digital media, but the report questioned whether these feelings were justified. One finding was that a significant cause of deforestation in the United States is coal mining, particularly in hardwood forests of Appalachia, and that America's adoption of networked broadband digital media alternatives to print is driving record levels of electrical energy consumption, produced primarily from coal in the United States. Thus the report by Carli points out that there is a significant flaw in a popular perception that adopting paperless digital solutions will "save trees".

GRAPH 8.4.4

#### Quarterly US newspaper print advertising expenditures and annual US newsprint consumption, 2005-2011



**Sources:** Newspaper Association of America, American Forest & Paper Association, 2011.

More broadly, consumers are beginning to learn about other environmental impacts of digital media such as energy consumption required to make news content continuously available on the Internet, energy consumption by consumer electronic devices, and problems with ultimate disposal of electronic devices and batteries. Of course the issue of print versus digital media is multi-faceted, involving other important criteria such as relative efficacy of advertising expenditures in different

media outlets, and neither print nor digital media are absolutely green or not green.

Thus, the theme of sustainability and contribution to the green economy resonates more strongly today among pulp and paper enterprises in North America and throughout the UNECE region, being perceived more widely as a logical way to achieve product innovation, more supportive policies, and potentially more positive market growth.

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## 9 Wood energy markets, 2010-2011

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### Highlights

- Global wood energy markets continue to grow, driven primarily by demand in the EU and its commitment to meet 20% of energy consumption from renewable sources by 2020.
  - Large investments in industrial pellet-production capacity have been made under expectations of a continuously growing demand, mainly from the EU.
  - Concern about how energy and climate-change policies may be affecting wood market dynamics and existing wood-using industries, has led to calls in Europe for a detailed evaluation.
  - Canada and the US remain the major suppliers of woody biomass feedstock, primarily pellets, to the EU. Canadian exports of industrial pellets are expected to grow in 2011.
  - A joint effort between APX-ENDEX and the Port of Rotterdam in the Netherlands has created a wood energy commodity contract exchange market, to be launched in the second half of 2011.
  - Prices for industrial pellets in the EU declined in the third quarter of 2010, but have maintained an upward trend through mid-2011.
  - The Russian pellet market is developing rapidly as new corporations and partnerships support a trend towards increasing unit size of production per plant: the world's largest pellet-producing facilities are being built currently in the Russian Federation.
  - Several Russian regional governments are successfully stimulating the use of wood energy for municipal heating.
  - New rules for the US Federal Biomass Crop Assistance Program have been issued, with a tier system of match payments that reflects emphasis on cellulosic liquid biofuels.
  - The US Environmental Protection Agency (EPA) will revisit and thoroughly assess greenhouse gas emissions from biomass and energy generating technologies and rule whether they will require CO<sub>2</sub> emission permits after the current three-year moratorium ends in 2013.
  - The expansion of wood energy to date has been largely policy-driven and there is a degree of anxiety over what might happen, if there were to be any major shift in public policy and the financial incentives that have supported it.
  - Revisions of the CO<sub>2</sub> neutrality of wood energy could severely affect markets in the EU and North America.
-

## 9.1 General energy market developments

Demand for woody feedstock is increasing, motivated by public policies that have set ambitious targets for renewable energy: for instance, the EU's aim of meeting 20% of its overall energy requirement from renewable sources by 2020 and, to a certain extent, the renewable portfolio standards in Canada and the US. Financial support to improve the cost-competitiveness of wood energy with fossil fuels will be instrumental to sustaining growth in the sector. The spike in oil prices in 2011 has provided a further rationale for choosing wood rather than fossil fuels.

International wood pellet markets grew in 2010. Increased exports from North America to the EU and the announcement of a new global commodity market for trading industrial wood pellet contracts have consolidated expectations about growth in wood energy consumption.

## 9.2 Europe subregion

### 9.2.1 Europe: policies driving markets

#### 9.2.1.1 Policies promoting renewable energy

Industrial pellets still dominate the EU's wood energy trade market, although industry co-products such as chips and sawdust take a large market share for local and regional consumption. The EU 2020 targets for renewable energy and the reduction of greenhouse gas (GHG) emissions are among the main drivers of growth in EU wood energy consumption. The 2020 targets require that at least 20% of energy consumption should come from renewable energy sources (European Commission, 2011). Research suggests that extra demand for woody biomass triggered by these targets could reach 305 million tonnes of wood (Sikkema et al., 2011).

Additional supplies of woody biomass could come from 45 million tonnes related to increased harvesting levels and about 400 million tonnes from the recovery of post-harvesting residues from altered forest management, the recovery of post-consumer wood through recycling, from the establishment of woody energy crops, and from agriculture. The research concluded that any short-term shortages of wood pellets to meet renewable energy targets within the EU-27 could be bridged by imports from nearby areas such as north west Russia. Long-term wood energy deficits could be supplied from North America and the Russian Federation.

Public financial support has been instrumental in helping large pellet operators cover the high costs of capital investment, operation and maintenance of renewable energy equipment, and pellet fuel feedstock procurement. US and Canadian pellet plants have

invested in large infrastructure to supply a growing, policy-driven demand from European power plants (Sikkema et al., 2011). There is also a trend emerging towards buying pellets up to three years in advance of delivery (Energeia, 2010; Romjin 2010).

The United Kingdom provides examples of public programmes developed to foster the use of wood feedstock in non-domestic and domestic energy generation. The UK's portfolio of financial incentives for heat and electricity generation includes the following:

- Renewables Obligation Certificates, which are tradable certificates issued under the Renewables Obligation programme for electricity generated from renewable sources. The programme targets large-scale licensed electricity suppliers. It requires the suppliers to source a proportion of all the electricity they supply from eligible renewable sources, including both dedicated biomass generation and biomass co-firing. The proportion of electricity to be supplied from renewables should increase each year to 15.4% by 2015-2016.
- Feed-in-Tariffs (FIT) Scheme, which encourages the deployment of small-scale (< 5MW) low-carbon electricity capacity by guaranteeing a fixed payment per kWh of electricity generated. The scheme also pays for any unused electricity exported to the grid. The feed-in-tariffs paid to micro Combined Heat and Power (CHP) with total installed electrical capacity of 2kW or less and available only for 30,000 units is set at 10.5 pence/kWh (Office of the Gas and Electricity Markets, 2011).
- Renewable Heat Incentive, which provides long-term guaranteed payments made quarterly over a 20-year period. The payments are available to renewable heat installations of all sizes with a launch target for the second quarter of 2011 (UK Department of Energy and Climate Change, 2011). It is estimated that a non-domestic 150kW biomass boiler running at an annual load factor of 30% using woodchips, wood pellets or logs could receive between 1.9 pence and 7.6 pence per kWh, depending on its size, and domestic biomass boilers could receive an average 4.75 pence per kWh (Econergy, 2011).

#### 9.2.1.2 Impact of EU energy and climate policies and initiatives

The EU has set an important example by its positive lead in recognizing wood as a clean renewable source of energy with considerable potential to meet Europe's future energy needs. Setting targets for renewable energy and drawing up national biomass action plans is a development that is now mirrored in many countries beyond the EU's borders. It has brought the potential of

wood as an energy source into sharp focus; and incentives to improve energy efficiency and adopt the latest technologies have encouraged investment across Europe, helping to reduce reliance on fossil fuels.

Sweden is often cited as an example of what can be achieved through public policy. By 2020, the proportion of energy to be supplied by renewable sources in Sweden has been set at 50%+ of total energy use, in line with EU Directive No. 2009/28/EC (Swedish Energy Agency, 2010). And at 44.7%, Sweden is already using the highest proportion of renewable energy in relation to final energy use of any country in the EU. Sweden has also set another ambitious target for 2020: reducing 1990 GHG emissions by 40%.

Wood fuels (27.7 TWh) form the greatest part of the 42.2TWh total amount of the biofuels Sweden uses for heat production. These biofuels consist mainly of logging residues and solid forest products industry co-products. Their use in the Swedish district heating sector has increased more than five-fold since 1990 (Swedish Energy Agency, 2010). Although most are locally grown, many are imported. The Swedish Energy Agency estimates that almost a fifth of the quantity of wood pellets used in the country are net imports.

Some industry sectors, however, are becoming increasingly worried about how EU and national policies may affect wood markets; in particular, the European Commission's Climate Change and Energy Package. Some environmental groups, too, are questioning the use of wood as a fuel, especially for producing electricity without the recovery and use of heat. There is therefore a need for an informed and participatory evaluation of the effect of using woody feedstock on the forest resource as well as the net difference in GHG emissions compared with fossil fuel alternatives.

The most efficient way to use wood for energy, in terms of recovering the highest percentage of its energy content, is to generate heat (90% efficiency), such as in district heating systems and individual house boilers (using the latest technology and with strict control over fuel quality). CHP is the next most efficient (65%-70%), followed by electricity generation (35%).

The growing demand for wood for industrial processing and energy generation is leading to increased competition for wood supplies and prices have increased. It is difficult, however, to separate the price increases coming from rising costs of labour, transport and energy from those that result from competition.

A Preliminary Draft Opinion issued by the European Economic and Social Committee's Consultative Commission on Industrial Change stressed that the woodworking and furniture sector "faces growing competition for wood from the renewable energy sector, due

to subsidies and other measures promoting the use of biomass, of which wood makes up a major share" (Zbořil and Pesci, 2011). The Committee has expressed serious concern about the market effects of EU policies that have made it more profitable to burn wood than to use it for manufactured products. It has called for a detailed evaluation of the market dynamics of wood raw materials for forest-based industries and for the renewable energy sector.

## 9.2.2 Europe market developments

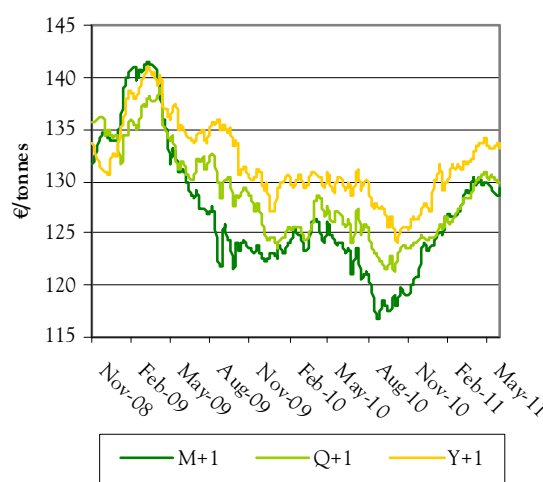
### 9.2.2.1 Wood pellet market development

A joint market consultation study among market participants and other stakeholders conducted by APX-ENDEX (the Anglo-Dutch energy exchange) and the Port of Rotterdam stressed the growth potential of the industrial wood pellets market and the need for exchange-traded biomass products. Both parties decided to further develop the biomass market. In November 2010, APX-ENDEX announced plans to launch exchange-traded industrial wood pellet contracts in mid-2011 (APX-ENDEX 2010).

Recent market trends for industrial wood pellet prices, as reported by APX-ENDEX appear below (graph 9.2.1). The footnote reference to "prices for upcoming year" means that, for instance, 2011 would represent prices for 2012. Trends show that the market price was highest in January-March 2009, after which it declined to its lowest ever recorded level, in the third quarter of 2010, and then started to rise again well into 2011.

GRAPH 9.2.1

Industrial wood pellet prices, 2008-2011



**Notes:** Industrial Wood Pellet Prices APX-ENDEX. Prices given in Euros per tonne, based on delivery CIF Rotterdam and net value of 17 MJ/kg (with water content less than 10%). M+1 represents price traded per tonnes for the upcoming month, Q+1 is next quarter price, and Y+1 captures prices for the upcoming year.

**Sources:** APX-ENDEX, 2011.

To address questions about the sustainability of materials used in producing industrial wood pellets, APX-ENDEX has drawn up draft guidelines for the market characteristics of industrial wood pellets. All deliveries will need to offer proof that the product originates from feedstock obtained in a sustainable manner. Cargo delivered under this specification must also be accompanied by proof of sustainability.

APX-ENDEX has listed several certification schemes but will reduce this number to only a few, based on the industry initiative, to come up with a common standard acceptable to all parties. Government programmes are also building in sustainability requirements for the use of woody biomass for energy. For example, the UK's Renewable Heat Incentive for biomass (wood-fuelled) heating is to develop sustainability criteria as part of a consultation process to take place in 2012. This will measure the impact of the use of biomass energy both on forests and in terms of GHG emissions. Sustainability criteria will become mandatory from 2013.

### 9.2.2.2 Market trends

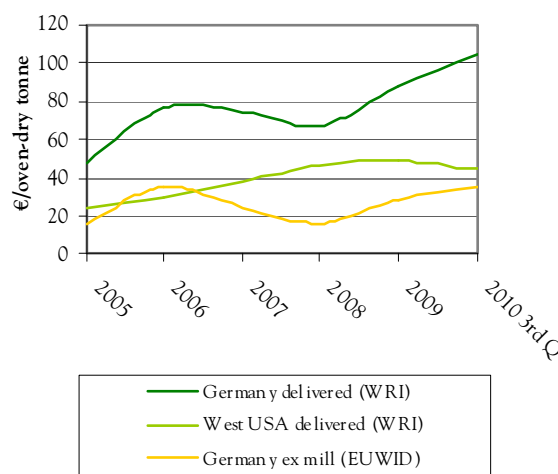
In Europe in 2009, around 650 pellet plants produced more than 10 million tonnes of pellets (Sikkema et al., 2011). Total European consumption was about 9.8 million tonnes, 9.2 million of which were consumed within the EU-27. While most markets of non-industrial pellets are largely self-sufficient, industrial pellet markets depend on wood pellets imported from outside the EU-27, mainly from North America and the Russian Federation. Because of their advanced storage facilities and long-term price-setting, industrial pellet markets are relatively mature, compared with non-industrial ones. However, industrial pellet markets remain highly dependent on public support schemes.

Prices per tonne of oven-dry sawdust in selected markets have shown high price fluctuation, with a general upward trend in selected regions, e.g. Germany and western US (graph 9.2.2). The average price for sawdust delivered to consumers in Germany has increased at a higher rate than sawdust produced at the sawmill (ex-mill). This increase in price margins might have been due to increasing transport costs and higher local demand.

Sawn-timber production decreased across North America and Europe in 2008-2009 and this, in turn, meant that less feedstock was available for energy. Simultaneously, the pulp and paper sector and the wood-based panel sector (especially oriented strand board (OSB)) slashed their input needs, leading to availability of alternative feedstock for the pellet sector from low-quality logs (pulpwood) and sawmill chips.

GRAPH 9.2.2

### Development of sawdust prices, 2005-2010



Sources: Sikkema R, Steiner M, Junginger H M, Hiegl W, Hansen M T and Faaij A 2011.

## 9.3 CIS subregion focusing on the Russian Federation

The Russian Federation's forest and wood-working sectors face significant development challenges. The forest sector is confronted with rising transport costs. The stakeholders in the reconstruction and modernization process of the municipal heating sector often have conflicting interests. And the investment climate in the wood-working sector can be labelled as bleak.

Still, the domestic wood energy market and the export of pellets are continuing to grow. Federal legislation and regional development plans are pushing the domestic use of wood energy, and intergovernmental relations and public-private cooperation are clearly improving. As production levels of the forest and wood-working sector recover, wood co-products will become more readily available. In the light of existing plans for several large Russian pellet-manufacturing facilities and installed production capacity, levels of production and exports of pellets seem bound to increase.

### 9.3.1 Russian Federation: policies driving markets

National political priorities include improved energy efficiency and increased use of renewable energy sources (RES). The main decrees, laws, national standards on renewables, and the energy strategy through 2030 were formulated in 2009. In 2010, the government continued to issue related legal documents that provide legal implements, incentives and targets to further promote the use of renewable energy.



Improving the investment climate and creating a level playing field are important to the Russian wood energy market and to the Russian wood sector in general. The country's forest and wood-working sectors need a governmental strategic development plan with clear long- and short-term goals to set priorities and provide market-development analyses and economic prognoses (Anufrieva, 2010).

Modernizing the municipal heating sector is also of vital socio-economic importance. Most district heating plants need reconstructing. In many Russian regions, it is now lucrative to convert municipal heat supply from fossil fuels to local RES; wood being the most common. Furthermore, fossil fuel prices and transport costs are constantly rising.

Regional governments have made striking progress in the 12 months up to May 2011. Several are introducing development plans and achieving tangible results in stimulating the use of wood energy for municipal heating. An increasing number of district heating plants are being converted to RES. Traditional difficulties in organizing and establishing private-public cooperation on the use of local energy sources are gradually being overcome. The system of financing municipal heating in the Russian Federation, however, remains complex and still poses an obstacle to the conversion to local energy sources.

The government of the Republic of Karelia has a programme to develop the heat sector, using local RES. Intergovernmental cooperation is in place between the Agency of Housing and Energy, the Ministry of Natural Resources and Ecology, and the Ministry of Economic Development. Of the 429 municipal boiler houses, 132 run on fuelwood and 17 on wood chips. In 30% of the 181 boiler houses that run on coal, wood is co-fired in spring and autumn.

Wood energy accounts for 18% of the Republic's municipal heat supply. In 2009 and 2010, wood harvesting levels were low and in some regions came to a halt. As a result, there was a deficit of fuelwood. Last winter, this problem was solved by transporting wood over long distances. The government has developed a more permanent solution: the regional forestry agency will carry out selective maintenance cuttings in the regions where commercial activity is not strong, currently (Sokolov, 2011).

Several related development and international cooperation projects have been started. Approximately \$300 billion will be invested to decrease the energy spent per GDP by 40% by the year 2020, according to the "Energy saving and energy efficiency improvement till 2020" decree (Russian Government, 2010). This should save the economy \$35 billion a year on energy. The International Finance Corporation (part of the World

Bank) announced a \$165 million five-year investment and consulting programme within the Russian renewable energy sector. The programme is estimated to install 205 MW of renewable generation capacity (The Moscow Times, 2010).

Several European countries (e.g. Italy, Finland, Norway and Sweden) and the EU have collaborated with the Russian Federation on energy efficiency and renewable energy projects. The United Nations Economic Commission for Europe (UNECE) is helping several Russian regions draw up Biomass Action Plans. The Russian Federation can benefit from the practical experience of European and other countries in using the latest technologies for CHP based on co-products, low value roundwood and forest residues.

The use of wood co-products can boost rural employment, increase the profitability of the woodworking sector, and trigger technological innovation. Thinning and other forest operations are costly but are becoming more common.

In general, forest stand quality in the Russian Federation is poor; the percentage of low-value fuelwood is high. Maintenance cuttings could increase forest productivity. Harvesting residues are usually just left behind, increasing the possibility of wildfires. The Forest Agency is adopting norms to promote the use of these forest residues. But the growth of the wood energy market is broadly considered to be sustainable, aside from the ecological risks and problems in the country's forestry today.

The Russian pellet market is highly oriented towards exporting to Europe. In the coming years, additional sustainability demands on woody biomass imports can be expected. European demand for Russian wood for energy will certainly rise. For example, Finland intends to increase its use of renewable energy from the current 25% to 38% by 2020. It has successfully increased its domestic production of wood for energy, which has risen six-fold since 2000, but the country will need more imports. Finland uses mostly wood chips with a few pellets. Possibilities of increasing the import of chips overland from the Russian Federation have been studied since 2008 (Metla, 2011a). In 2010, 61% of Finland's wood imports came from the Russian Federation, of which chips were the most traded assortment. Fuelwood imports to Finland were booming in 2009 but plummeted by 84% in 2010 (Metla, 2011b).

Wood energy projects in the Russian Federation can benefit enormously from Joint Implementation projects under the Kyoto Protocol. The government approved 15 such projects in July 2010, and another 18 in December 2010. On 9 June 2011, President Medvedev called on the government to make use of the Kyoto mechanisms while

they are still in effect (ITAR-TASS, 2011). Today, the 33 projects are in place and achieving satisfactory results (Usievich, 2011).

### 9.3.2 Russian Federation market developments

Although wood pellet production capacity in the Russian Federation continues to grow, less than one-third is utilized. Estimated annual production is 750,000 tonnes, of which 600,000 tonnes are exported. The Russian Federation and Europe have begun to publish data on the export and import of pellets. In contrast to earlier estimates by business consultants, the government statistics appear to understate actual trade levels.

Export prices have dropped to approximately €105-€110 per tonne FOB in the port of St. Petersburg and Ust-Luga (Ivin, 2011). Exports, almost exclusively industrial pellets and handled by traders, are mainly shipped across the Baltic Sea in loads ranging from 2,000 tonnes - 7,000 tonnes.

As Sweden and Denmark account for roughly half of the exports, the exchange rates of their local currencies are of importance. The euro and the Danish krone devalued by 12% against the rouble between June 2010 and November 2010, recovering 8% by June 2011. The Swedish krona devalued 15% but recovered only 5% over the same period.

There are almost 200 pellet-producing companies in the Russian Federation, of which two produce more than 100,000 tonnes per year. In regions with an established pellet market, fluctuations in raw material availability and increasing wood co-product prices are restructuring the market. Corporations and partnerships have been founded and the trend towards bigger plants with higher capacities per plant is continuing. Large, capital-intensive companies are replacing small ones. Increasing domestic demand could create new opportunities for small local companies. The domestic market for charcoal and briquettes is also developing.

Profit margins in the Russian pellet market are low, and many production plants closed in 2010-2011. The market potential, according to some studies, nonetheless remains high (Raktovskaya, 2011). Companies (of all sizes) with their own feedstock prove to be less prone to bankruptcy. Having an outlet for their wood co-products is in itself an incentive. Companies are converting their heat supply to local RES, especially those with their own wood chips or sawdust. Pellet production is spreading to inland regions with under-utilized co-products and low-value forest stands.

Domestic and foreign demand can be expected to rise in the coming years. On 16 June 2011, the Russian Energy Agency, the holding INTER RAO UES, and

China's National Bio-Energy Company agreed to found the joint venture "Green Energy Cooperation".

Production has now started at the world's largest pellet plant, in the Leningrad region, built by Vyborgskaya Cellulose and Ekman & Co. The plant has a projected production capacity of 1 million tonnes per year. A new holding, Russian Wood Pellets, plans to produce 3 million tonnes of wood pellets at 13 locations in the North-west and Central (around Moscow) Russian federal districts.

With this initiative, the Russian pellet sector could be entering a new era of cooperation between governmental organizations and private companies. The holding can get a 50% discount on wood procurement (on the basis of Decree No. 419 of July 30, 2007 on "Priority investment projects in the field of forest harvesting").

## 9.4 North America subregion

### 9.4.1 US: Policies driving markets

#### 9.4.1.1 Impact of federal policies

The wood energy market in the US comprises four major sectors: industrial (68%), residential (20%), electricity (9%) and commercial (3%). The industrial sector represents the wood products, pulp and paper industry; and the amount of wood energy it consumes has been mainly linked to wood product output rather than public policies. The other three sectors have been the main target of public policy at both federal and state levels. Historically, public policy has focused on promoting the use of biomass for electricity while, in recent years, there has been a shift to greater support for liquid fuels for transport.

According to a recent publication, the most effective federal incentives introduced since 2004 appear to be (a) the Renewable Energy Production Tax Credits, (b) Clean Renewable Energy Bonds, (c) Qualified Energy Conservation Bonds and (d) Investment Tax Credits (Aguilar et al., 2011). All of these are tailored to the electricity generation sector. It is also suggested that the eligibility of open-loop biomass plants (i.e. not relying on bio-energy dedicated crops, but instead on material harvested from working forests and industry co-products) for Renewable Energy Production Tax credits have favoured the greater use of woody materials, particularly in the electricity sector. Regulatory policy instruments that set renewable energy targets, such as the federal Green Power Purchasing Goal and state renewable portfolio standards, have encouraged the use of biomass as an eligible renewable energy feedstock, but a significant impact on wood energy consumption remains to be seen.

Biomass Crop Assistance Program (BCAP) implementation guidelines (section 9.4.1.2) have been recently updated. BCAP, a policy established to help meet US Federal Renewable Fuel Standards, mandates increased national biofuel use to reach 136 billion litres a year by 2022, with 21 billion gallons per year (79.5 billion litres) from advanced biofuels (US Public Law 110–140).

#### 9.4.1.2 Carbon neutrality of biomass energy

Although the electricity sector has been a major beneficiary of federal public policy support, it has recently been facing increased scrutiny because of GHG emissions. Whether power generation using woody feedstock is considered a GHG carbon-neutral option is under debate. On 12 January 2011, the US Environmental Protection Agency (EPA) announced its plan to defer for three years the requirements for GHG permits for CO<sub>2</sub> emissions from biomass-fired and other biogenic sources (EPA, 2011).

EPA has been developing guidelines to restrict emissions from certain stationary sources, such as electric power plants. It has suggested the possibility that emissions from biomass might be treated on the same terms as emissions from fossil fuels. At the same time it recognized the uncertainty about the carbon offset benefits of wood and other biomass sources (EPA, 2010). It is proposing studies during this three-year period that will (a) include a review of available technical information on biogenic emissions and (b) seek to develop accounting options for CO<sub>2</sub> from stationary sources that satisfy principles of predictability, practicality and scientific soundness. Four broad types of accounting approaches are being considered:

- Case-by-case analysis of individual source-specific permit applications.
- Categorical exclusion of biogenic CO<sub>2</sub> emissions from Prevention of Significant Deterioration (PSD) permitting.
- Exclusion of biogenic CO<sub>2</sub> emissions from PSD permitting contingent upon the US land-use sector's remaining a "net sink".
- Differential treatment of feedstock via approaches reflecting feedstock-specific attributes (GPO, 2011).

Biogenic CO<sub>2</sub> emissions being reviewed include diverse sources such as those derived from combustion of biological material, including all types of wood and wood co-products, forest residues, and agricultural material (EPA, 2011a).

To aid decision-making about building biomass energy plants during the three-year deferral period, EPA is providing guidance for determining when biomass and biogenic sources meet requirements to provide Best Available Control Technology (BACT) for reducing CO<sub>2</sub>

emissions (EPA, 2011b). The EPA decision triggered different reactions. Wood energy industry representatives have expressed concern that regulating wood energy CO<sub>2</sub> emissions such as those from co-firing it with coal could stop investment in wood-using power plants (Barnard, 2010). And environmental groups, including the Natural Resources Defense Council and Southern Environmental Law Center, are opposing the proposal to allow a three-year exemption from carbon emission regulations (Maron and ClimateWire, 2011). The Edison Electric Institute, an association of shareholder-owned electric power companies, supports the three-year deferral and supports the view that wood energy CO<sub>2</sub> emissions should be considered carbon neutral (EEI, 2011).



Source: M. Fonseca, 2010.

#### 9.4.1.3 Biomass Crop Assistance Program

BCAP was authorized by the Food, Conservation, and Energy Act of 2008 (US Public Law 110-246) to provide financial assistance to owners and operators of agricultural and non-industrial private forest land who wish to establish, produce and deliver biomass feedstocks (US Federal Register 2010). BCAP provides (a) matching payments for no more than two years to eligible material owners, at a rate of \$1 for each \$1 paid by a qualified biomass conversion facility up to \$49.60 per oven-dry ton of delivered biomass to produce heat, power, bio-based products, or advanced biofuels; (b) establishment payments up to 75% of the cost of establishing a bioenergy perennial crop and (c) up to 15 years of annual payments for woody crops (USDA, 2011). Eligible woody material, collected or harvested, must come directly from the land and, if outside BCAP project areas, must be a by-product of preventive treatments to reduce hazardous fuels, reduce or contain disease or insect infestation, or restore ecosystem health. Although BCAP payments can be received for the production of heat or power, BCAP's primary objective is to reduce the financial risk for landowners switching to energy crops as they prepare for new emerging liquid biofuel markets.

BCAP has introduced a new tiered system of reductions to annual payments based on the use for which the material or crops are sold. Conversion to cellulosic biofuels gets the smallest payment reduction (1%), followed by use of the material for production of advanced biofuels (10%), whereas uses for purposes other than conversion to heat, power, bio-based products, or advanced biofuels get the highest reduction (25%) (USDA, 2011).

The programme formally began in July 2009 and continued through a pilot phase (i.e. Notice of Funding Availability period) that ended in February 2010. Revisions to BCAP were published in the US Federal Register in October 2010. Programme changes aimed to, among other things, ensure programme “additionality” (i.e. additional biomass energy production beyond historical levels), enhance stewardship and conservation measures, protect existing wood product markets, spur the production of liquid cellulosic biofuels production and cap spending. During the Notice of Funding Availability period, BCAP gave out \$250 million in matching payments. In total, \$461 million are expected to be paid out over 15 years (USDA, 2011).

#### 9.4.2 US market developments

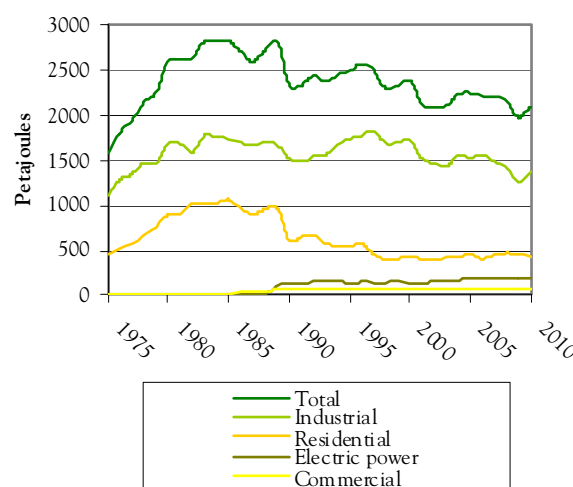
In 2010, wood use for energy was 2,095 petajoules (equivalent to roughly 230 million m<sup>3</sup> of fuelwood), up from 1,984 petajoules in 2009. Overall, use had declined between 2006 and 2009 (graph 9.4.1). The level in 2010 is still 30% lower than the 1985 high of 2,835 petajoules (US DOE, 2011b). The decline is due to decreased residential and industrial wood energy use (primarily by forest products industries). Since 2000, woody biomass has accounted for about 3% of US energy production. Wood energy consumption has declined steadily as a share of all renewable energy consumption, from 45% in 1981 to 28% in 2008 and to 25% in 2009 and 2010.

Residential heating with wood fell to only 390 petajoules in 2001, increased 22% to 475 petajoules in 2008, and declined to 443 petajoules in 2010. In commercial buildings, use has been stable since 2000. Industrial wood energy has declined 11% since 2006. Wood-based electricity production has been on a slightly rising trend: from 136 petajoules in 1990 to 187 petajoules in 2008 and to 199 petajoules in 2010.

In contrast, the production capacity of wood pellets, primarily for residential heating and export, has escalated from 600,000 tonnes in 2003 to over 4 million tonnes in 2009. Exports increased five-fold, from under 50,000 tonnes in 2006 to over 250,000 tonnes in 2008. Capacity is expected to expand further to meet increased demand in export markets (Spelter and Toth, 2009).

GRAPH 9.4.1

US wood energy consumption by user, 1975-2010



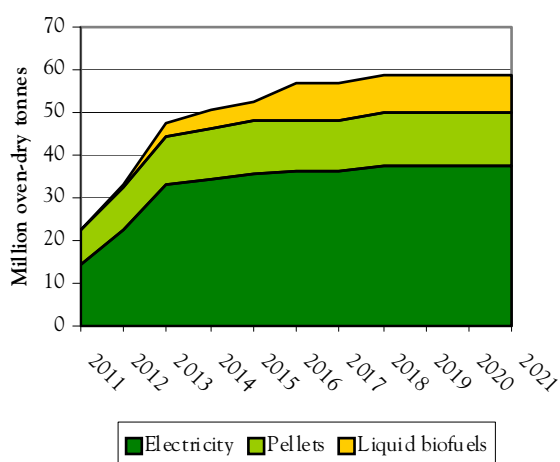
Sources: Adapted from US DOE, 2011b.

Reference Case projections in the 2011 *Annual Energy Outlook* suggest a potential 37% increase in wood energy use by 2030 to 2,870 petajoules (about 315 million m<sup>3</sup> equivalent of fuelwood) (US DOE, 2011a). This outlook assumes natural gas price increases for residential (+13%), commercial (+15%), industrial (+37%) and electric power (+25%) use. It assumes coal prices for electricity generation to increase 13%, and imported oil prices to rise 51%. The outlook for expansion of ethanol production into use of cellulosic feedstocks is projected to be limited to 13-16 billion litres by 2022 under current policies and would not meet the 61 billion litres target for 2022 if these policies are not modified.

An analysis by Forisk Consulting suggests that planned energy project could result in increased wood for energy use to 58.9 million oven-dry metric tonnes by 2021 (graph 9.4.2). Forisk identified announced US wood energy projects for electric power, pellet production and liquid fuel production along with their potential annual wood energy demand. They applied several screens with limitations based on readiness of technology and status. If the project has received/secured/signed two or more of the following, then it passed the status screen: (a) financing, (b) air quality permits, (c) engineering, (d) procurement and construction contracts, (e) power purchase and interconnection agreements for electricity facilities, and (f) supply agreements. The screens are a way to assess the likelihood that projects will complete the development process and actually produce bioenergy. Total wood energy demand passing status screens is expected to total 32.4 oven-dry metric tonnes by 2021.

GRAPH 9.4.2

## Projected wood for energy use in the US, 2011-2021



**Note:** Based on announced US facilities on 25<sup>th</sup> May 2011 and wood use after applying screens to identify projects that are likely to succeed.

**Sources:** Adapted from Forisk Consulting, 2011.

## 9.5 Developments in Canada

### 9.5.1 Canada: Policies driving markets

At the national level, important Canadian programmes include the Pulp and Paper Green Transformation Program (announced August 2009) and the mandate for renewable fuels in the gasoline pool which was scheduled to come into force in 2010. Only one year remains in the Pulp and Paper Green Transformation Program, which was designed to provide funding for forestry companies to finance projects that will, in turn, increase renewable energy production and deliver increased energy efficiency. The maximum funding is capped at Can\$1 billion, and at the individual company level is calculated based on a Can\$0.16/litre credit for the volume of black liquor produced by their mills between 1 January 2009 and 31 December 2009. Firms have until 31 March 2012 to draw on funding to finance approved capital projects (Natural Resources Canada, 2010). At the time the programme was announced, 24 Canadian companies qualified for credits under the programme. By April 2011, about Can\$278 million had been allocated to various projects across the country (Pernegre, 2011).

Canada's national Renewable Fuels Standard mandates an average 5% renewable fuel content within the gasoline (petrol) pool, which will provide an estimated incremental reduction of GHG emissions of about 1 million tonnes of CO<sub>2</sub> equivalent per year, over and above the reductions attributable to existing provincial requirements. Regulations are already in force

around this target. The Renewable Fuels Standard also requires 2% renewable fuel in the diesel fuel pool by 1 July 2011. Provincial mandates for renewable fuels are in place in British Columbia (5% by 2010), Saskatchewan (7.5% since 2007), Manitoba (8.5% since 2008), Quebec (5% by 2012), and Ontario (5% since 2007). The legislation contains no provisions for wood-based biofuels.

The Canadian government's plan to phase out coal-fired electricity generation would affect 21 plants, though no legislation yet exists to enforce this policy. The Canadian Wood Pellet Association has lobbied heavily to introduce co-firing of wood pellets with lignite coal, estimating that a co-firing rate of 5% would create a market for 2.6 million tonnes of wood pellets per year, or almost twice Canada's current production capacity (Wood Pellet Association of Canada, 2011). The Association has pushed hard to create policy to support greater uptake of biomass and is working with the Canadian Clean Power Coalition to increase biomass use across the country (Wood Pellet Association of Canada, 2011).

#### Quebec

Provincial strategies are continuing to lead the way in bioenergy development. In Quebec, about 60 MW of biomass electricity capacity is being developed, and subsidies of up to Can\$3 million are being provided for the demonstration of GHG reduction technologies (Energiesvertes, 2011). Bioenergy is seen as a key component in a targeted reduction of Quebec's GHG emissions by 2020.

#### Ontario

In Ontario, the Green Energy and Green Economies Act (Ontario Bill 150) remains a contentious piece of legislation. Biomass, particularly taken from forests and agricultural operations, has not become a major component of Ontario's electricity mix, despite the presence of a FIT at Can\$0.13/kWh. The Ontario FIT provides 20-year contracts. With only 18 MW currently under construction, wood-to-electricity represents only 0.6% of the projects supported by this Act (Ontario Power Authority, 2011). Ontario Power Generation is targeting 2012 as the year it will begin using renewable biomass as a replacement fuel for coal in some of its electricity generating units. The Canadian Wood Pellet Association, while supportive of increasing biomass use, has complained about the Ontario-only approach to biomass sourcing taken by the government, suggesting that such wording would contravene inter-provincial trade law (Wood Pellet Association of Canada 2011). Ontario's Long Term Energy Plan puts biomass-to-electricity at about 1.3% of the total provincial electricity demand, or about 2.6 TWh per year, by 2030, which could require up to 3.1 million green tonnes or 14% of

the annual sustainable harvest in the province (Ontario, 2010). Growth in biomass-to-electricity could also be achieved by increasing incentives available; a recent report suggests that the FIT would have to rise to \$CDN 0.273/kWh in order provide a 20-year internal rate of return of 27% and a three-year payback period (Monieson Centre, 2011). The FIT programme is currently under review.

### British Columbia

In British Columbia, policy under the title of the BC Bioenergy Strategy has suggested that by 2020 biofuel production could meet 50% or more of the province's renewable fuel requirements. The Strategy commits to developing at least 10 community energy projects over the same period and places the onus on the provincial forest service to establish a comprehensive biomass inventory to help support these projects. The Strategy builds on \$CDN 25 million in funding for the BC Bioenergy Network that is meant to drive investment and innovation. In addition, a two-part Bioenergy Call for Power focuses on the existing biomass inventory (BC Bioenergy Strategy, 2011).

## 9.5.2 Canada: Market developments

The twelve months to June 2011 have seen no dramatic changes in Canada's wood energy sector. The country's two major uses of wood for energy are self-generation of power for the forest sector and pellet production for domestic and international markets. In 2008, energy production from wood totalled about 463 petajoules, which is more or less the same as in recent years (IEA, 2011).

The attractiveness of wood energy is strong enough that some large investments have been made in capacity. For example, there are plans to spend up to \$CDN 153 million on retrofitting an old pulp and paper mill in Quebec to generate power. A 25MW power plant fed by waste from its operations and from an extensive local network of chip and other biomass suppliers is expected to begin supplying electricity by late 2012. The company further plans to begin production of dissolving grade cellulose for the textile industry by mid-2011.

Studies continue to indicate that a wood-energy system has great potential for Canada; for example, it has been estimated that a bioenergy production and delivery system built around the Great Lakes St. Lawrence Seaway system could not only displace all the coal-fired electricity in Ontario but also provide 620 million litres of green biodiesel (Hacatoglu et al., 2011).

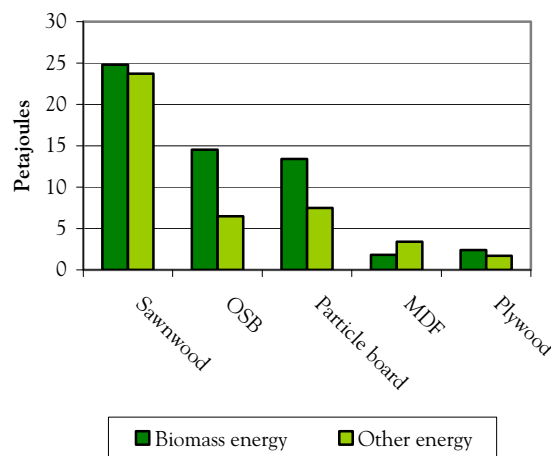
A new report released by FPInnovations provides a good sense of how wood energy is used within the forest sector (Meil et al., 2010). It notes that the manufacture of

solid wood products and panels does not require much energy, with typical energy costs representing less than 5% of the cost of goods sold. At the same time, industry spending on energy doubled between 1998 and 2008. The incentives provided under the Pulp and Paper Green Transformation Program have driven changes in pulp and paper self-generation. There is significant capacity for energy generation both in solid wood and panel production.

Estimates of annual energy consumption by the various wood processing sectors appear below solid wood and panel production (graph 9.5.1). Softwood lumber production uses the most energy, followed by particleboard, OSB, Medium Density Fibreboard (MDF) and plywood. The amount of biomass energy used in each of these manufacturing processes is significant, ranging from 69% (average for OSB) to about 35% (average for MDF). Other energy used in the process may be fossil-based or, depending upon local electrical generation grid, include renewables such as hydro, solar, or wind power.

GRAPH 9.5.1

### Annual energy consumption in Canadian wood industries

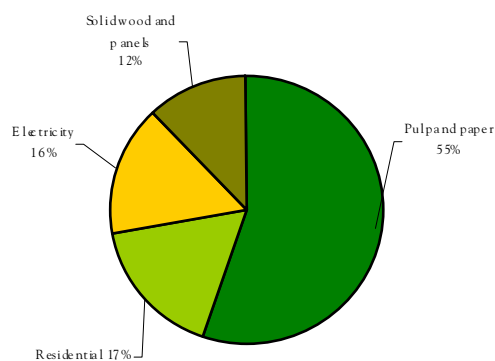


Sources: Calculated with data from Meil et al., 2010, FAOSTAT, 2011.

The breakdown of wood energy consumption by the major users is shown below (graph 9.5.2). The pulp and paper sector is by far the largest user of the annual production of 463 petajoules, which is roughly equivalent to 4.1% of Canada's total primary energy supply (IEA, 2011).

GRAPH 9.5.2

Share of wood energy consumption in Canada, by major users, 2008



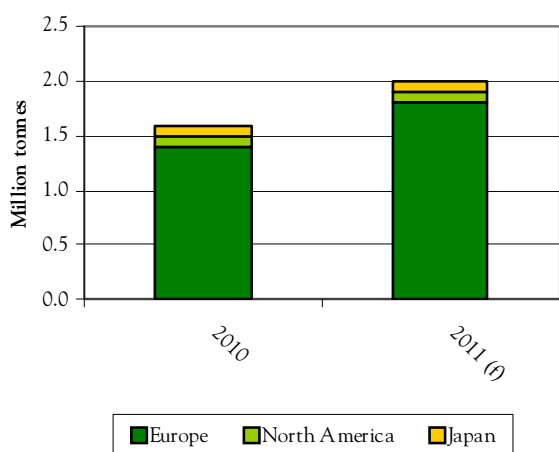
Note: Total energy consumption 463 PJ.

Sources: Calculated with data from International Energy Agency 2011 Meil et al., 2010, FAOSTAT 2011.

Wood pellet production in Canada is continuing to grow and, in 2010, almost 1.5 million tonnes of wood pellets went to overseas markets; most coming from British Columbia. Europe was the principal destination for exports to customers in Belgium, Denmark, the Netherlands and the UK, for co-firing with coal in electricity power stations (graph 9.5.3). Across Canada in 2011, 33 pellet plants were operating at almost their full capacity, about 2 million tonnes.

GRAPH 9.5.3

Canadian wood pellet exports, 2010-2011



Note: f = forecast.

Sources: Wood Pellet Association of Canada, 2011.

Pellet production is concentrated in western Canada (70% of capacity), mainly British Columbia, where average plant capacities of about 118,000 tonnes per year, compare with only 43,000 tonnes in the eastern provinces. Production capacity in the east is growing, however, with Ontario, Quebec and several Maritime Provinces all home to new pellet facilities. Today, around 20 wood pellet plants are in various stages of planning or construction across the country (Wood Pellet Association of Canada, 2011).

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# 10 Certified forest products markets, 2010-2011

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## Highlights

- By May 2011, the global area of certified forest was 375 million hectares, a 7% increase from May 2010; almost all the recent growth in certified area has taken place in the Russian Federation and North America.
  - Almost 90% of certified forests are in the northern hemisphere.
  - The potential supply of industrial roundwood from certified forests was estimated as 447 million m<sup>3</sup> in May 2011, about 25% of global roundwood production.
  - The area of certified forest in Europe increased by 9% from 93.3 million hectares in 2010 to 101.7 million hectares in 2011, the first increase since 2008.
  - While the numbers of Chain-of-Custody (CoC) certificates continued to grow in 2010 and 2011, they have not followed the exponential growth witnessed until 2010 and the volumes that they account for are insignificant, in relation to the volumes of wood products traded globally.
  - There is little firm evidence that certified forest products attract a price premium; what little evidence exists is mostly anecdotal.
  - Globally, forest certification is becoming better known and might become a tool to ensure economic security and jobs in the future.
  - The development of green building codes in Europe, the US and Asia-Pacific should present market opportunities for certified wood products but it is of key importance for the forest products sector to take an active role in their development.
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## 10.1 Introduction

This year's chapter reviews the market and trade in Certified Forest Products (CFPs) and focuses on how market tools, such as certification, contribute to the green economy. The chapter also examines policy-related aspects of certification in the forest sector.

CFPs bear labels demonstrating, in a manner verifiable by third-party independent bodies, that they come from forests that meet the standard of sustainable forest management (SFM) (figure 10.1). Consumers may find labels on furniture and wood products, while manufacturers can verify the sources through the certification scheme's chain-of-custody (CoC) procedures. This chapter takes account of national and international, independent third-party certification of forests by organizations such as the American Tree Farm System (ATFS), Canadian Standard Association (CSA), the Sustainable Forest Initiative (SFI), and the Malaysian Timber Certification Council (MTCC), which is the only independently certified national scheme from a tropical country. However, the graphs mainly present data only for the Forest Stewardship Council (FSC), and the Programme for the Endorsement of Forest Certification (PEFC). Data for national systems that have since been endorsed by PEFC (ATFS, CSA, MTCS, SFI) have been amalgamated into the PEFC data and do not appear separately after the date of endorsement.

FIGURE 10.1

Example labels of major forest management and chain-of-custody certification schemes.



**Sources:** Modified after Nordic Family Forestry, 2007, individual certification schemes (ATFS, CSA, FSC, MTCC, PEFC, SFI) and authors' compilation, 2011.

While attempts are made to be impartial and objective, certification and CFP markets remain controversial within the forest sector – especially due to the fact that broadly organized and targeted data collection on production and trade flows is clearly missing. Section 4 in this chapter deals with topics such as impacts and awareness of certification, Green Building

Initiatives (GBIs) and trade legislation related to certification and illegal logging. The chapter focusses on certification systems based in the UNECE region but provides an overview of developments in Asia, one of the largest marketplaces for forest products.

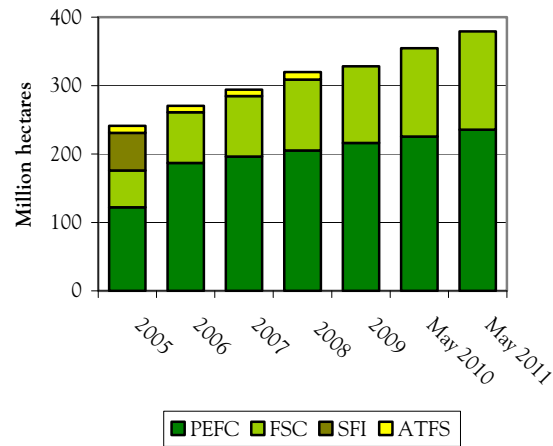
## 10.2 Development of forest certification

### 10.2.1 Overview

By May 2011, the global area of certified forest, endorsed by one or other of the international frameworks – the FSC and the PEFC – amounted to 375 million hectares, up 7% (23.5 million hectares) since May 2010 (graph 10.2.1). There is a rough overlap of 3.75 million hectares due to double certification.

GRAPH 10.2.1

Forest area certified by major certification schemes, 2005-2011



**Notes:** Data cover all FSC- and PEFC-certified forest land together with land certified under the following large national certification systems: Malaysian Timber Certification System (MTCS), American Tree Farm System (ATFS), Sustainable Forest Initiative (SFI) and Canadian Standards Association (CSA). Data for national systems subsequently endorsed by PEFC (MTCS, ATFS, SFI, CSA) are amalgamated into the PEFC data and not shown separately after the date of endorsement.

**Sources:** Individual certification systems, Certification Canada and authors' compilation, 2011.

The rate of increase of certified forest area has slowed during the past decade. Since 2009, two certification schemes (PEFC and FSC) have been dominant, since all smaller schemes have been endorsed by PEFC. The area of forest certified by FSC increased 11% and that certified by PEFC by 5%, between 2010 and 2011. However, the trends for both systems have been similar over the past decade.

In the 1990s, the certified forest area grew exponentially but, since 2001, growth has followed a linear path, with an annual increase of 10% - 20% until 2006. Since then, the pace of certification has slowed further, averaging 23 million hectares per year. One explanation is that a majority of managed forest in the northern hemisphere, with the exception of the Russian Federation, is already certified. Another factor is that initial expectations of a price premium for certified forest products have not been met. The greatest potential now for forest certification is in the tropical forests of the southern hemisphere. Preventing deforestation in the tropics was among the key drivers for introducing forest certification but this is the area where the least progress has been made. After 20 years, still only roughly 2% of tropical forest has been certified: in the meantime, more than 290 million hectares have been deforested (<http://foris.fao.org/static/data/fra2010/KeyFindings-en.pdf>).

The proportion of global industrial roundwood supply from certified forests was estimated at 25.3% (447 million m<sup>3</sup>) from May 2010 to May 2011, a slight fall from the previous 12-month period (table 10.2.1).

In terms of certified forest area, PEFC is the largest programme, though FSC has been expanding faster from 2008-2010, due mainly to large areas certified in North America (especially Canada) and the Russian Federation. FSC operates in 81 countries and, by May 2011, its certified forest area totalled 143 million hectares, compared with 129 million hectares in May 2010. Most FSC-certified forest lies in the northern hemisphere, mostly in Europe (44%), where there are 62.4 million hectares and in North America (38%) with 54.5 million hectares.

The PEFC-certified forest area rose from 225 million hectares in May 2010, to 236 million hectares in May 2011—slightly less than two-thirds of the globally certified forest area. Currently, PEFC endorses 29 national certification systems, while 25 countries have active certificates for forest management. The great majority of PEFC-certified forest lies in North America (mainly Canada and US) and Europe (mainly Finland and Norway).

Globally, the certified area is not evenly distributed. More than half (54%) the certified forest area is in North America, just under one quarter (23%) in the EU/EFTA region and 12% in other Europe and the CIS. The remaining 11% is split across the southern hemisphere.

TABLE 10.2.1

## Potential global and regional supply of roundwood from certified resources, 2009-2011

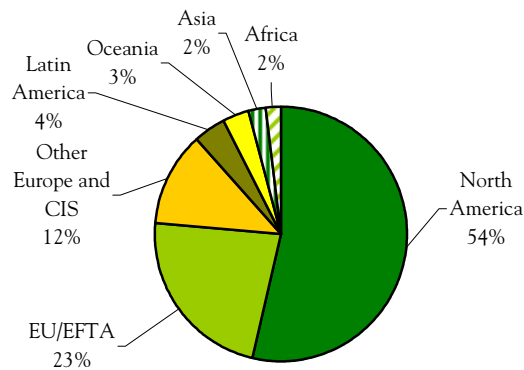
Region	Total forest area (million ha)	Certified forest area (million ha)			Certified forest area (%)			Estimated volume of industrial roundwood from certified forest (million m <sup>3</sup> )			Estimated proportion of global roundwood production from certified forests (%)		
		2009	2010	2011	2009	2010	2011	2009	2010	2011	2009	2010	2011
North America	614.2	180.3	199.8	201.0	29.4	32.6	32.7	175.6	194.6	201.0	9.8	10.9	11.3
Western Europe	168.1	82.2	85.0	85.3	46.5	51.2	50.8	238.1	261.7	227.5	13.3	14.6	12.8
CIS	836.9	25.2	29.9	44.3	3.0	3.6	5.3	4.9	5.8	8.5	0.3	0.3	0.5
Oceania	191.4	10.3	11.6	12.3	5.0	5.6	6.4	2.5	2.8	3.5	0.1	0.2	0.2
Africa	674.4	5.6	7.3	7.6	0.9	1.2	1.1	0.6	0.8	0.8	0.0	0.0	0.0
Latin America	955.6	14.6	14.4	16.1	2.1	1.6	1.7	3.6	2.7	3.2	0.2	0.1	0.2
Asia	592.5	3.0	8.6	8.1	1.4	1.5	1.4	3.1	3.4	2.8	0.2	0.2	0.2
World total	4 033.1	321.2	356.7	374.9	8.2	9.0	9.3	428.4	471.8	447.3	24.0	26.4	25.3

**Notes:** The reference for forest area (excluding “other wooded land”) and estimations for the industrial roundwood production from certified forests are based on FAO’s *State of the World’s Forests 2007 and 2010* data. The subregions’ annual roundwood production from “forests available for wood supply” is multiplied by the percentage of the regions’ certified forest area (i.e. it is assumed that the removal of industrial roundwood from each ha of certified forests is the same as the average for all forest available for wood supply). However, not all certified roundwood is sold with a label. 2011 covers May 2010 - May 2011, and 2009 and 2010 are also from May to May. “World” is not a simple total of the regions.

**Sources:** Individual certification systems, Forest Certification Watch, the Canadian Sustainable Forestry Certification Coalition, 2010, FAO, 2007, FAO, 2010, and authors’ compilation. Information valid at May 2011.

GRAPH 10.2.2

Relative shares of total global certified forest area by world region, 2011



**Notes:** Overlaps due to double certifications are not considered in the graph.

**Sources:** Individual certification systems, country correspondents, Forest Certification Watch, Certification Canada, authors' compilation, 2011.

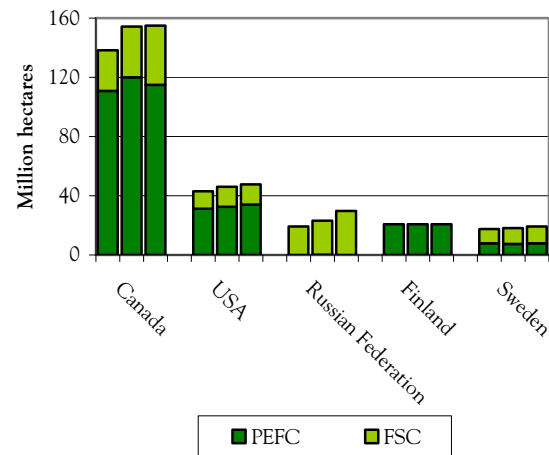
Within the UNECE region, the ranking of the five countries with the largest area of certified forest has not changed since May 2010. In the eight years since 2004, North America has had the largest area of certified forest: Canada has 153.1 million hectares and the US 47.3 million hectares (graph 10.2.3).

The Russian Federation now ranks third within the UNECE region and in the world and continues its trend of strong increase. With a growth rate of 28.4%, the certified area in the Russian Federation increased from 23.1 million hectares in May 2010 to 29.7 million hectares in May 2011. This area is entirely certified by FSC since the 180,000 hectares by PEFC do not show in the statistics anymore. However, given the steep trend, the Russian Federation might become the country with the second largest certified forest area in the world within the next two years.

Finland now ranks fourth in the world and has the largest absolute area of certified forest of any country in western Europe: 20.5 million hectares of Finland's forest area of 26 million hectares are now certified, though this figure has remained unchanged for the past three years.

GRAPH 10.2.3

Five countries' certified forest area, within the UNECE region, 2009-2011



**Notes:** Bars for each country represent years from 2009 to 2011. The graph contains no overlap from double certification. Information valid as of May 2011.

**Sources:** Individual certification systems, country correspondents, Forest Certification Watch, Canadian Sustainable Forestry, Certification Coalition, authors' compilation, 2011.

### 10.2.2 North America subregion

The FSC-certified forest area in North America (US and Canada) increased from 47.8 million hectares to 54 million hectares. However, there were losses of 3.7 million hectares under the PEFC scheme (down from 152.4 to 148.7 million hectares in May 2011). There is some concern that the rate of growth in forest management certification has peaked in North America. Most commercial forests in Canada – 153 million out of 210 million hectares (73%) – have already been certified by at least one third-party standard and it is likely to become increasingly difficult to engage the remaining forests in a certification programme.

The situation in the US is similarly challenging. One of the largest categories of land not currently certified is federal land, including the national forests. The US Forest Service manages 78 million hectares of land, and has not so far decided to pursue certification of the forests it manages. Apart from the federal lands, most remaining non-certified ownerships have only small forest holdings.

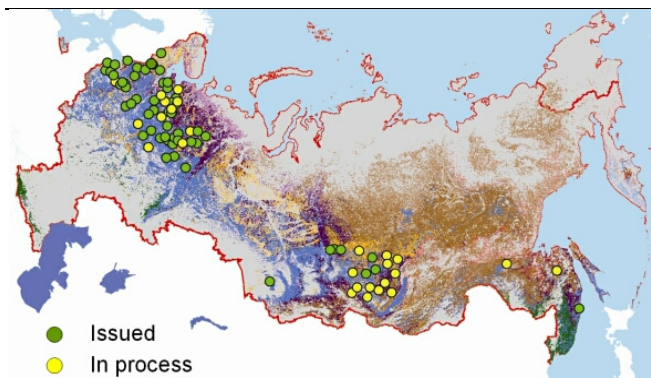
### 10.2.3 CIS subregion

Forests in the Russian Federation cover 1.2 billion hectares, about 69% of the entire territory, but the total certified forest area stood at only 30 million hectares in May 2011 (though this was 28% higher than in May 2010). Currently, the only third-party certified forest management programme operating in the Russian Federation is the FSC scheme, concentrating on three

regions: the European part of Russia, Central Siberia and the Far East (Figure 10.2.3).

FIGURE 10.2.3

Locations of Forest Management Certificates under FSC in the Russian Federation



Source: www.forest.ru, modified after Mikhail Karpachevskiy (Biodiversity Conservation Center), 2009.

Logging operations in the Russian Federation exist on 100 million hectares of forested land. The annual harvested level is about 140 – 160 million m<sup>3</sup> of timber while the potential is 500 million m<sup>3</sup> per year (Tysiachniouk 2006). According to the authors' compilation, some 8.5 million m<sup>3</sup> of harvested timber (only 5% - 6%) are estimated to come from certified forests. However, case-study authors have noticed some visible macro-economic effects like improved tax collection, market transparency, employment, or wages and investment, through certification (Golovina, 2009).

PEFC certified 7.8 million hectares for the first time in Belarus, in August 2010.

In 2009, the European Bank for Reconstruction and Development (EBRD) launched a technical assistance project to support forest certification in the Ivano-Frankivsk district of Ukraine), under the FSC scheme. The first phase of the project, currently underway, provides support to 15 state forest enterprises (SFEs) through training, information dissemination, guidance and assistance with internal audits for the implementation of FSC certification requirements.

10.2.4 Europe subregion

After some years of stagnation, the area of certified forest in Europe increased by 9% from 93.3 million hectares in May 2010, to 101.7 million hectares in May 2011.

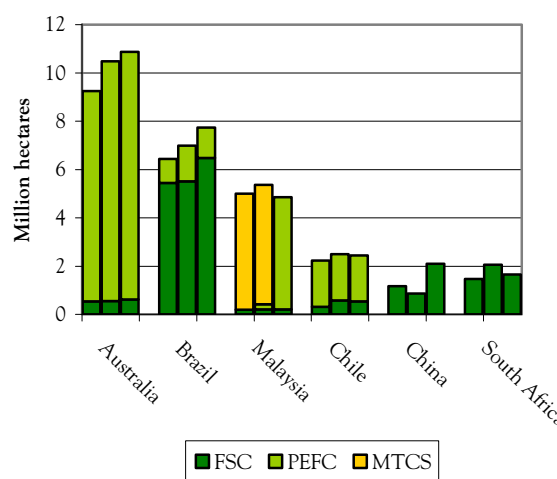
10.2.5 Other regions

Outside the UNECE region, the ranking of certified area has not changed among the top three countries, which remain Australia (with 10.9 million hectares),

Brazil (7.7 million hectares) and Malaysia (4.9 million hectares) (graph 10.2.4). While there have been increases in the certified area of Australia (up 4%) and Brazil (up 11%), there have been losses in Malaysia (down 10%). Most of the certified forest area in Australia is under the PEFC umbrella (94%) while some 84% of all certified forest area in Brazil is under the FSC scheme.

GRAPH 10.2.4

Certified forest area in six countries outside the UNECE region, 2009-2011



Note: The graph contains some overlap from double certification. Information valid as of May 2011.

Sources: Individual certification systems, country correspondents, Forest Certification Watch, Canadian Sustainable Forestry Certification Coalition and authors' compilation, 2011.

The only third-party certified national system in the tropics, MTCS - by the Malaysian Tropical Timber Committee (MTCC), has been included in this chapter since 2008. MTCS has increased its certified area in Malaysia by 5-7% annually since 2008. From May 2010 to May 2011, the area of MTCS-certified forest fell by 500,000 hectares. However, this year's statistics are the first that list the certified area of MTCC as fully endorsed by PEFC. It is possible, therefore, that the reduction over the 12 months to May 2011, could simply be a reflection of the on-going processes of re-certification.

The most dramatic changes in certified forest area outside the UNECE region from May 2010 to May 2011 occurred within the ranking of the countries behind Australia, Brazil and Malaysia. The Republic of Congo has 2.7 million hectares certified by FSC and now ranks fourth, directly followed by Uruguay which has some 2.6 million hectares certified by FSC and overtook four countries since May 2010. Chile and China also have more than 2 million hectares of certified forest area. While in most of the countries the certified area increased, there were losses of 50,000 and 800,000

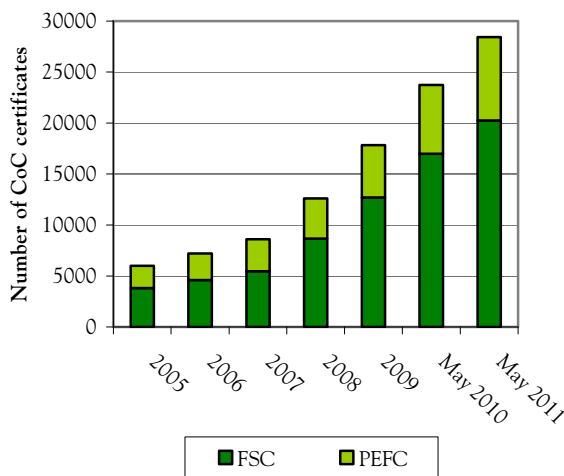
hectares of certified forest area in Chile and South Africa, respectively. In Gabon, the certified area remained the same (1.9 million hectares).

### 10.3 Growth of chain of custody certification

CoC certification has been growing exponentially from 2005 (in fact, since its introduction in 1997) with growth of 20% between May 2010 and May 2011, compared with over 33% in the previous 12 months. Between May 2010 and May 2011, the total number of PEFC and FSC CoC certificates issued worldwide increased to 28,423 (graph 10.3.1). This indicates that trade interest in certification as a tool to demonstrate high environmental performance has remained strong, despite the recession. CoC certification is a major marketing tool for enterprises in the forest sector, differentiating their products and improving their competitiveness in the market.

GRAPH 10.3.1

Chain-of-custody certified trends worldwide, 2005-2011



**Notes:** The numbers denote CoC certificates irrespective of the size of the individual companies or of volume of production or trade. Information valid as of May 2011.

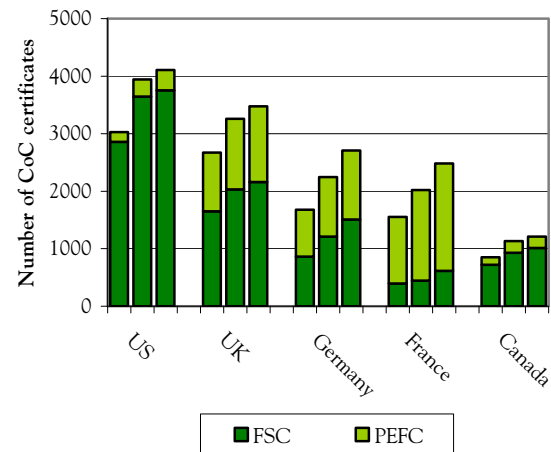
**Sources:** FSC and PEFC, 2011.

The US is in the lead with 4,110 certificates, followed by UK (3,473), Germany (2,707) and France (2,484).

While FSC issues the majority of CoC certificates in North America, PEFC tends to be more dominant in the leading European countries (graph 10.3.2).

GRAPH 10.3.2

Chain-of-custody certificates in five countries within the UNECE region, 2009-2011



**Notes:** Bars for each country represent years from 2009 to 2011. The numbers denote CoC certificates irrespective of the size of the individual companies as of May 2011.

**Sources:** FSC, PEFC and authors' compilation, 2011.

Outside the UNECE region, FSC is by far the major issuer of CoC certificates (graph 10.3.3). Latest trends show that PEFC has increased the rate of growth in the number of its CoCs issued to around 30% in the past two years, though from a low base.

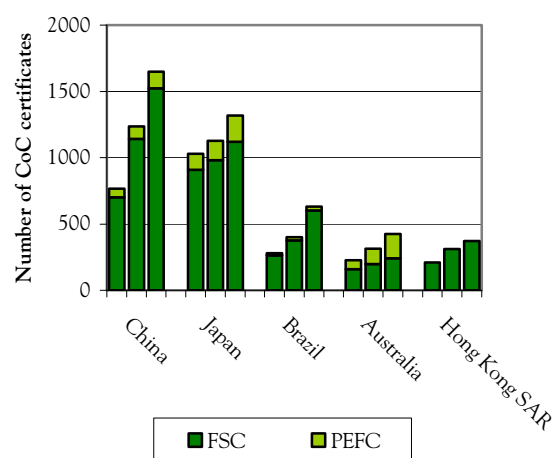
China is the leading country in terms of CoC certificates with 1,648 issued in 2011, but the rate of growth in the number of certificates has not continued to show the exponential growth rates seen from 2008 to 2010, during which period the numbers of CoC certificates tripled.

The numbers of CoC certificates and the volumes that they account for are still insignificant in relation to the volumes of wood products traded globally.



GRAPH 10.3.3

Chain-of-custody certificates in five countries outside the UNECE region, 2009-2011



Notes: Bars for each country represent years from 2009 to 2011. The numbers denote CoC certificates irrespective of the size of the individual companies as of May 2011.

Sources: FSC, PEFC and authors' compilation, 2011.

## 10.4 Key forest certification issues

### 10.4.1 Mutual recognition between the certification schemes

There are an estimated 3.75 - 5 million hectares that have been certified by more than one of the major schemes. The need for such double or "dual" certification would be removed if the largest certification schemes could agree "mutual recognition". However, mutual recognition appears unlikely. There continues to be strong competition between programmes regionally (e.g., SFI and FSC in North America) as well as visible competition internationally between FSC and PEFC. Mutual recognition would require either significant change by one or more programmes or an acceptance of significant differences in the way each programme operates and is structured (table 10.4.1). There are differences between the FSC and PEFC approaches to standard setting, accreditation of certification bodies and other programmatic functions. Potentially the most significant difference between PEFC and FSC is their viewpoint about government involvement in the processes of standard setting and certification.

TABLE 10.4.1

Differences in programmatic structures between PEFC and FSC

	PEFC Methods	FSC Methods
<b>Standard Setting and Approval</b>	ISO/IEC Guide 59	ISEAL Code of Good Practice for Setting Social and Environmental Standards
<b>Accreditation of Certification Bodies</b>	Administered by national accreditation bodies that comply with ISO/IEC 17011:2004 and are members of the International Accreditation Forum (IAF)	Administered by Accreditation Services International (ASI)
<b>Membership</b>	National Governing Bodies and Stakeholders	Individuals and Organizations, excluding governmental bodies
<b>Auditing</b>	ISO/IEC 17021:2006 and/or ISO Guide 65:1996.	ISO/IEC Guide 65:1996 (E)

Source: Individual Certification Schemes and authors' compilation, as of May 2011.

### 10.4.2 Costs of certification

The costs of certification are highly variable and have to distinguish between direct and indirect costs. Factors influencing direct costs include the size of operation, location, management history, ownership, and complexities in land tenure. Furthermore, costs depend on the global region of certification and the type of forest (tropical, boreal, temperate). Additional direct costs for management plans and field audits vary greatly among the systems. Too little verified detail on direct costs is known officially from the customer side, but direct costs of certification generally increase as ownership size decreases. Costs may vary from \$2 to \$60 per hectare. Annual audits may cost from \$0.1 to \$40 per hectare (Hansen, 1998). In most of these cases, clear advantages in terms of lower direct costs are reported from large-scale industrial forest plantations. Subsequent fees also need to be considered as direct costs. For instance, MTCC imposed a logo usage fee on the Malaysian timber producers. The logo usage fee consists of a one-time issuance fee (about \$16) and an annual fee (\$87-\$580 or \$0.6 per hectare). The logo fee will be charged to all PEFC Logo users under the MTCS, i.e. both certificate holders (for forest management and CoC) and non-certificate holders (certification bodies). CoC certification primarily uses existing inventory control systems to assure segregation of certified and non-certified material. The direct cost of certification typically is less than \$3,000.

The second cost of certification is the indirect cost of changing management practices, if necessary, to obtain certification and also to follow the reduced management options regulations in order to maintain the certificate. Restricted forest management options may reduce wood and fibre production and increase the cost of delivering wood to market (van Deusen, 2010). There is little researched information about the indirect costs of CoC certification, e.g. in the case of potential changes in production practices.

The costs of forest management certification are largely borne by the land owners and/or land managers. There is some evidence that manufacturers of forest products and distributors are able to pass on at least some of the costs of CoC certification to customers when they are able to negotiate the sale of certified products. Anecdotal evidence suggests that the opportunity to pass on certification costs to consumers is most developed within markets for solid wood products and finished goods, as opposed to pulp and paper markets or markets for raw materials and unfinished goods.

### 10.4.3 Price premiums for certified forest products

The most commonly cited benefits for certified producers and goods are supposed to be market access, stability, credibility, and forest management. Producers of some specialty products, such as flooring, have cited small premiums due to marketing their products as certified.

A study published in 2010 reported that 73% of green building architects stated they have paid a premium for using FSC-certified wood (Germain, 2010). Anecdotal evidence suggests price differences of 10%-30% are common between certified and non-certified finished goods. Recent studies state that, in Europe, certified companies obtained an average 6.3% price premium for certified wood products, the mean price premium for certified wood products was 5.6% in the Republic of Korea (Cha et al., 2009), and certified wood products achieved a 5.1% price premium in US markets but only 1.5% in Canada (Yuan and Eastin 2007).

### 10.4.4 Certified forest, products use and consumer awareness

Public recognition of the terms “forest certification” and “sustainable forest management (SFM)” – key factors for forest products marketing research - were tested in a survey in Japan (Kraxner et al., 2009). Results indicated that more than 60% of the respondents were aware of forest certification but less than 50% had heard about sustainable forest management (SFM). This study also states that small-scale forest owners – after having received a detailed explanation of forest certification – perceived certification as a signal to manage their abandoned forests in a responsible way while at the same

time generating benefits, in terms of market access and maybe price premiums. Forest owners also might consider certification as a long-term investment and insurance for economic safety and job security, ecological benefits, and social services.

In another survey carried out in 2011 in the UK, 43% of the respondents stated that they had previously seen the logo of the FSC compared to just 19% four years earlier (FSC 2011). One key factor for such a development might be the increased availability of certified products on the shelves of the retailers. This might also prove that manufacturers and retailers play a key role in increasing how often consumers see a certification logo. The UK survey also found that, in addition to promoting certified products, it is of utmost importance to explain what is behind such logos.

More research published in 2010 summarized the experience of architects who sought to use certified wood in the US and the purchasing barriers they encountered (Germain 2010). One of the challenges identified was a lack of local certified wood so that consumers needed to seek wood from greater distances. The research found that 29% of the completed LEED (Leadership in Energy and Environmental Design, see description in chapter 3, section 5) green building projects in the state had used FSC-certified wood. Of the interviewed architects involved with current projects, 50% were using FSC-certified wood in the project. Additionally, 88% of the architects indicated an intention to use FSC-certified wood in future projects. The vast majority, 92% of architects, indicated that securing LEED points was a driving factor for using FSC-certified wood. Only about 25% indicated they were using FSC-certified wood at the request of a client.

Another study in the US and UK detected differences between consumers in their attitudes towards wood product certification (Aguilar and Cai 2010). UK consumers reported stronger belief in the need for certification of harvesting in tropical and temperate forests as well as the capacity of environmental certification to curtail illegal tropical deforestation. The comparative analysis further determined a lower preference towards wood products originating from tropical forests compared to products sourced from temperate forests or without information. Disclosing a tropical forest origin lowered preferences by 36.4% and 39.1% among US and UK consumers, respectively, compared to a product with no information and equal price. An interesting point of this study was also that no statistically significant differences were detected between certifying organizations.

Willingness to pay (WTP) is one key method to investigate consumer behaviour in market analysis. Cai

and Aguilar (2011) first presented results of a WTP meta-study at a IUFRO conference in the US and explained that reported estimates of WTP premiums for certified wood products over non-certified options range from 1.0% to 40%. Frequently purchased wood products with lower base prices (e.g. printer paper, pencils) tend to capture higher premium levels. On the other hand, an increase in the base price will decrease consumers' WTP premium. Another finding derived from this study is that there are regional differences in consumers' WTP between Asian and European countries, while no statistical difference was found between North America and Europe. The authors conclude that, in some countries, it will be more difficult to develop forest certification under the voluntary mechanism, and thus governments, as well as non-government organizations, might need to take greater responsibility in forest management and certification.

#### 10.4.5 Impacts of certification in Asia Pacific

The discussion of forest management and forest products certification has not only led to an increased market of certified products in the UNECE region, particularly in the north-western hemisphere, but also seems to have impacted the Asia-Pacific region with its huge wood demand and importance for the global timber market (Durst et al., 2006). Countries that very recently have developed national certification systems include Australia, China, Indonesia, Japan and Malaysia. Other countries such as Myanmar, New Zealand, India, the Republic of Korea or Viet Nam are currently working on or discussing the development of national certification standards (Cha et al., 2009; Forest Environments Limited, 2009; Yadav et al., 2007).

China is paying much more attention to the increased use of certified material in wood products manufacturing (Yuan and Eastin, 2007). Although FSC is currently the dominant certification programme in China, more than 3.4 million hectares of forests are expected to become certified in 2011 under the China Forest Certification Council (PEFC News, 2011). China's domestic market for certified forest products is far from being mature and most certified forest products are presently still exported (Zhao et al., 2011).

In Japan, paper products companies outnumber wood products companies in CoC certificates (Owari & Sawanobori, 2007).

#### 10.4.6 Green building and certification

Green building programmes provide an incentive to use certified wood products. Most green building programmes in Europe, the US and Asia-Pacific include credits or points for using certified wood. As an example, the dominant voluntary programmes in the United

States, the United States Green Building Council's LEED, does not restrict the use of different forest certification programmes, but LEED offers credit only for FSC-certified materials. Other green building programmes recognize additional third-party forest certification programmes. The most significant development in green building markets and demand for certified wood is the anticipated transition from voluntary programmes to the adoption of formal green building codes, which may result in green building practices becoming mandatory.

More than half of the world's new construction in the next decade is expected to occur in the Asia-Pacific region. GBIs exist but are in their infancy, especially in China and India. The forest industry needs to work with those who are drawing up the codes to ensure that they are fully rational. Green building is going to continue growing in importance. Wood should benefit from green building codes, provided they are soundly drawn up: it is of key importance for the forest products sector that they are.

#### 10.4.7 Impact of trade legislation on certification

Measures introduced to control illegal wood might be expected to help to boost interest in certification, since certification is generally regarded as meeting legality requirements. In addition, the knowledge and experience gained by the certification organizations may help in developing and implementing systems to ensure legality, for example, the FSC's adoption of its "controlled wood" standard.

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# 11 Carbon markets, 2010-2011

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## Highlights

- As the global economy started to recover in 2010, with greenhouse gas emissions at record levels (30.6 gigatonnes of CO<sub>2</sub>), the world's carbon trade went into structural decline.
  - The global volume of carbon traded in the markets fell by 9% to 6.9 billion tonnes of CO<sub>2</sub>e in 2010, and the value of transactions settled to \$141.8 billion (down 1% from 2009).
  - Carbon trade suffered from uncertainties over the post-2012 Kyoto agreement, slow progress in the UNFCCC negotiation process, and the absence of full operational details for REDD+.
  - The EU-Emissions Trading System (EU-ETS), the leading carbon market, grew by 1.1% to \$119.8 billion in 2010, representing 84% of global trade.
  - Forestry projects will continue to be under-represented in carbon markets until EU-ETS accepts afforestation/reforestation as a qualifying activity.
  - The voluntary carbon market (VCM), the main growth segment for forest carbon projects, reached a record transaction volume of 132 million tonnes of CO<sub>2</sub>e (34% higher than 2009), valued at \$424 million.
  - REDD Credits played a more prominent role in the Voluntary Carbon Market (VCM), indicating that corporate offset buyers are looking favourably on forest carbon.
  - In the 12 months up to June 2011, 13 new afforestation/reforestation projects (A/R) (73,000 hectares to mitigate 654,000 tonnes of CO<sub>2</sub>e) were approved under the Clean Development Mechanism (CDM).
  - In the absence of a legally binding successor agreement or an alternative trading mechanism to the Kyoto Protocol, which expires in 2012, the regulatory carbon market will be disrupted.
  - REDD+ negotiations focus on details of monitoring, verification and reporting, financing, reference emission levels from forestry, and local implementation safeguards.
  - The European pulp and paper industry faces competitive auctions of European Union Allowances and binding emission benchmarks against reference emission levels when EU-ETS enters Phase III, starting in 2013.
  - Japan's Fukushima accident has halted nuclear energy development in several industrialized countries; the German government's decision to close its nuclear plants by 2022 will be a key driver for demand and prices of EU Allowances during Phase III of EU-ETS (2013-2020).
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## 11.1 Introduction

This chapter focuses on carbon markets, especially their relevance for forestry and forest-products markets. It discusses the most important regional market developments and national carbon market start-ups, and tracks the progress in forest carbon project development over the 12 months prior to May 2011. The 2008-2009 and 2009-2010 FPAMR chapters explained the different carbon trading schemes and trading platforms, and the political processes that drive the market.

Reviewing 2010 market data proved more challenging than before because of discrepancies between the three main data sources: the World Bank, Ecosystem Marketplace and Point Carbon by Thomson Reuters. Continuity of sources and their seamless integration have been maintained to the extent possible.

For the benefit of readers who might be less familiar with carbon markets, there follows a short overview of the carbon market segments and their relevance for the forestry sector. This should help with understanding market details, and offer realistic expectations about forestry's immediate contributions to carbon markets.

There is no single worldwide carbon market, but rather a loose network of regional, national and sub-national carbon schemes that operate under different rules, with the voluntary carbon market (VCM) being the most international and fluid. The demand for carbon is partly voluntary, stemming among other things from the need to comply with rules and regulatory caps, and is often mandated by a Government's climate change policy.

The attraction of a particular carbon market to the forest sector depends on the methodology, eligibility and functionality it applies. Since almost all the major carbon schemes differ in those criteria, it is not easy to assess their impacts on forestry and industry. In the following section, we try to bring clarity to the most prominent carbon schemes for the forest sector in the UNECE region.

## 11.2 Where does the forest sector stand in carbon markets?

The Kyoto Protocol looks increasingly likely to expire in 2012, without any immediate successor or replacement agreement. Its two project-based flexible mechanisms, i.e. Clean Development Mechanism (CDM) and Joint Implementation (JI), have had limited success in forestry and the forest industry. The only eligible forest activities in CDM are afforestation and reforestation (A/R), which represent only 0.5% of the projects.

Without a successor agreement, a regulatory gap may come into effect after 2012. This will interrupt the trade in Kyoto Protocol offsets unless alternative markets

accept the offset credits generated under the CDM Certified Emission Reductions (CERs), or the JI Emission Reduction Units (ERUs).

Some countries, such as Japan, have started to prepare for that situation with alternative "domestic offset" (DO) schemes, or are looking for bilateral tracks. The European Commission views JI as a temporary mechanism serving only until the time when most economic sectors fall within its Emission Trading System (EU-ETS).

The European pulp and paper industry has been a member of the EU-ETS since 2005, but no binding emission benchmarks have yet been imposed. This, however, will change, as the Confederation of European Paper Industries (CEPI) has prepared EU industry-wide benchmarks to set the levels of emission allowances by product group. These will be incorporated into Phase 3 of EU-ETS, which starts in 2013.

Life could become harder for industry: if pulp and paper mills emit above the benchmark, they will need to buy European Union Allowances (EUAs) from the carbon market for compliance. Also, the EUAs will no longer be free; they will be gradually moved into auctions. Thus, the pulp and paper industry will be in direct competition for EUAs with the power, steel and cement industries.

REDD supports actions that lead to Reduced Emissions from Deforestation and Forest Degradation. REDD+ accepts as eligible a wide range of forest activities, as well as forest conservation, forest carbon stock enhancement and sustainable management of forests.

Selling forest carbon offset credits from developing to developed countries is based on a much criticized approach to reducing emissions in countries with a low Human Development Index (HDI), *de facto* on behalf of the more advanced countries where the climate burden per capita is much higher.

Trading carbon offset credits may limit options to diversify local forest industry clusters in the developing countries, and postpone low-carbon shifts at source in advanced economies. Much depends on how these countries value the environmental service of sequestering and storing carbon in forests.

Forest carbon frequently secures some of the lowest prices among different offset classes. This helps to attract flocks of corporate buyers who see green forest carbon adding value to their broader corporate social responsibility (CSR) strategies at affordable cost.

There is no firm decision yet on whether REDD or REDD+ credits will ever be allowed for large-scale trading, or if they should be credited through funds on national accounts or to sub-national bodies instead.

Nevertheless, inside the VCM there is a growing trade in REDD credits, where in 2010 they accounted for 29% of all transactions (according to Ecosystem Marketplace).

The reasons behind this expansion are that Verified Carbon Standard (VCS) approved new REDD methodologies in 2010, and the Climate Action Reserve (CAR) of California established ties to promote REDD+ in Mexico. The private sector expects their investments in REDD+ to deliver profit through emission trading. This potential will be larger in the future, if REDD+ is recognized within compliance markets.

Voluntary carbon markets have been more positive for forestry and industry as they span more activities: not only related to A/R, and REDD+ but also to Improved Forest Management (IFM), and carbon stocks associated with harvested wood products (HWP).

This latter is important for extending the benefits from carbon trade to forest products, industry and trade, and is on the agenda of Kyoto Protocol negotiations. Even though trading volume in the VCM is growing fast, it still only plays a minor role in the value of the entire carbon business (0.3% in 2010).

Some emerging national and sub-national carbon markets will embrace forestry in a big way. California's cap-and-trade scheme, starting around 2013, may become the second largest carbon market in the world, allowing heavy industries and power companies to buy offsets from projects in forestry, including a proposed quota of 75 million REDD credits.

## 11.3 Market outlook

### 11.3.1 Total carbon market size

In 2010, the overall value of the global carbon market fell for the first time, by \$1.3 billion to \$141.8 billion (1% below 2009), and by 9% of tonnes to 6.9 billion (table 11.3.1). The drop was mostly due to reduced activity in the primary CDM market and in the Assigned Amount Unit (AAU) market.

In the United States, trade was hit by the member States' fleeing from the Regional Greenhouse Gas Initiative (RGGI) and the closure of the Chicago Climate Exchange (CCX). There were economic and political setbacks, as well as carbon framework obstacles behind the bearish trading. The market was suffering from uncertainties surrounding the post-2012 Kyoto agreement and from the stalling of the United States federal climate bill.

The climate change architecture also ran into political impediments elsewhere, which took steam out of the world carbon trade even though the global economy was beginning to recover and GHG emissions were rising to a record 30.6 gigatonnes of CO<sub>2</sub> in 2010.

TABLE 11.3.1  
Carbon markets 2009-2010: key figures

Market segment	2009		2010	
	Volume million tons CO <sub>2</sub> e	Value million \$	Volume million tons CO <sub>2</sub> e	Value million \$
Project-based subtotal:	179	3 228	153	2 175
Primary CDM	135	2 700	94	1 500
Joint Implementation	44	528	59	675
Voluntary markets subtotal:	98	416	132	424
OTC	55	354	128	414
CCX <sup>1</sup>	41	50	2	0.2
Other Exchanges	2	12	2	10
Secondary CDM subtotal:	889	17 500	1 005	18300
Allowances markets subtotal:	6 452	121 997	5 641	120 905
EU-ETS	5 510	118 500	5 529	119 800
NSW <sup>2</sup>	34	117	n.a	n.a
RGGI <sup>3</sup>	768	1 890	45	436
AAUs market	135	1 429	63	613
Alberta's SGER <sup>4</sup>	5	61	4	56
Total carbon markets	7 618	143 141	6 931	141 804

**Notes:** Data have been adjusted with Ecosystem Marketplace and New Carbon Finance: Back to the Future: State of the Voluntary Carbon Markets 2011, and Thomson Reuters Point Carbon's Carbon Market Monitor, A Review of 2010.

<sup>1</sup> Chicago Climate Exchange (the USA, a voluntary cap-and-trade scheme closed 31.12.2010): tradable unit Carbon Finance Instrument CFI.

<sup>2</sup> New South Wales (Australia).

<sup>3</sup> Regional Greenhouse Gas Initiative (10 states in the USA): tradable unit Regional Gas Allowance RGA.

<sup>4</sup> Specified Gas Emitters Regulation of Alberta Province of Canada.

**Sources:** The World Bank (a) 2011: State and Trends of the Carbon Markets 2010.

### 11.3.2 Regulatory carbon markets

#### 11.3.2.1 EU Emissions Trading System

Despite the decline in total market value, the EU Emissions Trading System (EU-ETS) proved to be vigorous and grew by 1.1% from 2009 to reach \$119.8 billion in 2010. Trade in EUAs accounted for 84% of global carbon market value. The European Union has so far been determined to keep forestry projects out of ETS, but political pressure has mounted to allow the use of the so-called link directive (which means "importing" CDM forest offset credits from A/R activities into ETS), when it moves into Phase 3 (in 2013).

#### 11.3.2.2 Clean Development Mechanism

The Clean Development Mechanism (CDM) announced that it had reached a milestone of 3,000 projects approved in the first quarter of 2011. The secondary CDM market, where the certificates are bought

through a third party, grew in value by 4.6% from 2009. However, the primary market performed poorly and fell to its lowest value ever (\$1.5 billion).

The perennial criticism of the CDM Executive Board has been that the approval process is too slow. In 2010, progress was made in removing bottlenecks and the project stream was invigorated (e.g. standardized methodologies are now on offer to streamline project formulation).

Inhibitive institutional and forest definition matters in participating countries also now seem to be better resolved. The end of the Kyoto Protocol's first commitment period in 2012 puts additional pressure on project developers who wish to get their projects registered before the deadline. Some projects have been moved from the CDM stream into VCM, in anticipation of discontinuity after the closure of the first commitment period of the Protocol.

Many improvements and easing of rules have resulted in the CDM A/R project pipeline looking much more promising. There are more than 70 projects at various degrees of readiness with a combined potential to yield future emission reductions in the magnitude of 5 million tonnes of CO<sub>2</sub> per year.

### 11.3.2.3 Joint Implementation

Joint Implementation (JI) is a Kyoto Protocol flexible mechanism for conducting projects leading to quantifiable emission reductions. JI projects generate Emission Reduction Units (ERUs) for trade, which are limited to transfers from one Annex B country to another. (Annex B refers to the emissions-capped industrialized countries and economies and countries in transition, as listed in the Kyoto Protocol.)

The JI market suffered the same uncertainties as CDM and in 2010 the value of trade of ERUs scored a moderate growth to \$675 million. No new forest projects have been developed in afforestation/reforestation under JI since the first of its kind in Romania. There are, however, a number of forest products related projects; notably, the Russian Federation has four ongoing wood-waste to energy and biomass utilization JI projects in its pulp and paper mills. Some eastern European countries have several biomass retrofit and cogeneration projects. Romania, for instance, has a project to use sawdust for replacing fossil fuels in district heating systems, in five of its cities.

### 11.3.2.4 Other compliance markets

Assigned Amount is the total volume of greenhouse gases that each of the 39 Annex B countries of the Kyoto Protocol may emit during the first commitment period. Assigned Amount Units (AAUs) define a tradable unit of one tonne of CO<sub>2</sub>e of Assigned Amounts.

More AAU sellers from the CIS and Eastern Europe entered the market in 2010, but the supply was fragmented and trade declined in total volume and value by more than half, after peaking in 2009. Large transactions by the Czech Republic and Ukraine had pushed a record level of AAUs into trade in 2009.

Countries have adopted varied approaches to dealing with their AAUs. For example, Latvia, one of the frontrunners of the Green Investment Schemes (GIS), has effectively stopped selling AAUs owing to the current low prices. GIS requires proceeds from AAU sales to be used primarily to finance energy-efficiency measures in the building sector. The Czech Republic, Estonia and Poland have actively sought to sell their AAUs; mainly to Japanese private companies. The Russian Federation, potentially the largest seller of AAUs, is currently absent from the market.

## 11.4 Voluntary carbon markets

The voluntary market hub of the greenhouse gas trade has remained small but innovative. Many mechanisms implemented in the regulatory/compliance markets were first developed for the voluntary carbon buyers, including avoided deforestation projects. The trade is practically global in scope, yet it is affordable to buyers as forest carbon prices per tonne tend to stay lower than in most other mitigation activities.

After a drop in transactions in 2009, in 2010 the voluntary carbon market grew to reach a record 132 million tonnes of CO<sub>2</sub>e, an increase of 34%, valued at \$424 million. This was due to growing interest in embedding carbon offsetting into corporate social responsibility (CSR), particularly investing in projects to avoid deforestation. Forestry projects have been prominent because big corporate buyers such as blue chip companies have been keen to venture early into forest carbon. Better adoption of recognized carbon standards and multiple social and biodiversity co-benefits have increased the allure of forest carbon in the eyes of corporate off-setters relative to other mitigation actions.

VCM transactions are made over the counter (OTC) and in greenhouse gas exchanges. North America generated 35% of transacted OTC volume in 2010. The OTC market grew particularly in Latin America, where transaction volumes more than doubled from 2009, mostly from new REDD projects.

REDD generated 29% of all OTC credits (38 million tonnes of CO<sub>2</sub>), followed by landfill methane and wind. Much of this growth was enabled by new REDD methodologies approved by the Verified Carbon Standard (Ecosystem Marketplace, 2011).

One of the traditional voluntary cap-and-trade schemes was discontinued when trading in the Chicago



Climate Exchange ended on 31 December 2010. Trading in other exchanges such as Chicago Climate Futures Exchange, Carbon Trade Exchange and China Beijing Environmental Exchange was low.

## 11.5 Forest carbon markets

### 11.5.1 Forest carbon in the Clean Development Mechanism

Foresters acknowledge the relevance of afforestation/reforestation (A/R) in mitigating the adverse impacts of and adapting to climate change. However, the A/R sector remains underdeveloped in carbon trade and below its perceived potential. As long as the EU-ETS excludes A/R, the largest segment of the global major carbon market remains closed to forestry.

On the supply side, A/R project developers struggle to apply robust greenhouse gas accounting methodologies effectively. Local capacities have remained weak to comply with all the rules and procedures, as well as related communications with the CDM Executive Board. Streamlining of rules and procedures has only recently been achieved, and the number of approved CDM A/R methodologies has moved up for small and large A/R projects. Developers have been able to replicate and scale up their A/R projects. (The World Bank (b), 2011).

The afforestation/reforestation projects developed or registered since the publication of the FPAMR 2009-2010 are listed in table 11.5.1. They include 13 additions, bringing the total number to 28. The project is diversified both in terms of countries and types of A/R activities.

The first conclusion is that South America has succeeded in attracting a number of project developers since late 2009. Another salient feature of the projects is the significant private-sector involvement. Some projects are named after their developers and partners (Posco, AES, Argos). Forest planting for industrial or commercial purposes has been the key activity in several new projects. Thirdly, Canada and some other countries have partnered as “project participants” because they support the World Bank BioCarbon Fund (BioCF, discussed later). This indicates their interest in eventually buying the credits from those projects.

Areas are small on average (totalling 73,000 hectares in the 13 new projects), and developers take advantage of the standardized A/R methodologies to facilitate project formulation. A total of 654,000 tonnes of CO<sub>2</sub>e will be mitigated if the projects manage to get registered, verified and finally issue their credits.

TABLE 11.5.1

#### CDM forestry projects registered since July 2010

<i>Title and year registered</i>	<i>Host party</i>	<i>Other party</i>	<i>Reduction in CO<sub>2</sub>e</i>
Reforestation as renewable source of wood supplies for industrial use in Brazil (2010)	Brazil	Netherlands	75 783
Reforestation on degraded lands in northwest Guangxi (2010)	China	Spain	87 308
“Posco Uruguay” afforestation on degraded extensive grazing land (2010)	Uruguay		21 957
AES Tietê Afforestation/Reforestation Project in the State of São Paulo, Brazil (2011)	Brazil	Canada	157 635
Argos CO <sub>2</sub> Offset Project, through reforestation activities for commercial use *	Colombia	UK	36 930
Reforestation of grazing Lands in Santo Domingo, Argentina (2011)	Argentina	Switzerland	66 038
Ibi Batéké degraded savannah afforestation project for fuelwood production (2011)	Democratic Republic of Congo		54 511
Himachal Pradesh Reforestation Project – Improving Livelihoods and Watersheds *	India	Spain	41 400
Kachung Forest Project: Afforestation on Degraded Lands **	Uganda		24 702
Southern Nicaragua CDM Reforestation Project	Nicaragua	Canada	7 915
Forestry Project in Strategic Ecological Areas of the Colombian Caribbean Savannas **	Colombia		66 652
Improving rural livelihoods through carbon sequestration by adopting environment friendly technology based agroforestry practices	India	Canada	4 896
Aberdare Range/ Mt. Kenya Small Scale Reforestation Initiative Kamae-Kipipiri Small Scale A/R Project **	Kenya	Canada	8 542

**Notes:** Estimated emission reductions in metric tonnes of CO<sub>2</sub> equivalent per annum as stated by the project participants

\* Review Requested

\*\*Requesting Registration

**Source:** UNFCCC, 2011.

### 11.5.2 Forest carbon in the voluntary carbon market

A listing of new VCM forestry projects that have issued Verified Carbon Units (VCUs), or were at least registered, by June 2011, appears below (table 11.5.2).

TABLE 11.5.2

#### Voluntary carbon market forestry projects

Project Title	Host Parties	Project proponent	Estimated VCUs
Darkwoods Forest Carbon Project	Canada	Nature Conservancy of Canada	124 847
Promoting Sustainable Development through Natural Rubber Tree Plantations	Guatemala	Pica de Hule Natural, S.A.	46 434
Protection of a Tasmanian Native Forest (Project 3: Peter Downie)	Australia	Peter Downie	55 549
Protection of a Tasmanian Native Forest (Project 1: REDD Forests Pilot *)	Australia	Multiple proponents	4 956
Restoration of degraded areas and reforestation in Cáceres and Cravo Norte *	Colombia	Asorpar Ltd.	80 000
The Kasigau Corridor REDD Project-Phase II The Community Ranches	Kenya	Wildlife Works Inc.	1 614 959
The Kasigau Corridor REDD Project – Phase I Rukinga Sanctuary	Kenya	Wildlife Works Inc.	251 432

Note: \* Registered

Source: VCS Project Database

Great expectations have been raised concerning the nascent REDD+ market. While REDD+ is by definition a sub-national or national venture, its initial training ground is in project work. The first REDD+ forest conservation credits have been certified and issued by the Kasigau Corridor project in Kenya (table 11.5.1). The project issued its first 1.45 million VCUs to the VCM in early 2011; the buyer was a South African bank. The project preserves 200,000 hectares of threatened forest and savannah land, and was validated by the Climate, Community and Biodiversity (CCB) Alliance for land-use and local livelihoods. A combination of VCS and CCB standards has proven popular among forest carbon projects. It remains to be seen how widely REDD+ credits will be enrolled under a market mechanism, as currently the fund-based structure is considered more appropriate.

Around 60 CCB forestry projects are in various stages of readiness, according to the CCB projects website. The projects have been or are currently being audited under

the Climate, Community & Biodiversity Standards by independent third-party certifiers. Most projects are outside the UNECE region (Latin America, Africa), but there are six projects in the United States, two in Canada, and one each in Switzerland and the United Kingdom.

Carbon Fix has a pipeline of nine forestry projects, but only one is in the UNECE region (Afforestation with Hazelnut Plantations in Western Georgia). Plan Vivo (PV) is an Offset Project Method for small-scale LULUCF (Land Use and Land Use Change in Forestry) projects with a focus on promoting sustainable development and improving rural livelihoods and ecosystems. Plan Vivo currently has three projects (outside the UNECE region) and a few more are being reviewed.

### 11.5.3 Forest carbon market fund created by the World Bank

Facilitating the nascent forest carbon trade is an important catalyst to demonstrate that the system can work. The BioCarbon Fund (BioCF) is a World Bank's public-private initiative that mobilizes resources for pioneering projects that sequester or conserve carbon in forest and agro-ecosystems. Since 2004, six public entities and 12 private companies have invested \$91.9 million in the Fund. Eighty per cent of these funds are used for CDM A/R projects applying different carbon sequestration technologies, including assisted natural regeneration, forest restoration, community reforestation, agro-forestry and silvo-pastoral systems. (The World Bank (b), 2011).

As of May 2011, the Fund had contracted 8.6 million Emission Reductions (ER) from 21 A/R CDM projects in 16 countries. These projects are all on degraded lands, with 50% for environmental restoration purposes, 25% for fuelwood and 21% for timber production. Nine BioCF projects have been registered under the CDM. Registered projects are awaiting verification, which is the final step before issuing ERs into the carbon market. Projects receive carbon payments through ERPA (Emission Reduction Purchase Agreement) provisions. The deals are made between a project entity and BioCF. (The World Bank (b), 2011).

## 11.6 Carbon prices

Higher economic activity tends to increase emissions and, if a binding regulatory cap is set, also the demand for emission permits (allowances) and offset credits. The price of carbon is the amount a polluter pays for the right to emit one metric tonne of CO<sub>2</sub>, or equivalent amount of other greenhouse gases. The higher the price of carbon,

the stronger the demand for cost-efficient carbon credits can turn.

Forestry and industry both constitute sources of emissions and offer means to mitigate them. Depending on the type of forestry or industry activity that generates the mitigation service (carbon credits), its impact can be both positive and negative to the various actors in the forestry sector.

The prices of CERs (Certified Emission Reductions of CDM) and EUAs (European Union Allowances of EU-ETS) reacted both to real economic fundamentals and to one unprecedented catastrophe in 2010-2011. The price trend was as usual a rollercoaster, but was overall higher than in 2009: EUAs maintained between \$14 and \$17 per tonne and CERs \$11-14 per tonne as in the 2009-2010 FPAMR. The spread between the two carbon commodities has grown wider since late 2010. One full week of trading was lost during the clean-up of security holes in national carbon registries (blank period in graph 11.6.1).

GRAPH 11.6.1  
Carbon prices, 2010-2011



Notes: Fraud and thefts of credits from national registries led to a temporary close of trading 27 Jan. - 4 Feb. 2011

Sources: BlueNext, 2011.

The accident at the nuclear plant in Fukushima, Japan, resulted in higher emission expectations and higher demand for carbon credits. Prices shot 10% upwards in just three days after the earthquake and tsunami. Prices reached a higher plateau and were sustained, for instance, by Germany's decision of 30 May 2011 to exit from nuclear power by 2022 (Reuters, 31 May 2011). Soon after that decision, however, prices went into a steep (20%) decline in mid-June as confidence on the European ETS faltered and speculators dumped EUAs to exit the market.

This was surprising against the increasing energy demand scenarios presented at the time. Policy statements from the EU caused disbelief that the bloc would be determined to raise carbon prices after 2012. Greece's decision to approve a debt plan dimmed market sentiment, and the country had to sell EUAs at the low price of €12.70.

By comparison, forestry offsets have fetched lower prices in the VCM. Improved Forest Management (IFM) projects were valued on average at \$6/tonne of CO<sub>2</sub>e (OTC transactions in 2010). Afforestation and Reforestation offsets were traded at \$9/tonne of CO<sub>2</sub>e. Avoided deforestation, which will be the main REDD+ project type, was priced at \$5/tonne of CO<sub>2</sub>e. (Ecosystem Marketplace, 2011)

The persistently low prices for forest carbon have raised concerns that if REDD+ and the VCM activities are allowed to float a large amount of forest offsets to the market, the prices of emission reductions would collapse. This would attract buyers to concentrate on forest carbon offsets and leave other mitigation actions on a second tier. That could potentially inhibit the impetus behind the development of clean technology, which is equally necessary for moving into the low-carbon economy.

## 11.7 Policy discussion

### 11.7.1 Progress made in climate change negotiations 2010 – 2011

#### 11.7.1.1 Forestry: a first-tier issue in COP-16 and COP-17

Reaching an all-encompassing climate change agreement is a daunting task. Confidence in the UNFCCC negotiation process was weakened at COP-15 in Copenhagen, although partly restored again during COP-16 in Cancún.

Negotiations in Cancún focused on issues including mitigation, adaptation, financing, technology, REDD+, MRV (monitoring, reporting, verification) and international consultation and analysis (ICA). The Cancún Agreements comprised more precisely the following outcomes, where countries:

- Established a Green Climate Fund, as an operating entity of the financial mechanism (15 members from developed countries and 25 members from developing countries).
- Decided on a Technology Mechanism containing two elements: A Climate Technology Centre and Network, and a Technology Executive Committee.
- Established a Cancún Adaptation Framework.
- Reaffirmed the “fast-start finance” pledged by developed countries to provide new and additional

resources, including forestry and investments, to fund especially adaptation to climate change in the most vulnerable developing countries.

- Made limited progress on social safeguards of REDD+ to forest-dependent people.

An important signal for carbon markets came from the launch of the Partnership for Market Readiness, aimed at piloting international carbon offsets and cap-and-trade systems in developing countries. Fifteen countries and the European Commission backed this World-Bank-led initiative. The World Bank has set a target to raise \$100 million for it.

Work on the open methodological and technical details of the global climate agreement is mainly done in the two ad hoc working groups, AWG-LCA (Long-term Cooperative Action) and AWG-KP (Kyoto Protocol). The Subsidiary Body for Scientific and Technical Advice (SBSTA) feeds the results of methodological work to the Conference of the Parties (COP) work on the Convention. The AWGs and the Subsidiary Body meet during and between the annual Conference of the Parties.

After Cancún, the AWGs convened from 5 to 8 April 2011 in Bangkok. The final declaration from Bangkok was that parties to the UN Climate Change Convention agreed to work towards a “comprehensive and balanced outcome” towards the COP-17 in Durban. This wording implies, and reaffirms, the common sentiment that there are no expectations of a comprehensive international climate change agreement in COP-17, in December 2011. Once again, the target will be postponed for yet another year to Qatar 2012.

Of central importance to the forestry sector is the possibility of agreeing on LULUCF. Deliberations on LULUCF brought Parties closer to a common understanding when they met in Bonn, Germany, in June 2011. It was affirmed that the implementation of LULUCF should be consistent with the objectives and principles of, and any decisions taken under, the FCCC and the Kyoto Protocol, whose fate was left pending. (ENB, 2011)

The forestry sector has much at stake in the climate negotiations. It has been keenly supporting and lobbying in the consecutive COP meetings. Four Forest Days have been organized as side events to attract the attention of media and spread information to the negotiators and NGOs present (see Text Box 1).

#### TEXT BOX 1

##### Forest Day 4 in COP-16

Forest Day 4 took place in Cancún during the COP-16 on 5 December 2010. Its theme was “Time to Act”, which emphasized the urgency to ensure that the state of the world’s forests, their biodiversity and the people who depend on them, are properly taken into account in the climate change negotiations. More than 1,500 people from 109 countries attended the event, including 260 UNFCCC climate negotiators and more than 100 journalists.

The design and implementation of REDD+ policies, strategies and projects were the main subjects of the meeting. The participants reaffirmed that REDD+ provides a key and cost-effective opportunity to mitigate climate change but the rights of indigenous and forest-dependent communities need to be protected when implementing REDD+ projects. Challenges to reach an agreement on monitoring, reporting and verification (MRV) systems was acknowledged.

It was significant for the forestry sector that each Annex I Party (industrialized countries and economies in transition listed under UNFCCC) was requested to submit to the secretariat information on their forest management reference emission levels (see Text Box 2). These reference levels will form the basis for assessing the changes in forest cover and carbon stocks in the future.

Other key agenda items were how to address harvested wood products (HWP), and how to treat emissions and removals from disturbances such as force majeure. Parties also addressed technical questions, including a proposal for flexible land use for planted production forests, references to full land-based accounting and definitions related to forests. (ENB, 2011)

#### 11.7.2 REDD+

The COP-16 Cancún Agreements placed REDD+ firmly into the post-2012 international climate change architecture. Decisions to describe the main elements of REDD+ and to operationalize its initial phase were largely positive for the forestry sector, although the finer details about how REDD+ should function were deferred to COP-17 and its run-up meetings.

The focus on REDD+ in Bonn was on The Subsidiary Body for Scientific and Technological Advice (SBSTA) trying to resolve the multiple issues related to:

- The practicalities in financing of REDD+.
- The definitions and modalities in developing forest reference emission levels.
- The measuring, reporting and verification (MRV) of REDD+ activities.
- How countries will provide information on safeguards to be respected while undertaking these activities.

## TEXT BOX 2

**Reference levels of emissions from forestry: implications for carbon neutrality concept**

The UNFCCC (United Nations Framework Convention on Climate Change) negotiations continued on the first week of June, 2011 in Bonn, where an important part of the work dealt with the reviewing process of national forest emission reference levels.

In accordance with the previous COP agreements, the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) had requested Annex I Parties (most industrialized countries) to submit by 28 February 2011 voluntary information on emission reference levels in forest management in 2008-2010, and establish projections up to 2020. These reference levels should be used as a benchmark to assess changes in forest cover and carbon stocks. There is a possibility that the proposed reference levels will be, after a positive review, adopted into the final accounting rules in Durban. If the reviews are negative, the discussion in Durban will become much more complicated.

It is noteworthy that once the reference levels are approved (probably towards the end of 2011), countries are unable to change them retroactively. This means that no policy put in place after 2009 can be included in the reference levels (such as the national adoption of the EU Renewable Energy Policy). If a member country has not had a renewable energy policy in place before or during 2009, the biomass use is not part of the reference level numbers. This means that emissions from the burning of biomass have to be registered under the land use and forestry emissions, hence cancelling its carbon neutrality which could have been taken for granted if the policy was established by the end of 2009.

*Source:* ICFPA, 2011

The question of REDD+ financing mode has been central to REDD+ discussions within the AWG-LCA for quite some time. Three options are considered, making REDD+ fund-based (e.g. under the Green Climate Fund), or market mechanism-based, or a mix of the two, also with public funding on national and international levels. The need for capacity-building for market readiness and national choice of financing “baskets” received initial support from many Parties. (FAO, 2011)

As REDD+ deals essentially with land-use decisions, it is logical that agriculture and food-security issues are being pushed onto the table for the negotiations. They are backed by common and informal support, but have not yet been officially accepted on the agenda.

## 11.8 EU-ETS Phase III

The European Parliament voted against more ambitious climate change targets in July 2011. Essentially

the proposal was about reducing emissions by 30% by 2020 (from 1990 base), instead of 20%. Poland's Presidency of the EU may render it difficult to shift targets, and the mounting urgency to rescue Greece, Ireland and Portugal adds pressure to moderate climate ambitions. The European Commission's Climate Change and Energy Package has raised concerns about the competitiveness of the pulp, wood-based panels and furniture industry with the renewable energy sector.

After the five-year Phase II ends, (2008-2012), the EU-ETS Phase III will introduce a three years longer span (2013-2020). An eight-year Phase III (2013-2020) will bring various changes to the current EU-ETS, in general showing that the ambitions have been raised and that long-term stability is sought to enable steady progress. A single allowances registry and an EU-wide cap on emissions will be established. Provisionally a 1.9 gigatonnes cap of CO<sub>2</sub> for 2013 will be instated, putting an end to determining the emission caps for each individual Member State. A significant increase in the level of auctioning of European Union Allowances (EUAs) is foreseen (a full 100% in power sector), as well as extending the scope of the scheme to cover new sectors and new greenhouse gases.

The European Commission and Member States have finalized CO<sub>2</sub> emission trading benchmarks for industrial sectors in Europe, including the pulp and paper sector, in 2011. These benchmarks will provide the basis for allocating free emission rights (allowances) among the pulp and paper mills across Europe after 2012. The benchmarks are based on the average of the best 10% of the mills as a specific benchmark, with different benchmarks granted for different product groups. There are 11 different benchmarks set for various grades of pulp, paper and paperboard. They range between 0.02 allowances/tonne for sulphite /mechanical/thermo-mechanical pulp (the lowest) and 0.334 allowances/tonne for tissue (the highest). If a mill emits more than the benchmark value, it has to buy additional credits from the market or at the government auctions. The Confederation of European Paper Industries (CEPI) is involved as a key stakeholder in the process. (Official Journal of the European Union, 2011)

## 11.9 Carbon market development in the United States

While the United States federal cap-and-trade scheme has been postponed indefinitely, the sub-national schemes are making varied progress.

### 11.9.1 Regional Greenhouse Gas Initiative

Regional Greenhouse Gas Initiative (RGGI) is a cap-and-trade programme formed by 10 North-Eastern states

aiming to reduce GHGs from power plants only. The scheme began full operation in 2009 by selling emission allowances through auctions and becoming the first mandatory cap-and-trade scheme in the United States. The beginning of the scheme has not been very successful. In 2009, RGGI trades accounted for 9% of the global total but in 2010 its market share dropped to 1%, staying almost inactive in the first quarter of 2011. Despite rising emissions in the Northeast in 2010, the amount of CO<sub>2</sub> remained below the cap as a result of persistent fuel switching from coal to natural gas and greater generation of non-fossil fuel power. Underpinning those developments was the continued economic weakness of the region. Futures prices for RGGI allowances dropped 17% during 2010 and the number of RGGI contracts declined.

New Jersey, the second-largest member of RGGI, has decided to leave the scheme at the end of 2011 because of dissatisfaction with the results of the system. New Hampshire, Maine and Delaware have also declared their interest in pulling out of the scheme. The RGGI region targets to reduce emissions by 10% below 1990 levels by 2018.

### 11.9.2 California

Assembly Bill 32 (“AB 32”), also known as the “Global Warming Solutions Act of 2006,” would implement an enforceable state-wide cap on greenhouse gas emissions in the state of California. It carries an ambitious target to cut emissions to 1990 levels by 2020 and 80% below 1990 levels by 2050, which is on par with EU targets. California plans to introduce its cap-and-trade plan in January 2012 in conjunction with the Canadian provinces of British Columbia, Quebec and Ontario. Alternatively, it is also considering standard-based policies and carbon taxes. California’s programme would be the second largest carbon market in the world, three times larger than RGGI in North-Eastern US states. The European Commission has expressed interest in establishing a link between the EU-ETS and California’s scheme.

California’s carbon market caters for emissions from power plants, oil and gas refineries, other heavy industries and transport fuels. It will allow emitters to buy offsets from projects in forestry, urban forestry, livestock manure treatment and the reduction of ozone-depleting substances as well as international REDD-projects. A total of 232 million offset credits will be allowed between 2012 and 2020, including 75 million REDD credits. The tradable unit is called California Carbon Allowance (CCA), and initial bids and offers are already being exchanged for CCAs for delivery in 2012.

However, there is a lot of opposition to cap-and-trade from environmental justice groups and scepticism over

the programme’s beginning in 2012. For instance, the Green Party opposes the proposition of California Air Resources Board (CARB) to grant free allocations to the industry and favours a carbon tax instead. Cap-and-trade has prompted many businesses to threaten moving to other states because of the cost of lowering their emissions or buying allowances and offsets.

Environmental groups consider the Forestry Offset Protocols of the scheme to be too generous to timber companies. There is a proposal to allow credits from replanting trees after clear-felling, and to assign credits also to harvested wood products. Climate Action Reserve (CAR), which drafted the protocols, defends them by insisting that they clearly require forest projects to permanently increase and maintain carbon storage. In May 2011, San Francisco Superior Court blocked the programme until such time as the California Air Resources Board (CARB) has investigated alternative options for meeting emission reduction targets.

### 11.9.3 Carbon market development in Japan

Japan’s earthquake and tsunami on 11 March 2011 sent tremors across the world’s energy policies, and its full consequences on carbon markets will be fully digested only in the long-term. The incident was the year’s biggest news in the carbon markets, for two reasons. First, it immediately raised expectations of a higher-than-average price for carbon, spurred by the possible shift back to more fossil-fuel-based energy generation. Second, in the longer term, it may provide a decisive boost to renewable energy development, including biomass-based power and heat. It remains to be seen whether Fukushima produces a long-term game-changer to renewable energy and carbon markets.

Japan may possibly review its GHG reduction targets. The Government had set a target to reduce emissions by 25% under 1990 levels by 2020. However, emissions and Japan’s demand for carbon permits are expected to rise if the world’s fifth-biggest polluter replaces the lost nuclear power capacity with fossil fuels.

Japan has postponed the creation of a national cap-and-trade scheme until 2014 because of strong lobbying by industrial groups but plans for a bilateral offset mechanism that would serve as an alternative to the Kyoto Protocol’s CDM. Under the Japanese mechanism, it would be possible to obtain credits also from nuclear projects and carbon capture and storage (CCS), which is not allowed under the CDM. Japan did not buy any CDM credits in 2010 and made only one purchase (from abroad) under the Kyoto Protocol, when the city of Tokyo bought an AAU’s equivalent of 4 million tonnes of CO<sub>2</sub> from Poland.

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# 12 Value-added wood products markets, 2010-2011

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## Highlights

- Global wood furniture markets have started to recover, led by the largest importer, the US, with China continuing to be the largest supplier.
  - Asia has strengthened its position as a supplier to the largest furniture import markets, supplying almost 75% of US furniture imports, mainly from China, followed by Viet Nam.
  - Consumption in furniture markets is forecast to grow 3.3% in 2011; if growth continues at this level, it is likely that pre-crisis production levels will be achieved in 2015.
  - Furniture manufacturers have increased production rapidly to meet steadily growing demand; increasing worries about inflation have so far failed to restrict growth in production, thanks to strict cost control measures and strengthening end product prices.
  - Wood Plastic Composites are becoming increasingly important as they display strong 'green' credentials and offer significant potential for growth.
  - Buying behaviour is changing as companies fear sanctions: the first case under the amended Lacey Act has been on trial in the US as a wood product buyer is being examined.
  - Markets for profiled wood products are showing strong recovery; US imports grew almost 20% in 2010 but this is still far below the pre-crisis level.
  - In Germany, overseas suppliers of profiled wood from Asia and Latin America have been able to take considerable business away from European producers, even though the market value itself has been in decline.
-

## 12.1 Introduction

Value-added wood products (VAWP), frequently called secondary-processed products, generate demand for a range of primary products. Sawnwood and panels are used extensively in furniture, builders' joinery and carpentry products, profiled wood and may also be processed in the manufacture of engineered wood products (EWP). These EWPs include I-beams with their I-shaped cross section; glulam, made of sawnwood glued into beams; and laminated veneer lumber, which is formed from gluing together sheets of veneer and then resawing them into desired dimensions. The manufacture of value-added wood products, especially those where labour costs are a significant component, takes place increasingly outside the UNECE region.

For the first time, the chapter includes a short section on Wood Plastic Composites (WPCs). While there is limited market data for such products, WPCs are becoming increasingly important and display significant potential for growth. Using high proportions of both recycled wood and plastic waste, WPCs have strong 'green' credentials, which may give them a marketing edge in the future.

A modest recovery in construction activity across the UNECE region is already reflected in the traded volumes of VAWPs, as consumption starts to grow again, especially in the US. It is notable how strong the VAWP industry has remained, especially in China, despite the collapse of export markets in 2008-2009.

VAWP manufacturers have practised severe cost control during the economic crisis and now are beginning to return to profit, as sales volumes are slowly increasing. Concern over the rising costs of energy, chemicals and also for wood raw material, remain but have not hampered growth in the sector. VAWP prices have increased moderately and still have room to increase. Competition in the markets is expected to remain tight as capacity has been idled and companies will return to production after the crisis. Low capital costs in some VAWP segments enable the factories to operate only when markets are expanding.

Overall, therefore, the picture is one of a gradual but encouragingly robust recovery.

## 12.2 Imports of value-added wood products

### 12.2.1 Wooden furniture imports in major markets

In 2010, the overall value of global furniture production was \$347 billion. Global trade in furniture (i.e. the value of exports + imports) fell by almost 25% in 2008-2009, but has since recovered to \$100 billion. The Centre for Industrial Studies (CSIL), forecasts that trade

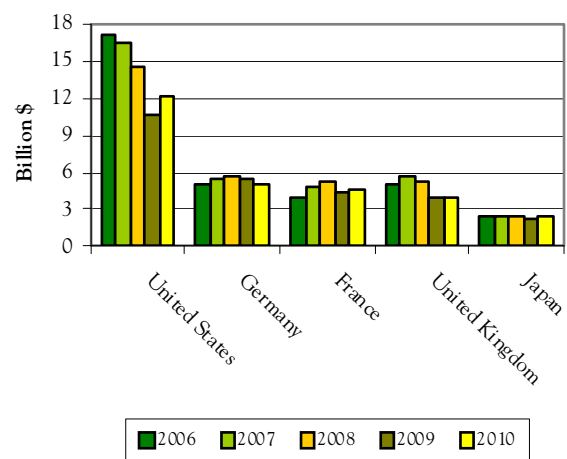
will reach \$109 billion in 2011, and grow to \$117 billion in 2012 (CSIL, World Furniture Outlook 2011). According to CSIL, 48% of global furniture production takes place in low-income countries, so the effects of the global economic crisis have particularly affected the furniture trade: both European and US manufacturers find it increasingly tough to compete with lower cost producers, when household budgets are under pressure. Now as production recovers, trade is growing rapidly.

The United States is the largest importer of wooden furniture, with imports valued at \$12.2 billion in 2010; the same level as 2003. After a period of strong growth from 2003, imports began to fall in 2006: by 2009, they had fallen by 40%. In Europe, the change was less dramatic. Imports by Germany fell only slightly in both 2009 and 2010 (6% in each), whereas imports by France fell by 20% in 2009, recovering 2% in 2010. UK imports fell by 26% in 2009 and have since remained flat (graph 12.2.1).

Asia has strengthened its position as a supplier to the largest furniture import markets, accounting for almost 75% of US furniture imports, sourced mainly from China, followed by Viet Nam.

GRAPH 12.2.1

Wooden furniture imports for the top five importing countries, 2006-2010



Sources: Eurostat, Trade Statistics of Japan by the Ministry of Trade and Customs, International Trade Administration, United States International Trade Commission, 2011.

As the US market seems to show the clearest indication of future trends, it is worth examining in more depth. In 2010, 33 million US households purchased new furniture, spending \$83.5 billion at retail value (Dana French, Furniture Today 2011). Latest studies indicate that up to 38 million households plan to purchase new furniture in 2011 (Furniture Today, 2011 Consumer Buying Trends Survey). A recent forecast suggests that

furniture sales will rise to \$90.7 billion by 2015; marginally exceeding the pre-crisis level of \$90 billion in 2007. This suggests higher growth in the furniture sector than among other VAWP (EASI, 2011). Globally, furniture consumption is forecast to grow 3.3% in 2011 (CSIL, World Furniture Outlook 2011).

### 12.2.2 Trade Policy Issues on Value-Added Wood Products Markets

In 2004, US manufacturers accused Chinese furniture exporters of charging below normal market prices (see coverage of this issue in past *Reviews* beginning in 2005) leading to the bedroom furniture anti-dumping dispute. A five-yearly review in 2010 (so called “Sunset Review”) resulted in the International Trade Commission and Department of Commerce deciding not to revoke the anti-dumping duties on the basis that, “revocation would likely lead to a continuation or recurrence of dumping and material injury to an industry in the United States” (Department of Commerce, December 20, 2010). US Customs and Border Protection will continue to collect anti-dumping duty cash deposits at the rates in effect at the time of entry for all imports that fall within the definition of bedroom furniture.

Furthermore, in the fight against illegal logging and trade, amendments to the Lacey Act in the US were implemented in 2010 and the first case has now been tested on trial. Officials confiscated several pallets of wood as well as some of a guitar company’s products and documents. The company had used the same supplier for its wood products for several years but had not verified the supply chain. Some documents were missing when the US Customs and Border Protection inspected the goods, including the ‘plant products declaration’ that is now required under the Lacey Act. An investigation is being conducted, the first under the amended Lacey Act, and is currently examining the long supply chain. Initial findings hint that the wood is illegal and that the company would have known this. The case, the first of its kind, has had extensive publicity, and is affecting buying behaviour (Furniture Today, August 2010).

The European Union has introduced similar legislation: Regulation (EU) No 995/2010 of the European Parliament and of the Council of 20 October 2010 Laying Down the Obligations of Operators who Place Timber and Timber Products on the Market will take effect from March, 2013. This prohibits the placing of illegally harvested timber on the EU market (illegality being defined by the laws of the country of origin). Companies placing timber on the EU market for the first time, must assess the risk that the timber may have originated from illegal sources. If the risk is present, companies must undertake appropriate risk mitigation measures. Once this ‘due diligence’ has been done, the

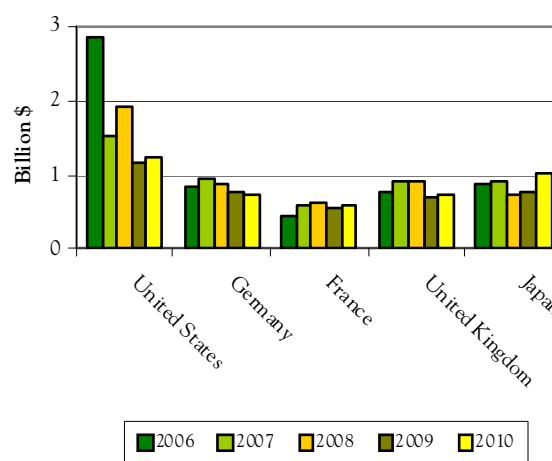
timber and timber products may then be sold or processed. Implementation regulations are under negotiation. Current studies aim to identify the best options for risk assessment and mitigation. (European Commission, Timber Regulation, 2011).

### 12.2.3 Builders’ joinery and carpentry

The slowdown in construction, in the US in particular, resulted in a sharp decline in the builders’ joinery and carpentry<sup>24</sup> (BJC) import markets. Markets have begun to show signs of recovery in 2010, though they still lag well behind the pre-crisis levels (graph 12.2.2). The housing boom had driven up imports, recording double digit growth prior to the 20%-30% drops of 2007-2009. Some of the main import markets, recovered slightly in 2010 over the previous year, however, Japan increased imports by over 30% and Germany contracted by 7%. European BJC markets are mainly supplied by local and regional producers, while the US imports a larger share from overseas. Canada is now supplying less than half of imports to the US markets and Asian producers are supplying more than Latin American producers.

GRAPH 12.2.2

Builders’ joinery and carpentry imports for the top five importing countries, 2006-2010



**Sources:** Eurostat, Trade Statistics of Japan by the Ministry of Trade and Customs, International Trade Administration, Under-Secretary for International Trade of the US Government, 2011.

### 12.2.4 Profiled wood markets

Heightened demand is directly reflected in trade, and profiled wood<sup>25</sup> markets are now seeing rapid movements

<sup>24</sup> Joined wood components, e.g. window frames, and doors.

<sup>25</sup> Wood continuously shaped along any of its edges or faces, whether or not planed, sanded or finger-jointed (mouldings, strips and friezes for parquet flooring, not assembled, tongued & grooved, beaded wood)

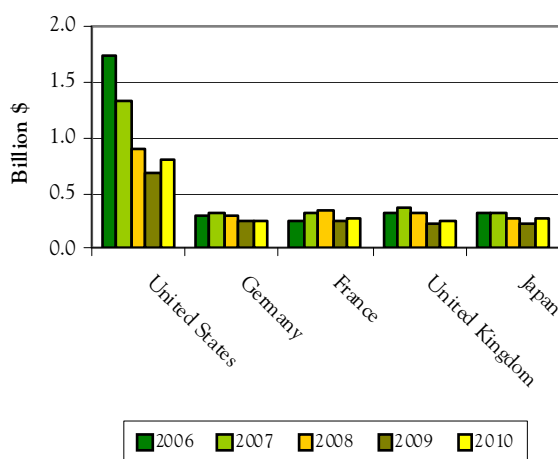
again. After a massive decline of over 60% from 2006 to 2009, US imports of profiled wood increased by almost 20% in 2010. Japan increased imports by close to 25% in 2010 over 2009. The effect was less dramatic in Europe, with profiled wood markets increasing modestly in France and UK, however, in Germany, the market continued to contract slightly.

Many global producers can increase production rapidly as soon as a robust growth begins. In German import markets, overseas suppliers from Asia and Latin America have been able to take considerable business away from European producers, even though the market value itself has been in decline. Whether this trend continues remains to be seen, however, markets are currently highly price-sensitive and overseas imports have tended to be at the lower end of price categories.

Brazil and Chile, the leading suppliers of profiled wood to the US market, have lost some of their cost competitiveness due to strong local currencies and a weak US dollar. In spite of this, profiled wood imports from Brazil to the US grew by over 35% in 2010 and, from Chile, imports grew by 20%; though they are still far below the record year of 2006. Trade patterns may change quickly in the profiled wood markets due to cost competitiveness and pricing in the different markets. Any increase in US housing activity will almost certainly increase imports, which in turn may take some pressure off the European import markets (graph 12.2.3).

GRAPH 12.2.3

Profiled wood imports for the top five importing countries, 2006-2010



**Sources:** Eurostat, Trade Statistics of Japan by the Ministry of Trade and Customs, United States International Trade Commission, 2011.

Again, the model of inconsistent, gradual recovery is being followed (with the US and Japan currently ahead of

the other countries), with much market instability in the meantime.

### 12.2.5 Wood Plastic Composites

Wood Plastic Composites (WPCs) are materials containing thermoplastics and wood in various forms. In many cases, both the wood fibre and the polymer are from recycled material or from waste plastic. The average product contains about 50% wood, in particulate form, such as wood flour or very short fibres but some WPCs may contain up to 70% wood fibre. WPCs are one of the rapidly growing sectors within the forest products/plastics industry. WPCs are seen as a key element in the global push for sustainability, given their use primarily of recycled material.

Figures presented by the German research organization, Nova-Institut GmbH of Huerth, at the China Fourth International Forum of Wood Plastic Composites held in Nanjing from 19-21 October 2010 show that the United States remains easily the world's largest market, at about 800,000 tonnes in 2009 (forestar-wpc.com, 2011). This is despite a fall of 20% between 2008 and 2009 from more than 1 million tonnes, reported by Prof. Mohini Sain, director of the Centre for Bio-composites and Biomaterials Processing at the University of Toronto. WPCs have the potential to cater for the needs of almost all walks of consumer and industrial products, especially in automotive, building and non-structural applications. The current global composite market, of which currently WPCs take only a minor share, is around \$90 billion, and is expected to grow to \$113 billion by 2013, assuming an end to the global recession by the end of 2011 (JEC market study, 2009). Currently the main reinforcement used in the composite industry is glass fibre, with a global production of 4.6 million tonnes annually (Market Research; China Glass Fiber Industry Report, 2010). Wood and other bio-based composite materials have significant advantages in environmental performance during all phases of manufacturing, use and disposal.

China, second only to the US in production capacity, is expected to see major growth in the manufacture of WPCs. Production capacity was 215,000 tonnes in 2009, and was expected to reach 300,000 tonnes by the end of 2010. The WPC committee, which represents 80% of Chinese WPC manufacturers, is forecasting a 30% addition to capacity in 2011 alone, reaching 400,000 tonnes. If this is achieved, production capacity would have almost doubled in only two years. As a major importer of wood and a major producer of waste plastic, China sees WPCs as a key opportunity to replace virgin wood fibre, reduce China's dependence on imported wood raw material and to make productive use of the large quantities of waste plastics. Currently, China exports

75% of WPC production but expects to see strong domestic demand in the coming years.

From a low base in 2003, the European market for WPC has grown significantly. Annual growth rates of up to 25% have been reported and in 2009, the European WPC market volume reached 170,000 tonnes, with Germany the largest single consumer at 70,000 tonnes and host to a large WPC factory that combines waste from a nearby self-adhesive label factory with wood, to produce decking for the growing central European market (UPM, 2008).

Decking still dominates the market and the big challenge for the industry is to find new high volume applications for WPC. However, there are signs that WPCs are used increasingly in moulded components for building and in window frames and doors. Pallets and food storage bins could be another market opportunity.

One example of a promising approach is a UK-based housing concept which offers a do-it-yourself house building kit. The intention is to provide this kit, which contains up to 75% wood fibre, for shelter homes and low cost housing for developing and emerging regions (reinforced plastics.com, 2011).

## 12.3 Engineered wood products market developments in North America

### 12.3.1 Introduction

Consumption of EWPs in North America has followed a sharp downward trend in recent years, driven by a dramatic fall in construction. The information in this section about the use of EWPs has been taken from available reports on new residential construction and repair and remodelling in North America (Wood Products Council, 2009).

Engineered wood products (EWPs) for this section include glulam timber/beams, I-beams (also called I-joists) and laminated veneer lumber (LVL). All three products are heavily dependent on new residential construction. Another major market is non-residential construction, including schools, restaurants, stores and warehouses. A third market is repair and remodelling of homes.

There is a section on a relatively new EWP system, cross-laminated timber (CLT). This product was first developed in Europe and is now being adopted in North America as a potential substitute for steel reinforced concrete, for both its environmental and economic benefits.

New residential construction in Canada peaked in 2004 with just over 233,000 homes and again in 2007 with 228,000. Canadian housing starts declined 8% in 2008, followed by a further 30% in 2009 to 149,000 homes, with

a forecast for 2011 of 183,000. The fall in US housing starts has been well-documented in the section on Housing in Chapter 1, Overview. There were only 554,000 starts in 2009 and the forecast for 2011 is 675,000.

Construction of non-residential buildings has increased for five years in a row and totalled over \$500 billion in 2008, with 2009 value down by nearly 5%. A further drop of over 15% was seen in 2010; the forecast for 2011 is for only a marginal further drop. While non-residential construction is dominated by concrete and steel, an estimated one quarter is wood-framed, and there remains considerable room for growth, especially with the growing emergence of new products and systems (such as cross-laminated timber).

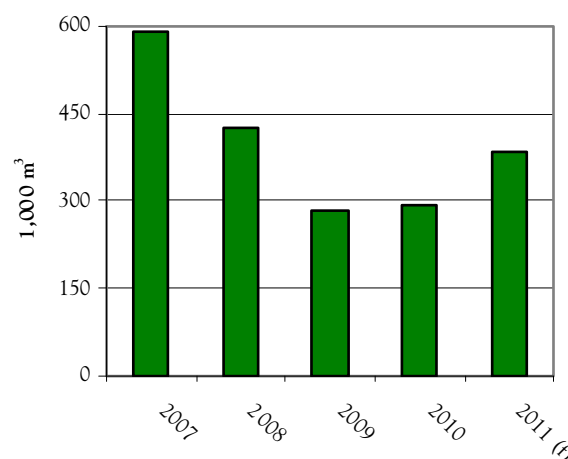
US repair and remodelling of homes has also declined as the US recession has progressed. One of the large uses of engineered wood is in the construction of room additions. Additions can easily cost \$50,000 and require bank financing or use of the owner's home equity line of credit. With home values declining, banks are reluctant to loan to homeowners and banks are also closing off access to home equity. Use of wood for repair and remodelling is expected to return to historical levels when the recession ends.

### 12.3.2 Glulam timber

Production of glulam timber in North America has declined steadily from 580,000 in 2007 to only 285,000 m<sup>3</sup> in 2009 (graph 12.3.1). There was little change in 2010, but production is expected to rebound to 390,000 m<sup>3</sup> in 2011, primarily from non-residential construction (graph 12.3.2). These figures represent a huge fall from 2006, when production was 750,000 m<sup>3</sup>.

GRAPH 12.3.1

Glulam production in North America, 2007-2011

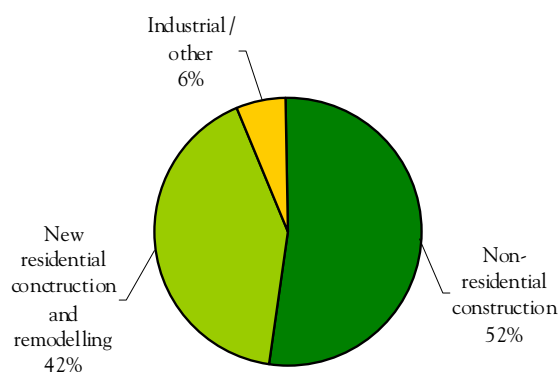


Notes: f= forecast. Conversion factor: 650 board feet per cubic metre.

Sources: APA – The Engineered Wood Association, 2011

A fuller picture of production, consumption and trade in North America is presented below, covering 2009 and 2010, with a forecast for 2011 (table 12.3.1).

GRAPH 12.3.2

**Glulam end-uses in North America, 2011**

Sources: APA – The Engineered Wood Association, 2011.

TABLE 12.3.1

**Glulam consumption, production and trade in North America, 2009-2011**(1000 m<sup>3</sup>)

	2009	2010	2011(f)	% change 2009-2011
<b>US Consumption</b>				
Residential	135.4	126.2	143.1	6
Non-residential	210.8	178.5	176.9	-16
Industrial, other	18.5	20	20	8
Total	364.6	324.6	340	-7
Exports	1.5	1.5	1.5	0
Imports	-4.6	-4.6	-7.7	67
Inventory change	-104.6	-58.5	15.4	-115
Production	<b>256.9</b>	<b>263.1</b>	<b>349.2</b>	36
<b>Canada</b>				
Consumption	18.5	21.5	20	8
Exports	9.2	9.2	13.8	50
Production	<b>27.7</b>	<b>30.8</b>	<b>33.8</b>	22
<b>Total production</b>	<b>284.6</b>	<b>293.8</b>	<b>383.1</b>	35

Notes: f= forecast. Conversion factor: 650 board feet per cubic metre. Canadian imports assumed to be minimal.

Sources: APA – The Engineered Wood Association, 2011.

**12.3.3 I-beams**

I-beams are over 80% dependent on new home construction, with most used in single-family construction. Builder surveys indicate that the I-beam share of raised wood floor area (does not include concrete floor area) reached its highest level in 2008, at nearly 52%, which represented the entire production capacity of I-beam plants at that time (graph 12.3.3). There has been considerable growth in market penetration, from a figure of only 16% in 1992. In the 1990s, builders who were interested in new technology were rapidly switching away from sawnwood to I-beams. However, market share has declined in 2009, as I-beams lost ground to sawnwood and open web trusses, a new light-weight joist that can be constructed entirely of sawnwood or a mix of sawnwood and steel. This is an interesting development and it remains to be seen how competition will affect future market share of I-beams versus open web trusses.

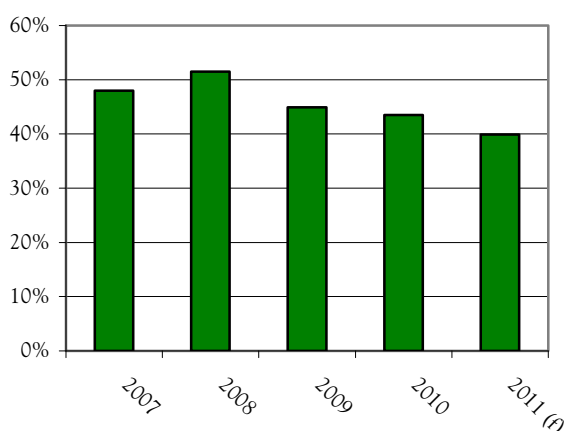
Roughly 115 million linear metres of I-beams were produced in 2009, with significant increases for 2010 and forecast for 2011 (graph 12.3.4).



Source: Root Design, 2011.

GRAPH 12.3.3

**I-beam market share of raised floor area in the US, 2007-2011**

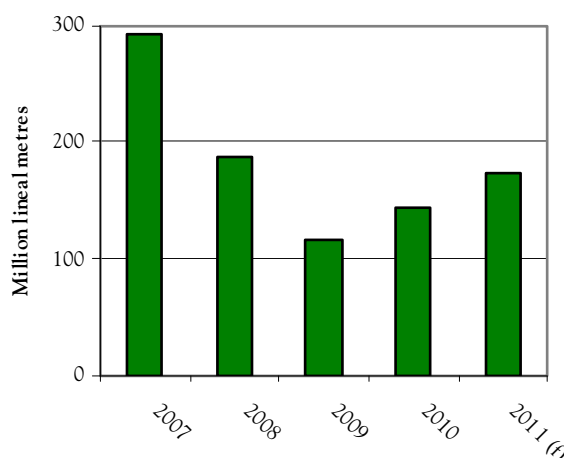


**Notes:** f= forecast. Wooden I-beam market share of total raised floor area, single family homes.

**Sources:** NAHB builder surveys, APA forecast, 2011.

GRAPH 12.3.4

**I-beam production in North America, 2007-2011**



**Notes:** f= forecast. Conversion: 3.28 linear feet per metre.

**Sources:** APA – The Engineered Wood Association, 2011.

Most I-beams – 70% – are used in new residential construction (graph 12.3.5). The balance is used in non-residential building construction and repair and remodelling.

TABLE 12.3.2

**Wooden I-beam consumption and production in North America, 2009-2011**  
(million linear metres)

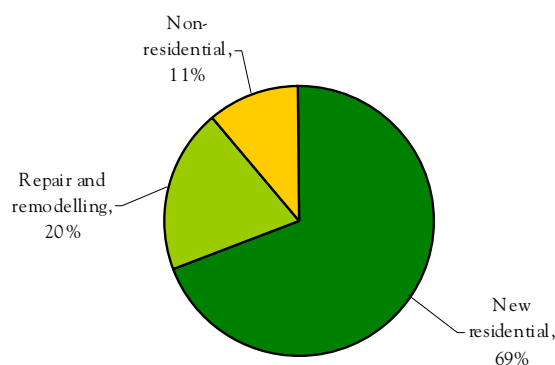
	2009	2010	2011(f)	% change, 2009-2011
<b>USA Consumption</b>				
New residential	65.2	66.5	74.7	14
Repair & remodelling	23.2	21	22.3	-4
Non-residential, other	16.8	12.2	12.2	-27
<b>Total, domestic</b>	<b>105.2</b>	<b>99.7</b>	<b>109.1</b>	<b>4</b>
<b>Canada consumption</b>	<b>34.5</b>	<b>45.4</b>	<b>44.2</b>	<b>28</b>
<b>All North American exports</b>	<b>132.6</b>	<b>137.5</b>	<b>144.8</b>	<b>9</b>
<b>Inventory change</b>	<b>-35.4</b>	<b>-13.1</b>	<b>8.2</b>	
<b>US production</b>	<b>78.4</b>	<b>91.2</b>	<b>114.3</b>	<b>46</b>
<b>Canada production</b>	<b>37.5</b>	<b>52.4</b>	<b>59.5</b>	<b>59</b>
<b>Total North American production</b>	<b>115.9</b>	<b>143.6</b>	<b>173.8</b>	<b>50</b>

**Notes:** f= forecast. Conversion: 3.28 linear feet per metre.

**Sources:** APA – The Engineered Wood Association, 2011.

GRAPH 12.3.5

**I-beam end-uses in North America, 2011**



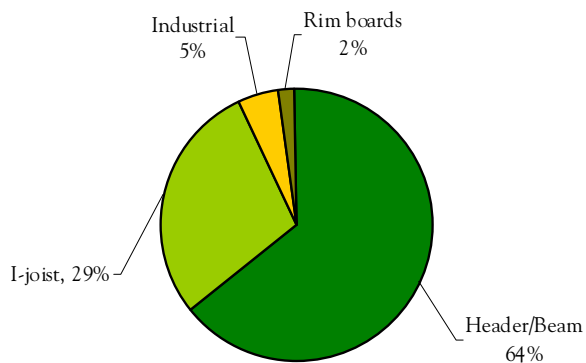
**Sources:** APA – The Engineered Wood Association, 2011.

**12.3.4 Laminated veneer lumber**

Approximately 80% of all LVL is eventually used in new home construction with 29% used in I-beam flanges and 64% as heavy-duty beams and as headers over windows and doors (graph 12.3.6). Five percent is classified as industrial and that includes scaffold planks and furniture parts, and 2% is used for rim boards. Rim boards are used on the perimeter of an I-beam floor system to provide a fastening point for I-beams and to assist in distribution of loads from walls. Production

peaked along with the US housing market in 2005 at 2.6 million cubic metres (graph 12.3.7 and table 12.3.3). Since then, production has declined along with I-beam production and the housing market. An estimated 894.8 thousand cubic metres was produced in 2009, a 39% decline from 2008.

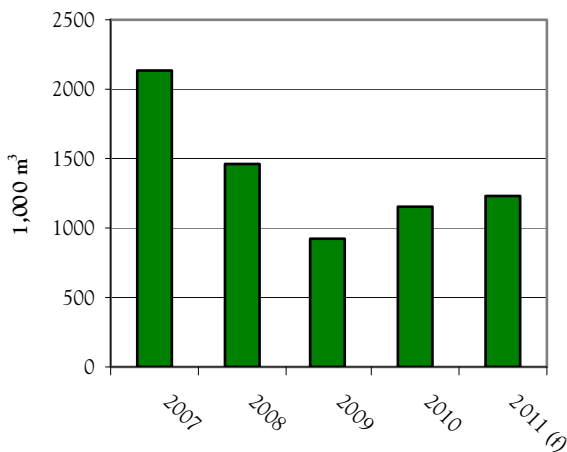
GRAPH 12.3.6  
LVL end-uses in North America, 2008



Sources: APA – The Engineered Wood Association, 2008.

LVL is well accepted for beams and headers and growth should return with an improved housing market. Like other engineered wood products, LVL allows the use of longer spans and fewer pieces to carry the same loads as other conventional wood products. The 2011 forecast production shows a continuing improvement from the low point of 2009.

GRAPH 12.3.7  
LVL production in North America, 2007-2011



Notes: f = forecast. Conversion: 35.3147 cubic feet per cubic metre.

Sources: APA – The Engineered Wood Association, 2011.

TABLE 12.3.3

LVL consumption and production in North America,  
2009-2011  
(1,000 m³)

	2009	2010	2011(f)	% change, 2009-2011
<b>Demand</b>				
I-beam flanges	257.7	337.0	388.0	51%
Beams, headers, others	668.3	826.9	841.0	26%
<b>Total demand (and production)</b>	<b>926.0</b>	<b>1 163.9</b>	<b>1 229.0</b>	<b>33%</b>
<b>Production, total</b>				
United States	835.4	1 050.6	1 107.2	33%
Canada	90.6	113.3	121.8	34%

Notes: Conversion: 35.3147 cubic feet per cubic metre.

Sources: APA – The Engineered Wood Association, 2011.

In addition to the engineered wood products discussed in this chapter, there are other structural composite sawnwood products manufactured in North America. These include Parallel Strand Lumber (PSL), Laminated Strand Lumber (LSL) and Oriented Strand Lumber (OSL). Each of these products is made from strands of wood of varying lengths and widths to achieve different strength and stiffness properties. PSL and LSL have been manufactured for several years, primarily by one company, and production volumes have been relatively low compared to other engineered wood products. There are incidences of OSL production today from an oriented strand board plant conversion. Uses for OSL are expected to be the same as solid sawnwood and include beams, headers, rim boards and structural framing lumber.

### 12.3.5 Cross-laminated timber (CLT)

CLT is a European product/system that is just beginning to make inroads in North America, offering a wood alternative to steel-reinforced concrete in structures where wood framing cannot compete. Perhaps the most cost-competitive example is mid-rise construction, both for residential and non-residential. CLT's good technical performance for fire, seismic, energy, and positive environmental attributes make it a preferred material for a growing "wood first" culture in North America for the construction of government and institutional buildings. Ease and cost-savings in fitting the plumbing, ventilation and electricity wiring has been applauded for CLT structures.





Sources: W. Pryce, 2011.

This year has seen the start-up of three CLT plants in Canada and one is planned for the US. Further, some firms have imported panels from Europe and erected residential and non-residential projects in both countries. Recently an Eastern Canadian company announced its plans to expand production capacity to 80,000 m<sup>3</sup> per year, becoming the largest manufacturing plant in the world with a capacity nearing half the production of all facilities in Europe.

FPInnovations has played a pivotal role in facilitating the commercialization and adoption of CLT in North America. The CLT Handbook allows architects and engineers to specify CLT via a one-off approach (see references for publication sources, including a free, downloadable CLT summary document). Furthermore, FPInnovations drafted a CLT Plant Qualification and Product Standards. In the short term North American CLT manufacturers can rely on proprietary products, certified by code-recognized auditing services. At the building code level, CLT is expected to be incorporated in both the National Building Code of Canada and the International Building Code by 2015.

Given the large market opportunity (floor areas) and its high wood usage, CLT may represent a significant outlet for dimensional sawnwood while also becoming an important player in the carbon economy.

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# 13 Tropical timber trends, 2009-2011

*Lead Author, Fran Maplesden*

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## Highlights

- All the major EU importing countries reported reduced tropical sawnwood imports for 2009, which were expected to remain at similar low levels in 2010.
  - Modified wood products, such as heat-treated softwoods and temperate hardwoods, are being marketed as alternatives to tropical hardwoods in the external joinery and furniture sectors in EU markets and present strong competition in these sectors.
  - Implementation of the (Illegal) Timber Regulation by the EU, is expected to push demand for certified tropical wood products during 2011-2012 but there are doubts that supplies will be adequate to satisfy demand.
  - Tropical log production continued to decline in 2010, reflecting the continued depressed state of housing and construction markets in the EU and the US, tropical log availability, progress towards sustainable forest management in producer countries; and limited progress in achieving plantation targets designed to relieve pressure on natural forest.
  - During the economic crisis, many African producers relaxed their log export restrictions to help improve the profitability of their forestry sectors (particularly Gabon, Cameroon and the Republic of Congo): by 2010, many countries had re-imposed log export restrictions to help recovery of their sawmilling and other wood processing industries.
  - China and India continued to dominate tropical log imports in 2009 and 2010, with China's imports returning to pre-crisis levels in 2010 following a recovery in China's housing sector as well as a recovery in export demand for China's secondary processed wood products.
  - In contrast to all other major tropical log importers, India's log imports grew throughout the economic downturn, as demand was stimulated by high economic growth and incentives for the building industry.
  - China overtook Thailand as the major tropical sawnwood importer in 2009, with China's domestic demand more than compensating for the depressed demand in China's export-oriented wood remanufacturing industries during the period of the global financial and economic crisis (2008-2009): imports were expected to soar in 2010, as a result of a significant recovery in wooden furniture and flooring export markets.
  - Prices among the important traded species of tropical primary wood products displayed relative price stability in 2009 and 2010, increasing from mid-2010 onwards.
  - The aftermath of the devastating earthquake and tsunami in Japan in 2011 is expected to result in increased spending on reconstruction, leading to a surge in demand for building materials, including tropical wood products.
-

## 13.1 Introduction

This chapter reviews the market for tropical timber primary products, focusing on logs, sawnwood and plywood. Where possible, information for 2010 and the first quarter 2011 is also included. The chapter is based on the ITTO's Annual Review and Assessment of the World Timber Situation 2010<sup>26</sup>, which contains a complete analysis of trends in production, consumption and trade of primary and secondary tropical timber products in relation to global timber trends. More up-to-date information comes from ITTO's bi-weekly Market Information Service<sup>27</sup>, where the reader may find additional information on the developments highlighted in this chapter. Data were collected via the UNECE/FAO/ITTO/Eurostat Joint Forest Sector Questionnaire. As in previous years, the base year for the analysis is not the previous (2010) because data for tropical timber production and trade after 2009 are generally unavailable or unverified. Production figures should therefore be viewed with caution. It should be noted that some of ITTO's terminology, used in this chapter, differs slightly from that of the rest of the Review. For example, ITTO analyses only logs (sawlogs and veneer logs) in the roundwood product group. A breakdown of the roundwood definition appears in the annex "Components of wood products groups".

The tropical timber market continued to be influenced by the global economic downturn, even in 2010, although there were growing signs of recovery in tropical timber trade and prices, with growth in China and India's markets stabilising global trade. There is continued interest in the development of policy initiatives with the aim of improving forest law enforcement and governance and countering the trade in illegal timber harvest. The emergence of a concerted international response to the problem of illegal logging has significant potential to increase the competitiveness of legally-sourced tropical timber, with illegal logging widely perceived to be a more serious issue in tropical producer countries.

Through the Forest Law Enforcement, Governance and Trade (FLEGT) Voluntary Partnership Agreement (VPA) process, the EU is providing support to some tropical producer countries to assess and improve legality assurance systems. To date, FLEGT VPAs have been signed with Cameroon, Central African Republic, Ghana, and the Republic of Congo while formal negotiations are underway in the Democratic Republic of Congo, Indonesia, Liberia, Malaysia and Vietnam. The EU's "Illegal Timber Law" (ITL), formerly referred to as the "due diligence" legislation, was formally approved by

the European Council on 11 October 2010 and is expected to come into force in 2013. The regulation is expected to result in legality becoming a minimum requirement for selling timber in the EU and a shift from high- to low-risk sources which will favour timber from verified legal and sustainable sources, including VPA-licensed timber. Many public sector procurement policies were being broadened to require that wood must be certified sustainable (rather than merely seeking to avoid wood from illegal sources) with significant differences in the detailed legality and sustainability requirements of government procurement policies, which is a concern to tropical timber producers supplying several markets.

In 2010, agreement was reached on a number of Reducing Emissions from Deforestation and forest Degradation (REDD+) issues at the UNFCCC conference in Cancun, Mexico. The REDD+ scheme aims to address global greenhouse gas emissions from deforestation by creating incentives to reward developing countries for bringing these emissions under control and reducing them. REDD+ initiatives have significant potential to alter the economics of tropical land management and the dynamics of the tropical timber trade. For more information see Chapter 11, Carbon Markets.

## 13.2 Production trends

Although tropical timber production and trade suffered during the global economic and financial crisis of 2008-2009, there were tentative signs of recovery in 2010 (table 13.2.1).

### 13.2.1 Logs

Production of tropical industrial roundwood (logs) in ITTO member countries declined to 141.7 million m<sup>3</sup> in 2009, when the global recession had reached its height. It continued to slide to 138.4 million m<sup>3</sup> in 2010, despite indications that a recovery in the global economy was underway and wood processing curtailments in ITTO member countries were beginning to ease. In addition to continued depressed market conditions in consumer countries, the progressive decline in tropical log production since 2008 reflects constraints in tropical log availability, significant progress towards sustainable forest management (SFM) in many producer countries and slow progress in achieving plantation targets to relieve pressures on natural forests.

<sup>26</sup> Available via: [www.itto.int](http://www.itto.int).

<sup>27</sup> Available at: [www.itto.int/en/market\\_information\\_service](http://www.itto.int/en/market_information_service).

TABLE 13.2.1

**Production and trade of primary tropical timber products,  
ITTO total, 2007-2010<sup>28</sup>**  
(million m<sup>3</sup>)

	2007	2008	2009	2010	Change % 2009-2010
<b>Logs</b>					
Production	141.8	145.6	141.7	138.4	-2.3
Imports	15.3	13.2	11.5	13.6	+18.3
Exports	13.6	12.9	10.9	12.0	+10.1
<b>Sawnwood</b>					
Production	43.4	43.5	42.4	43.2	+1.9
Imports	8.8	8.1	6.6	8.3	+25.8
Exports	11.0	8.9	8.0	9.1	+13.8
<b>Plywood</b>					
Production	20.0	17.8	18.2	18.3	+0.5
Imports	8.1	6.5	5.4	5.1	-5.6
Exports	8.9	7.3	5.3	5.2	-1.9

**Notes:** Total of producer and consumer countries. ITTO categorizes its 60 member countries into 33 producers and 27 consumers (non-tropical) which together constitute 95% of all tropical timber trade and over 80% of tropical forest area. A full list of members is available at [www.itto.int](http://www.itto.int).

**Source:** ITTO Annual Review and Assessment of the World Timber Situation, 2011.

The proportion of tropical roundwood to total industrial roundwood production from all forests in ITTO member countries was 13% in 2009 - a small rise from 2008. During the period 2008 to 2010, there were regional differences in production growth trends in ITTO producer regions, with the rate of decline in production being greater in the Asia-Pacific region than in both of the other producer regions. Regional disparities in the rate of domestic conversion of primary products continued with Latin America's conversion of domestically produced logs to (at least) primary products being highest of the three regions, remaining at over 99% in 2008-2010. By contrast, the rate of domestic conversion in Africa is relatively low, although the proportion increased from 79% in 2008 to 84% in 2009 and 2010. Asia-Pacific's domestic log processing rose marginally from 90% to 91% over the same period, reflecting both increasing domestic demand for wood-based products, resulting from population and economic growth, as well as greater emphasis on producing and exporting added-value processed products in the region.

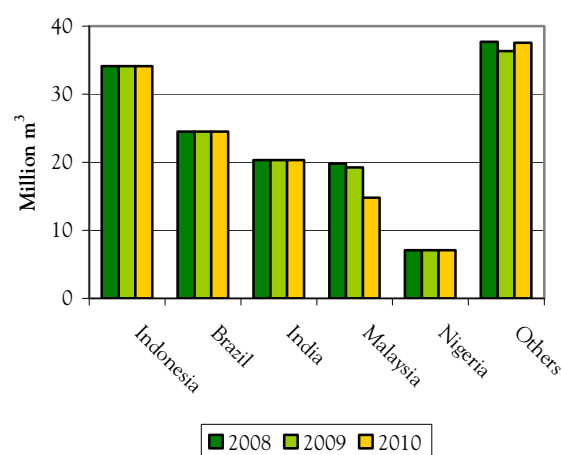
Although Africa's log production is relatively small, it is more dependent on exports, and EU markets, than the other regions (over 16% of log production is exported as logs). Compared to Asia and Latin America, the African

region was more sensitive to the depressed wood products demand in traditional markets caused by the global economic downturn. Many of the major producing countries relaxed log export restrictions during the economic crisis, to assist their forestry sectors to improve profitability (particularly Gabon, Cameroon and the Republic of Congo), but in 2010 many countries re-imposed these restrictions to assist the recovery of their sawmilling and other wood processing industries.

Four countries – Indonesia, Brazil, India and Malaysia – accounted for two-thirds of total ITTO production in 2009 (graph 13.2.1). Indonesia, the largest ITTO tropical log producer country, has produced 34.2 million m<sup>3</sup> annually since 2007, following a period of growth in response to increasing GDP growth and domestic demand from the construction industry. Indonesia's natural forests have faced pressure from conversion to agriculture (particularly oil palm plantations) and forest plantations (for the pulp and paper industry) and from rising domestic demand for wood products in the growing housing construction sector. A recent, significant effort to curb deforestation, as part of a REDD+ bilateral deal with Norway, includes a two-year moratorium on new logging concessions in primary forests and peatland, although implementation of the deal has been hampered by disagreement on which forests should be included. The impact of this initiative on future production will depend on the details of the moratorium.

GRAPH 13.2.1

**Major tropical log producers, 2008-2010**



**Source:** ITTO, 2011.

### 13.2.2 Sawnwood

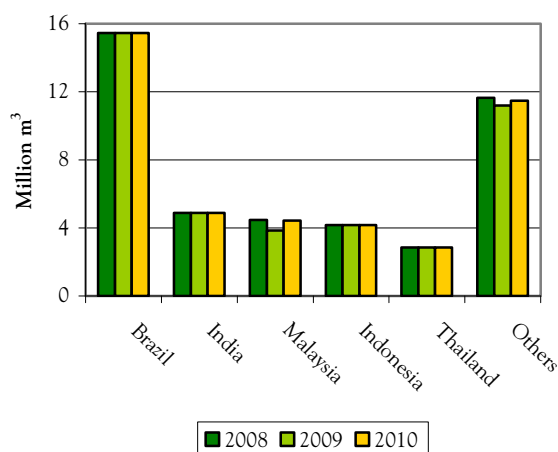
Tropical sawnwood production by ITTO members dropped 2.5% in 2009, with most of the decrease occurring in the Asian region. Production recovered slightly in 2010, however, to reach 43.2 million m<sup>3</sup>, nearly

<sup>28</sup> Figures for 2007-2009 may differ from those provided in previous years where data revisions have been provided by member countries in the 2010 Joint Forest Sector Questionnaire.

the level before the global economic crisis. Regionally, Asia-Pacific and Latin America/Caribbean each accounted for approximately 44% of production in ITTO producer regions, while Africa accounted for the remainder. Although production in Latin America declined slightly to 17.9 million m<sup>3</sup> in 2009, with Peru accounting for most of the decrease, production is expected to recover to 18.0 million m<sup>3</sup> in 2010. Brazil remains the largest producer of tropical sawnwood in the region and among ITTO producers, with high economic growth and an increase in construction activity fuelling increased domestic sawnwood demand. The top five tropical sawnwood producer countries - Brazil, India, Malaysia, Indonesia and Thailand - are also important tropical sawnwood consumers and together they accounted for nearly 70% of total tropical sawnwood consumption. (graph 13.2.2)

GRAPH 13.2.2

## Major tropical sawnwood producers, 2008-2010



Source: ITTO, 2011.

### 13.2.3 Plywood

ITTO producer<sup>29</sup> countries' tropical plywood production has fallen steadily in recent years, dropping to 10.8 million m<sup>3</sup> in 2009, a year-on-year decline of 9%. This can be attributed to a significant proportion (around 30%) of producer country production being exported to consumer countries whose construction industries had been severely affected by the global economic crisis. By contrast, ITTO consumer countries' tropical plywood production increased in 2009 to 7.5 million m<sup>3</sup>, assisted by a domestic construction boom in China in late 2009 and a rebound in China's exports, which increased China's production demand. The net effect of these

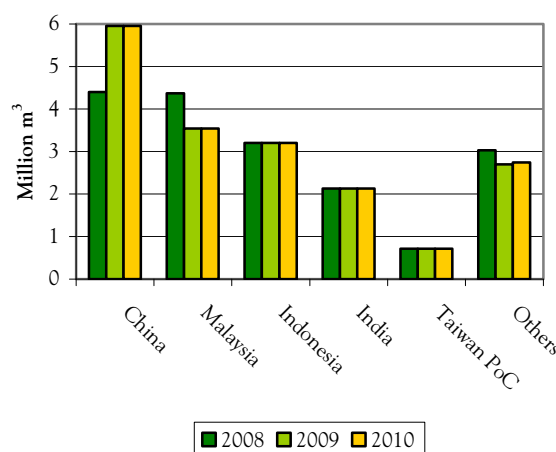
changes amongst producer and consumer countries amounted to a small year-on-year increase in tropical plywood production in 2009 (2.2%) and almost no change in 2010 over the prior year (graph 13.2.3).

China, Malaysia and Indonesia have dominated tropical plywood production among ITTO countries (graph 13.2.3). Nevertheless, production in both Indonesia and Malaysia has dropped over the last decade, mainly due to reductions in logging quotas, crackdowns on illegal log flows that have restricted log availability for plywood production, and declining availability of logs of peeler quality. Although China's tropical plywood production is expected to remain level in 2010, there are market uncertainties about the impact of China's policies to dampen the housing market's demand for building materials. India's tropical plywood production, based largely on imported tropical logs (as in China), has also expanded significantly over the last decade. India's housing sector, which is a significant plywood end-user, has been supported by a government stimulus package for the building industry, designed to relieve the shortage of both urban and rural dwellings. Currently, India's plywood production is reported to be affected by shortages of power, labour and peeler grade logs, with imported plywood from China providing strong competition with domestic plywood products.

EU production of tropical plywood is tiny on a global scale (less than 2% of global production), but it is a significant industry in France and Spain, where it accounts for about half of total plywood production in both countries.

GRAPH 13.2.3

## Tropical plywood production from major manufacturing countries, 2008-2010



Source: ITTO, 2011.

<sup>29</sup> Although China is a major producer of tropical plywood, it is not defined as an ITTO producer country.

## 13.3 Import trends

### 13.3.1 Logs

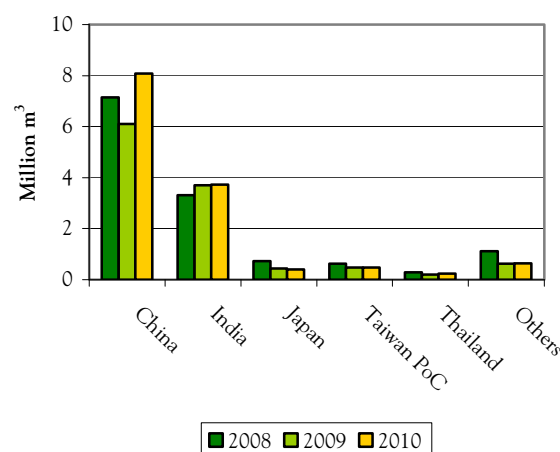
Trends in imports of tropical hardwood logs by ITTO members show the impact of the global economic crisis on demand in 2008 and 2009, with year-on-year declines in aggregate tropical log imports of 14% and 13%, respectively. Imports showed signs of recovery in 2010, increasing by 17% to 13.6 million m<sup>3</sup>. China and India continued to dominate trade in tropical roundwood imports (graph 13.3.1). Together, they accounted for over 85% of tropical roundwood imports in 2009, compared with 22% in 1995 (when Japan was the major importer), 46% in 2000 and 73% in 2007.

Although China's imports<sup>30</sup> declined by 15% in 2009, it remained the dominant country market, accounting for 53% of ITTO tropical log imports. China's imports recovered fully in 2010 from the global recession, surpassing a peak in 2007 to reach 8.1 million m<sup>3</sup>, following a recovery in China's housing sector (a stimulus package for housing and infrastructure projects had strengthened the housing sector significantly), as well as the recovery in export demand for China's secondary processed wood products. In 2009, Gabon, Papua New Guinea and the Solomon Islands (not an ITTO member) were China's main tropical log suppliers. Gabon's share of China's tropical roundwood imports declined in 2010, as expected, following the implementation of severe log export restrictions in May 2010. However, imports from Papua New Guinea and the Solomon Islands more than compensated for this. In marked contrast to all other major importing countries, India's imports grew during the global economic downturn, reaching 3.7 million m<sup>3</sup> in 2009 and growing slightly in 2010, stimulated by high economic growth and incentives for the building industry.

Japan's tropical log imports, used predominantly in Japan's plywood industry, have plunged in recent years because of strong price competition from imported plywood and declining housing starts. Although housing starts and total log imports picked up in 2010, tropical log imports continued to decline, while coniferous log imports grew. Japan's industrial output and household spending fell dramatically in the aftermath of the earthquake and tsunami in early 2011. Some major plywood mills reported considerable damage, interrupting or halting production. Even mills unaffected directly by the disasters cut production because of power shortages. Government officials are working on plans for reconstruction of infrastructure and housing. However, increased spending on reconstruction in the affected areas is unlikely to lead to a surge in demand for building

materials, including wood products before the latter part of 2011.

GRAPH 13.3.1  
Major tropical log importers, 2008-2010



Source: ITTO, 2011.

EU imports of tropical logs fell sharply from 1.2 million m<sup>3</sup> in 2007 to 0.38 million m<sup>3</sup> in 2009, recovering only marginally in 2010 (0.40 million m<sup>3</sup>). This dramatic two-year downturn reflected deteriorating market conditions in EU countries and falling demand from EU wood processors, as well as investment in processing capacity in African countries.

### 13.3.2 Sawnwood

Imports of tropical sawnwood fell sharply in 2009, to 6.6 million m<sup>3</sup>, a year-on-year decline of 27%, as the impact of the global economic crisis on construction demand and consumer spending took full effect. Imports rebounded in 2010, and were estimated to reach 8.3 million m<sup>3</sup>. China overtook Thailand as the major tropical sawnwood importer in 2009, with imports rising to 2.2 million m<sup>3</sup> (graph 13.3.2). Domestic demand in China more than compensated for the depressed demand in China's export-oriented wood remanufacturing industries during the global financial and economic crisis (2008-2009). China's tropical sawnwood imports were expected to soar in 2010, reaching a record 3.3 million m<sup>3</sup>, as a result of a significant recovery in wooden furniture and flooring export markets.

A significant proportion (70%) of the global tropical sawnwood trade lies within Asia. Thailand was the second largest tropical sawnwood importer in 2009, with three-quarters of the imports coming from Laos and Malaysia. In 2010, Thailand's imports had recovered to 2.2 million m<sup>3</sup>, the highest level in over a decade. Malaysia's imports plummeted to 269 000 m<sup>3</sup> in 2009, which was over 65%

<sup>30</sup> Official Chinese statistics do not include Taiwan P.O.C. nor Hong Kong and Macao S.A.R.s

less than the 2006 level. Malaysia's suppliers were mostly from ITTO's Asia and Pacific region, with 41% of imports in 2009 from Thailand, and most of the remainder from Indonesia, Myanmar and the Philippines .

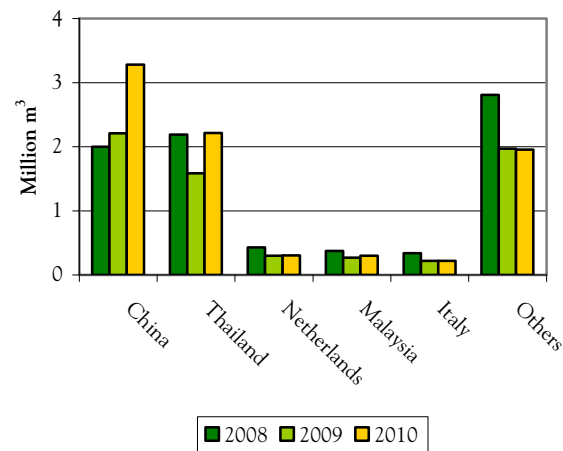
All the major EU importing countries reported significant reductions in imports in 2009, with levels expected to remain low in 2010. With many EU member countries facing government austerity measures, sluggish construction activity, a continuing tendency for importers to maintain low stocks and signs of declining market share for some tropical products, it is unlikely that imports will recover soon. In October 2010 in the Netherlands, the largest EU tropical sawnwood importer, the Dutch Timber Procurement Assessment Committee (TPAC) reversed its earlier decision that the Malaysian Timber Certification System (MTCS) meets the Dutch Procurement Criteria for timber. This is likely to impact Malaysia's exports to the EU because the Netherlands is the major market for MTCS-certified timber products, including sawnwood.

In EU markets, tropical hardwood sawnwood faces mounting competition from modified wood products, such as heat-treated softwoods and temperate hardwoods. Thermal treatment capacity has expanded in the EU recently and thermally treated softwood products, which have targeted performance attributes, are being marketed as alternatives to tropical hardwoods in the external joinery and furniture sectors. Although the market share of wood products in the EU window sector is reportedly increasing, there are obstacles to tropical wood products fully benefiting from this trend, including a growing availability of high performance substitutes to tropical hardwood products, including engineered wood products (EWPs), limited production capacity in the tropical supplying countries for EWPs and finished wood window components and a lack of availability of certified timber. This latter is a particular concern, given the widespread expectation that EU demand for certified tropical wood products will pick up strongly during 2011-2012 as the EU moves towards full implementation of the Illegal Timber Law (ITL).

Although Japan's tropical sawnwood consumption and imports have declined steadily over recent years, a surge in sawnwood imports as part of the post-earthquake reconstruction effort is expected in late-2011. Government policies support a higher degree of self sufficiency in industrial wood consumption. A new regulation took effect in October 2010, which aims to promote the use of wood products, in particular wood of domestic origin, in public buildings. However, the sheer scale of reconstruction means that imported products will almost certainly be needed to cover an expected shortfall in domestic production.

GRAPH 13.3.2

## Major tropical sawnwood importers, 2008-2010



Source: ITTO, 2011.

### 13.3.3 Plywood

Although global trade in tropical plywood has declined in recent years, it continues to be dominated by a small number of major players. Japan and the US, the dominant importers, together account for about half of imports, while the bulk of tropical plywood imports are sourced from Malaysia and Indonesia, with most of the remainder coming from Brazil and China.

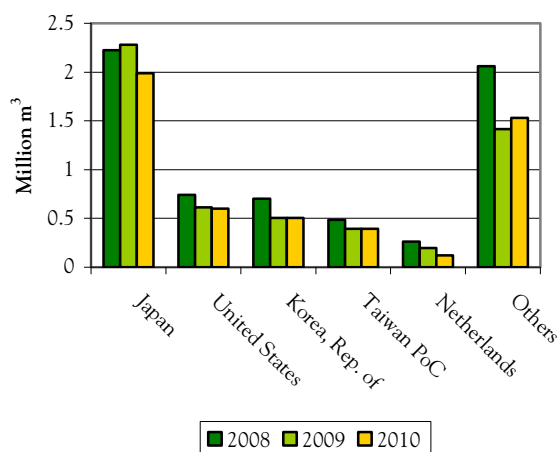
Although Japan's total imports for all types of plywood fell by 20% in 2009 - the result of depressed housing starts and poor economic conditions - imports of tropical plywood increased slightly, to 2.3 million m<sup>3</sup> (graph 13.3.3). This increase, which runs counter to the recent downward trend in Japan's tropical plywood imports, may be due to a decline in the capacity of Japan's domestic tropical plywood mills, which were reported to be cutting production by 20% to 30% in 2009 because of the depressed domestic market. Domestic mills had difficulties sourcing tropical peeler logs from Malaysia, because of escalating demand for logs by China and India. Plywood imports grew in 2010, following strong economic growth and a recovery in housing starts. However, tropical plywood imports dropped to 2.0 million m<sup>3</sup>, with prices being pushed upwards due to restricted supplies and rising production and transport costs. In the aftermath of the earthquake and tsunami in March 2011, tropical plywood imports increased considerably, triggered by immediate concerns about the impact of the earthquake and tsunami on domestic plywood capacity (although, by July 2011, significant capacity had been restored) and longer term concerns about the scale of post-tsunami reconstruction. The outlook for Japan's plywood demand and imports remains uncertain in the medium- to long-term. It will depend on



the timing and extent of the considerable post-tsunami reconstruction efforts, counterbalanced by Japan's revised economic outlook, following the earthquake and tsunami.

GRAPH 13.3.3

## Major tropical plywood importers, 2008-2010



Source: ITTO, 2011.

EU imports of tropical plywood dropped by 35% in 2009 to 868 000 m<sup>3</sup>, with imports expected to remain at this low level in 2010. Netherlands is the major EU importer, followed by UK, France, Belgium and Germany: most imports originate from Indonesia, Malaysia, Brazil and China. In 2009, the more competitively-priced Malaysian tropical plywood gained ground in EU markets at the expense of supplies from Brazil and Indonesia. This change was affected also by reductions in production capacity in both countries, mounting environmental concern about Indonesian plywood, and a larger proportion of Brazilian plywood being diverted to its growing domestic market. In 2010, birch plywood prices rose as a result of forest fires that had raged through the Russian Federation in summer 2010, boosting demand for Indonesian film-faced plywood and competitively-priced Chinese plywood.

China continues to offer tropical plywood to EU markets at competitive prices, allowing China's market share to grow in 2010, despite the continued imposition of anti-dumping duties (the EU decided in January 2011 to retain these duties) on okoumé plywood imported from China. Okoumé plywood has a variety of exterior and decorative end-uses in the EU although other tropical wood species, such as red canarium, bangkirai and meranti, may be used as substitutes. Consumption fell slightly during the peak of the global economic crisis. Gabon's imposition of severe restrictions on okoumé log exports in May 2010 calls into question continued Chinese and EU production of okoumé plywood.

Anecdotal reports suggest that prices for okoumé rotary veneer have been rising, while demand and prices for finished okoumé plywood in EU countries remain low.

Statistics on imports of certified tropical plywood products are unavailable, as they are not differentiated by the Harmonized System (HS) codes. However, demand is reported to be rising, with indications that the larger importers and merchants are investing in environmental certification and legality assurance, with pressure on suppliers to demonstrate that products are certified. Malaysian exporters have a competitive advantage in being able to offer certified plywood products in reasonable quantities, which should be an important advantage when the EU's ITR is fully implemented, from March 2013.

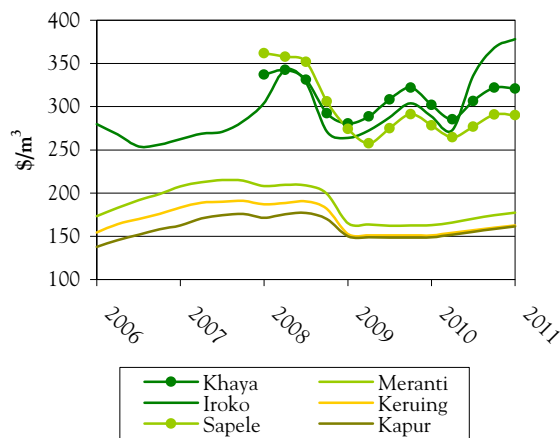
### 13.4 Prices

Price trends for some of the important traded species of tropical primary wood products showed a return to relative price stability in 2009 and 2010. This followed a dramatic fluctuation between pre-crisis price peaks in early 2008 and plunging prices in late 2008, as the global economic crisis reached its height. Although demand remained relatively low in the EU, prices of West African logs (iroko, sapele and khaya) trended upwards as roundwood supplies and importers' inventories dwindled because of low purchasing activity and as suppliers diverted their exports to China and India, where demand had remained relatively buoyant (graph 13.4.1). From late-2009 to mid-2010, prices dropped as demand remained subdued. In mid-2010, however, prices moved upwards due to low stocks and growing demand in India and China, in addition to disruptions to log supply because of log export restrictions in Gabon and political unrest in Côte d'Ivoire.

Log prices for south east Asian species (meranti, keruing and kapur) remained stable during 2009 (although at low levels), as demand in all major markets remained depressed, resisting upward price pressure from rapidly increasing freight rates. In 2010, prices trended upwards due to continuing strong demand in India (for infrastructure construction projects) and China, as a replacement for Russian logs (see Chapters 3 and 5 for more information), as well as periodic disruptions to supply caused by poor weather conditions in Malaysia.

GRAPH 13.4.1

## Tropical log price trends, 2006-2011



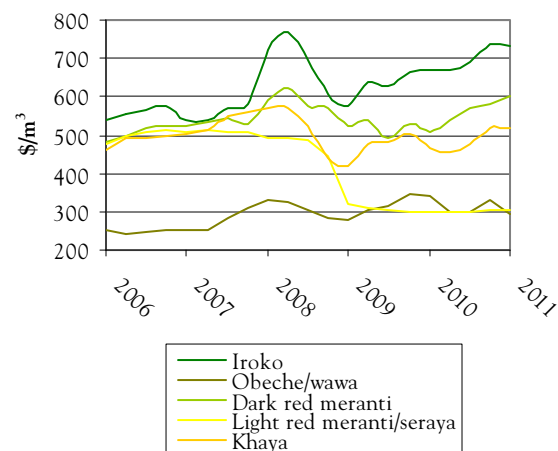
**Notes:** Prices in constant 1990 \$ per cubic metre (deflated by the IMF Consumer Price Index for industrial countries). Data series for sapele and African mahogany are only available from January 2008.  
**Source:** ITTO Market Information Service, 2006-2011.

Prices for African mahogany sawnwood (khaya or acajou) fell rapidly from mid-2008 but picked up again in 2009 (graph 13.4.2). This reflected the restricted supplies from the African supplying countries – Ghana, Côte d'Ivoire, Gabon and Cameroon - and the relatively small volumes being traded, as increases in ocean freight rates had an impact on Carriage Insurance and Freight (CIF) prices. Since mid-2010, rising prices have reflected the limited stocks in importing countries and growing demand, with real prices reaching \$520/m<sup>3</sup> by February 2011. Wawa (or obeche) sawnwood prices also trended upwards in 2009, reflecting supply adjustments to match the comparatively high stocks in EU markets. During the second quarter of 2010, demand was reportedly boosted by a stronger US dollar (with wawa invoiced in UK pounds) and a lack of supply of North American tulipwood, a lighter coloured timber used in similar applications. With sawnwood demand picking up marginally in 2010 and stocks low, prices trended upwards, reaching a high of \$340/m<sup>3</sup> (real) in November 2010.

Apart from a drop in September 2009, prices for iroko sawnwood (or odum, currently West Africa's most valuable sawnwood export species) trended upwards through 2009 to early 2011, as production and supplies from producer countries remained low because producers preferred to slow production rather than increase export volumes to demand-constrained markets. In 2011 there was an upward pressure on prices for iroko (logs and sawnwood) because of reportedly high demand and reduced supplies of heavy hardwood species from Brazil and other South American exporting countries.

GRAPH 13.4.2

## Tropical sawnwood price trends, 2006-2011



**Note:** Prices in constant 1990 \$ per cubic meter (deflated by the IMF Consumer Price Index for industrial countries).  
**Source:** ITTO Market Information Service, 2006-2011.

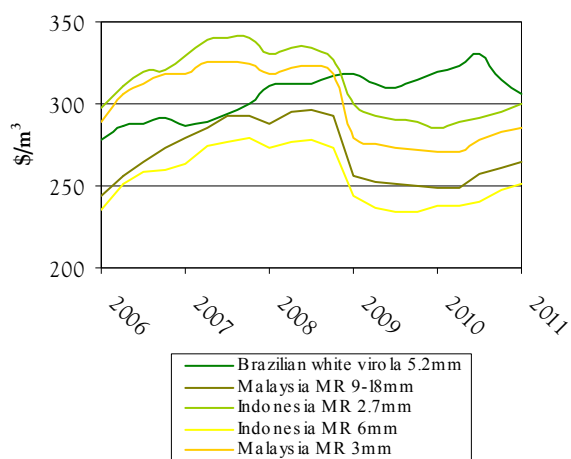
Malaysian dark red meranti sawnwood prices declined in UK pounds from early 2009 until September 2009, as consumption weakened and as the UK currency strengthened. Prices trended upwards in US dollars until early 2011 due to rising freight costs and limited supplies, reflecting low levels of purchasing by importers in 2010. Seraya (also known as light red meranti, a medium-density utility timber) scantlings (sawnwood having small dimensions) prices remained relatively stable in 2009 and 2010, although they have not recovered to pre-crisis levels. In the last quarter of 2010, prices continued to be dampened by low demand in the general EU building sector and the ready availability of competitive species.

Prices for Asian plywood panels (graph 13.4.3) remained at relatively low levels in 2009 and 2010, despite Asian exporters' efforts to push up CIF prices on the basis of reduced supplies, improved demand in the Middle East and Japan and mounting freight rates. However, a continuation of depressed demand kept prices at relatively low levels. In early 2011, with log supplies particularly low in Malaysia, steady demand from Chinese and Indian buyers, and strengthening local currencies relative to the US dollar (the currency in which Asian plywood is traded), FOB prices were being pushed upwards and were not expected to retreat.

Increased building activity in Japan in 2011 is expected to increase demand for tropical plywood considerably, reducing availability to other destinations and leading to significant upward price pressure in 2011. A significant price differential between Indonesian, Malaysian and Chinese tropical plywood grades (although not shown in graph 13.4.3) reflects different

plywood qualities. Although Chinese plywood is generally the cheapest tropical plywood available in international markets, producers have been pushing for higher prices, citing renewed demand in Japan and rapidly rising manufacturing costs (labour, transport, raw materials) in China.

GRAPH 13.4.3  
Tropical plywood price trends, 2006-2011



**Note:** Prices in constant 1990 US dollars per cubic meter, FOB (deflated by the IMF Consumer Price Index for industrial countries).

**Source:** ITTO Market Information Service, 2006-2011.



**Source:** D. Haugen, 2011.



**Source:** Manfred Mielke, 2011.

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# 14 Brief review of market developments in China, 2010-2011

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## Highlights

- China's overall output of forest products in 2010 reached \$300 billion, an increase of 29.3% on 2009, and is expected to reach \$365 billion in 2011.
  - China is now the largest producer of wood-based panels in the world, with production that has doubled in only four years.
  - In only 10 years, China has more than doubled its production of paper, pulp and paperboard, which now accounts for almost 25% of global production.
  - China now has a national forest certification programme, which this year is expected to add 3.4 million hectares of certified forest area to the two million hectares already certified.
  - China has more chain of custody certificates (CoC) than any other, and a growth rate that has seen CoCs triple from 2008 to 2010.
  - With a scheduled increase in export tariffs on Russian roundwood, China looked elsewhere for imported roundwood, including: North America, Europe, New Zealand and the tropics.
  - China is purchasing more sawnwood from abroad and has increased their purchases dramatically from the west-coast of North America (4 million m<sup>3</sup> in 2010 from British Columbia alone).
  - China is the world's largest furniture manufacturer: its production capacity now accounts for more than 20% of global production capacity.
  - China's furniture producers may need to merge to achieve the necessary economies of scale and efficiency to face the increasing competition from lower-cost manufacturing countries, such as Viet Nam.
  - China is now the second largest manufacturer of Wood Plastic Composites in the world, behind only the United States.
-

## 14.1 Introduction

The growth of China's forest sector in the past 10 years has been remarkable. In 2005, it overtook Italy to become the major world furniture producer. China is now also the largest producer of wood-based panels, production of which has doubled in only four years. In only 10 years, it has more than doubled its production of paper, pulp and paperboard, which now accounts for almost 25% of global production. According to the China Paper Association, China is now the largest producer and consumer of paper products in the world.

As a major consumer of wood, in its raw form as well as wood products, and as a major exporter of processed wood products, China exercises considerable influence on world markets for forest products, including the UNECE region. It is for that reason that this chapter provides an update on developments in China in 2010 and 2011. The reader is invited to explore the individual chapters that precede this one for further information on many of the particulars of China's forest products sector.

## 14.2 Chinese forest sector policy developments

In 2010, the Chinese government continued its support for the development of China's forest sector. As the world economy slowly recovered, the rate of growth of China's forest industry began to approach the rates that had applied before the economic crisis. China's overall output of forest products in 2010 reached \$300 billion, an increase of 29.3% on 2009 (graph 14.2.1). This was considered to be a major achievement, occurring at the end of China's 11<sup>th</sup> five-year plan<sup>31</sup>.

China has a national strategy, which calls for growth of 12% annually by way of vertical integration and via specialized industry clusters. The commercial value of its forest products sector is expected to reach \$365 billion by 2011 (The Economic Times, 2011).

China is also taking steps to satisfy the market demands for legal and sustainable products, by setting up and promoting a Chinese national forest certification programme and standards. Certified forest area in China now exceeds two million hectares and China has more chain of custody certificates (CoC) than any other country in the world, and a growth rate that has seen CoCs triple from 2008 to 2010. It is expected that before the end 2011, there will be an additional 3.4 million hectares certified under the Chinese national certification programme (PEFC News, 2010). Currently, most certified forest products made in China are exported (Zhao et al., 2011).

<sup>31</sup> China's Five-Year Plans is a strategic plan carried out by the Chinese Government for economic development. The 11<sup>th</sup> five-year plan started in 2005, ending in 2010.

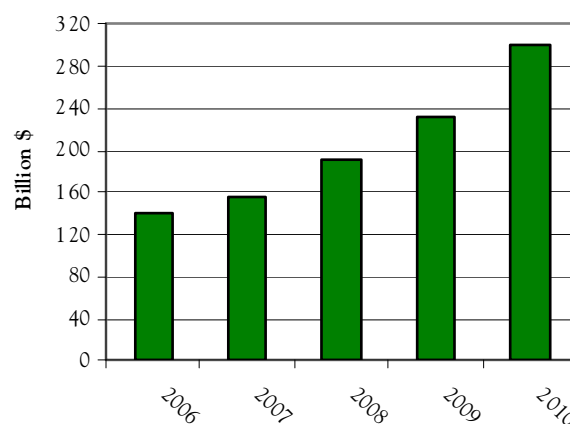
Policy influences from outside of China are also playing a role in the development of China's forest products industry via regulations and measures against dumping and government subsidies:

- The European Union followed the US in adopting anti-dumping and anti-subsidy measures against the Chinese coated wood-free paper manufacturers.
- Anti-dumping duties of 66.7% against Chinese Okoumé plywood exports into the EU (EU 2011).
- A preliminary determination by the US Government that the Chinese Government subsidized engineered flooring exporters, who followed by setting preliminary countervailing duties against the manufacturers (Hardwood Review, 2011).
- A continuation in the US of the anti-dumping duties against Chinese bedroom furniture manufacturers (US Department of Commerce, 2010).

The Russian log tariffs were also a factor affecting China's forest products industries. The proposed increase to the log tariff in 2009, to €50/m<sup>3</sup>, never occurred, however, China made some changes to their log sourcing and manufacturing strategy in anticipation of this change. Imports of logs from the Russia Federation increased during the first quarter of 2011, but China has looked to other sources for logs and has dramatically ramped-up their imports of logs from New Zealand, North America and Europe. On top of these changes, China increased imports of Russian sawnwood from, amongst other countries.

GRAPH 14.2.1

Value of Chinese forest products' output, 2006-2010



**Note:** Includes roundwood, sawnwood, panels, paper and pulp.

**Source:** International WOOD MARKETS Group, 2010.

## 14.3 Wood products manufacturing

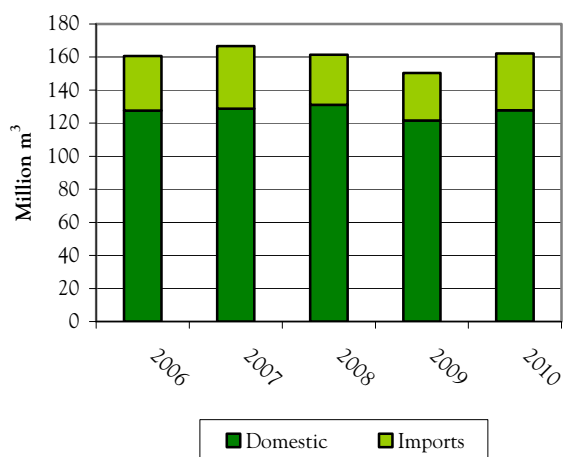
### 14.3.1 Domestic production of raw materials

China's roundwood consumption in 2010 was estimated at 162 million m<sup>3</sup>, an increase of 7.8%

compared with 2009 (graph 14.3.1). Roundwood production in 2008 rose more than usual due to the snow disaster that affected southern China in January 2008 and the severe earthquake that affected Sichuan Province in May 2008.

GRAPH 14.3.1

Chinese roundwood consumption, 2006-2010



Sources: FAOSTAT and secretariat estimation, 2011.

China’s consumption of domestically-grown roundwood has increased steadily since 2003, reflecting forest expansion that has been an element of China’s series of five-year plans. However, imported roundwood still constitutes an essential part of China’s roundwood consumption, though the majority of the final manufactured products, of course, are exported. The pace of growth in roundwood consumption is such that China is trying to bridge the widening demand-supply gap by continuing to expand its area of forest and new plantations (figure 14.3.1).

The consumption of roundwood does not seem to have increased as much as might have been expected, given the remarkable rise in China’s forest products manufacturing sector. It seems probable that the growth in roundwood supply may not be fully captured in the official statistics.

FIGURE 14.3.1

Distribution of China’s forests



Source: Zengyuan Li, 2005, Forest Resources Monitoring using Multi-source Remote Sensing Data in China, Research Institute of Forest Resources Information Technique, Chinese Academy of Forestry, Beijing China.

### 14.3.2 Manufactured wood products

China is the world's largest furniture manufacturer. Its production capacity now accounts for more than 20% of global production capacity, according to Greentimes (2010), a news website focusing on the forest industry in China. Wooden furniture accounts for around one-third of all the furniture manufactured in China in 2010, in terms of volume. In spite of a downturn in China's housing market in 2010, which produced a fall in domestic demand of roughly 30%, the export market for wooden furniture remained strong. The value of China's wooden furniture exports in 2010 was \$ 10.6 billion, an increase of approximately 40%, compared with 2009 (graph 14.3.2).

GRAPH 14.3.2

Value of Chinese furniture exports, 2006-2010



Source: China National Furniture Association, 2010.

The eurozone debt crisis and the depreciation of the euro affected China's wooden furniture exports in 2010, but they appear to have recovered as measures were taken in Europe to respond to the debt crisis. However, with continuing austerity measures in many European countries, it remains to be seen how this will impact exports in 2011. China's furniture industry is not without its problems. There is a feeling within China's furniture industry that producers may need to merge to achieve the necessary economies of scale and enhanced efficiency in the supply chain, to maintain China's future competitiveness, especially in its export markets. This will be essential to help China face the increasing competition from lower-cost manufacturing countries, such as Viet Nam.

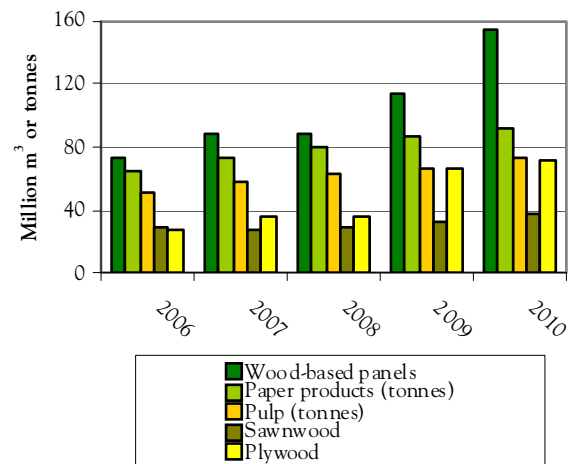
Production of all the major forest products increased in 2010, continuing a trend that has been evident for several years (graph 14.3.3). The production of wood-

based panels has almost doubled since 2006, to 153.6 million m<sup>3</sup> in 2010; over the same period, the panels sector in Europe and North America has seen capacity stagnate or even shrink. In 2010 alone, China's wood-based panel production increased by 35.3%. This has occurred at a time when the construction sector in Europe and North America, the biggest market for structural panels in particular, has been in the doldrums.

In terms of the Green Economy, it raises the question of whether or not, in environmental terms at least, it makes sense to transport bulky low-value roundwood over long distances, only to be sold back as manufactured added-value products, when there is significant capacity lying idle in North America and perhaps Europe. As the global economy recovers from the financial crisis, it will be interesting to see how the demand for China's wood-based panels and other forest products may increase, in both domestic and international markets.

GRAPH 14.3.3

Production by China of main forest products by sector, 2006-2010



Sources: China Paper Association, State Forestry Administration, P.R. China, China National Furniture Association, China Development Gateway, China wood industry information, 2011.

One relatively new sector in China is Wood Plastic Composites (WPC). WPC manufacture started in China in the late 1990s, and has grown rapidly since then. China is now the second largest manufacturer of WPC in the world, behind only the United States. Production of WPCs in China were 215,000 tonnes in 2009 and were expected to top 300,000 tonnes in 2010, with 75% exported. This sector appears to be very well suited for China, given its high production of waste plastics and its large wood products sector, which produces substantial volumes of co-products. It is a sector that is likely to see continued expansion in the future.



## 14.4 Import and exports

### 14.4.1 Imports

While both exports and imports of forest products increased, the increase of imports was higher. The major products that China imported in 2010 were industrial roundwood, sawnwood and waste paper (graph 14.4.1).

#### 14.4.1.1 Roundwood

The Russian Federation has been the principal exporter of roundwood to China. However, price increases, partly the result of Russian export taxes, have led China to explore other sources to meet its growing demand for roundwood, including North America. China now is the biggest customer for exported logs from the US and sources large volumes of logs from other temperate regions such as Canada, New Zealand and Europe.

China also imports large quantities of tropical logs (8.1 million m<sup>3</sup> in 2010). Gabon, Papua New Guinea and the Solomon Islands supplied the largest share of logs.

Despite importing large volumes of logs, China is quite reliant on imports of sawnwood as a raw material for further manufacture and for domestic consumption.

#### 14.4.1.2 Sawnwood

Increasing quantities of sawn softwood are being imported. China invested in Russian sawmilling capacity as a buffer against the log tariff. In addition China has dramatically increased their imports of sawn softwood from North America, with China consuming more than four million m<sup>3</sup> (17%) of British Columbia's production in 2010 (The China Bulletin. 2010). This increased presence of China in the softwood markets of western North America has been a blessing for many mills who had been left with little market options after the crash of 2008-2009.

China also imports large quantities of sawn hardwood. During 2011, China's imports of temperate sawn hardwood are projected to exceed two million m<sup>3</sup>, with more than half coming from the US alone. Imports of tropical sawn hardwood reached 3.3 million m<sup>3</sup> in 2010 (ITTO, 2011).

### 14.4.2 Exports

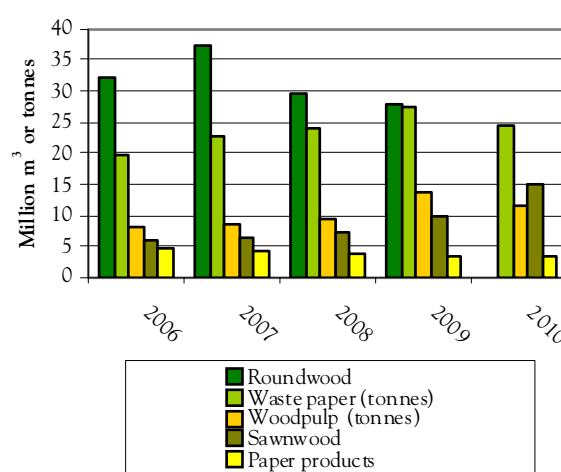
As the world economy improves, China's trade in forest products has increased, by 37.1% in 2010, in terms of value. This is even slightly higher than China's general growth in trade of all products, which was 34.7% in 2010.

Paper and paper products still make up the second largest source of revenue of China's forest products exports, with wooden furniture remaining the first place (graph 14.4.2). After falling for two years from 2007, wood-based panel exports began to rise again in 2010,

particularly plywood, which grew by 35.7% in 2010, compared with 2009. The increased exports of China's wood-based panels were largely due to the increased demand from developed countries, including European countries and the US. Particle board imports into the EU increased by 64% in 2010 and China has become Europe's largest supplier of plywood

GRAPH 14.4.1

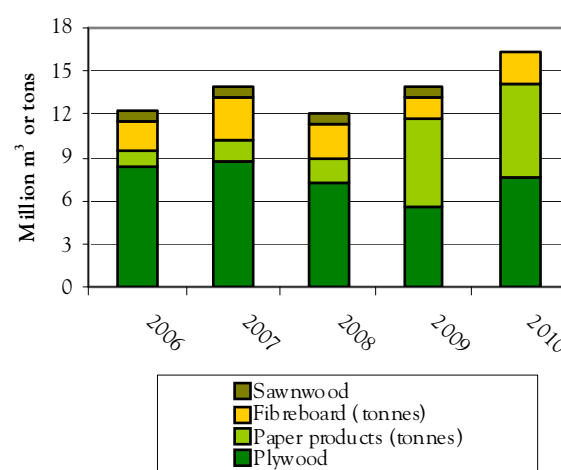
Chinese forest product imports, 2006-2010



Sources: China Paper Association, State Forestry Administration, P.R. China, Green Times, 2011.

GRAPH 14.4.2

Chinese forest product exports (excluding secondary manufactured products), 2006-2010



Note: Data for sawnwood is missing for 2010.

Sources: China Paper Association, State Forestry Administration, P.R. China, Green times, 2011.

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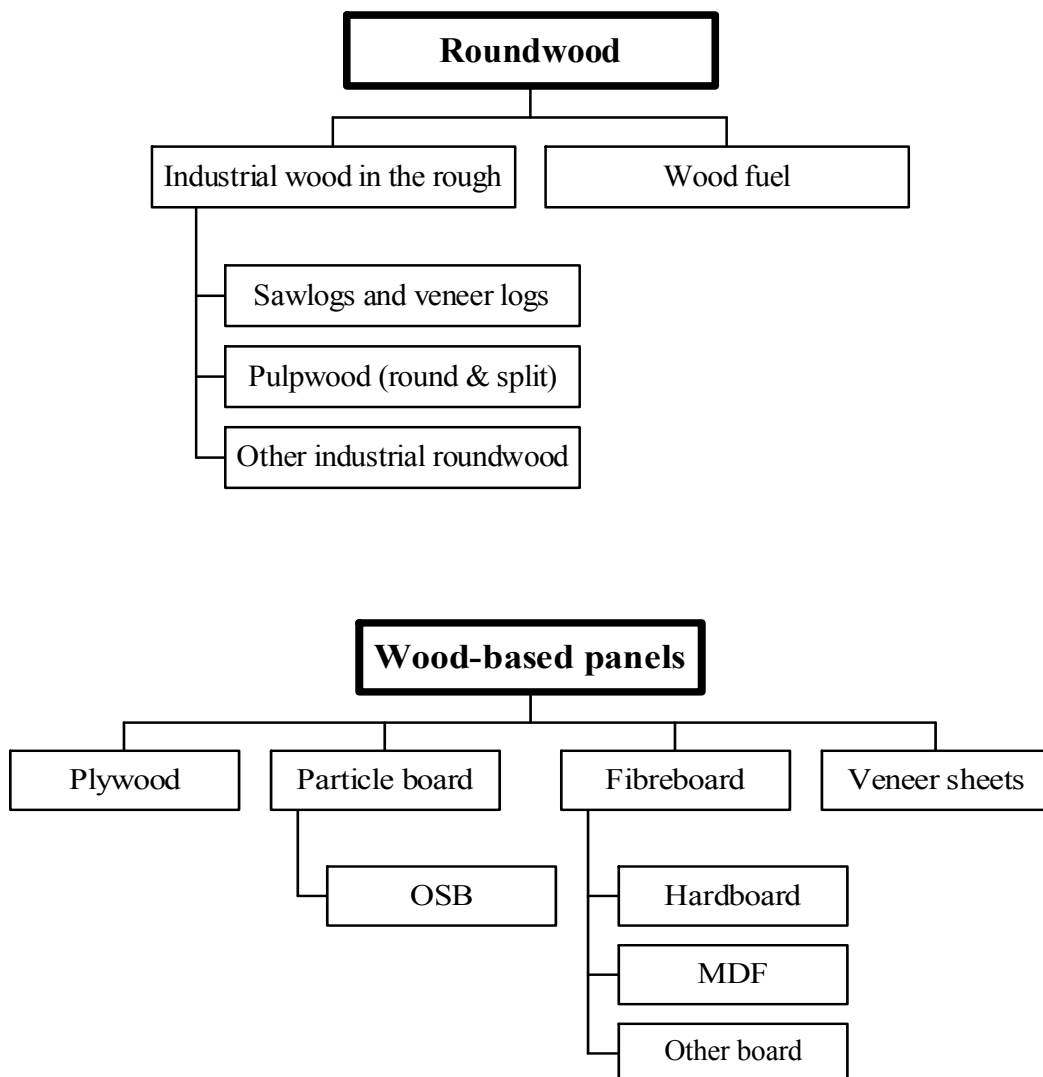
## Annex

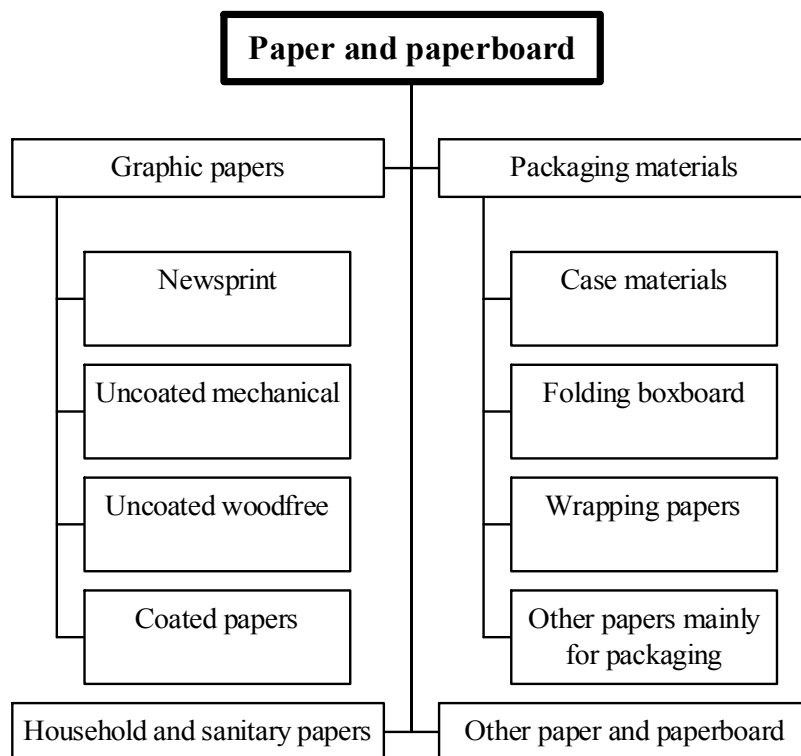
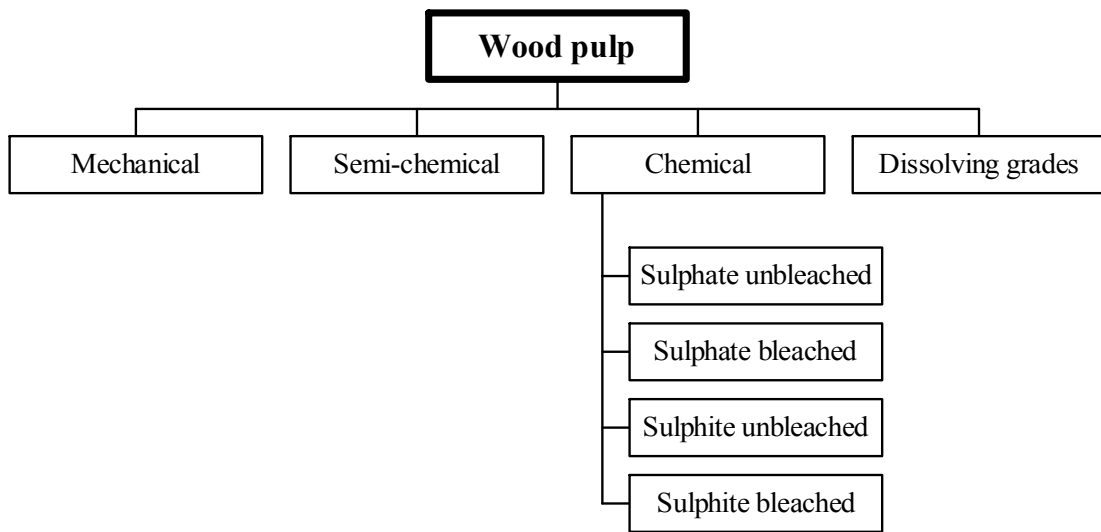
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## Components of wood products groups

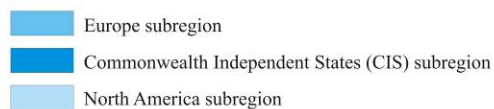
(Based on Joint Forest Sector Questionnaire nomenclature)

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, chips and particles, wood residues, sawnwood, other pulp and recovered paper.





### Countries in the UNECE region and its subregions



#### Europe subregion (EU\*)

Albania  
 Andorra  
 Austria\*  
 Belgium\*  
 Bosnia and Herzegovina  
 Bulgaria\*  
 Croatia  
 Cyprus\*  
 Czech Republic\*  
 Denmark\*  
 Estonia\*  
 Finland\*  
 France\*  
 Germany\*  
 Greece\*  
 Hungary\*  
 Iceland  
 Ireland\*  
 Israel  
 Italy\*  
 Latvia\*  
 Liechtenstein  
 Lithuania\*  
 Luxembourg\*  
 Malta\*  
 Monaco  
 Montenegro  
 Netherlands\*  
 Norway  
 Poland\*  
 Portugal\*  
 Romania\*  
 San Marino  
 Serbia  
 Slovakia\*  
 Slovenia\*  
 Spain\*  
 Sweden\*  
 Switzerland  
 The FYR of Macedonia  
 Turkey  
 United Kingdom\*

#### Commonwealth Independent States (CIS) subregion

Armenia  
 Azerbaijan  
 Belarus  
 Georgia  
 Kazakhstan  
 Kyrgyzstan  
 Republic of Moldova  
 Russian Federation  
 Tajikistan  
 Turkmenistan  
 Ukraine  
 Uzbekistan

#### North America subregion

Canada  
 United States of America

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## Some facts about the Timber Committee

The Timber Committee 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, Canada and Israel are members of the UNECE and participate in its work.

The UNECE Timber Committee shall, within the context of sustainable development, provide member countries with the information and services needed for policy- and decision-making with regard to their forest and forest industry sectors ("the sector"), including the trade and use of forest products and, when 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 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 organizing seminars, workshops and ad hoc meetings and setting up time-limited ad hoc groups, for the exchange of economic, environmental and technical information between governments and other institutions of member countries required for the development and implementation of policies leading to the sustainable development of the sector and to the protection of the environment in their respective countries;
4. Carry out tasks identified by the UNECE or the Timber Committee 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 (Food and Agriculture Organization of the United Nations) and its European Forestry Commission, and with the ILO (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 writing to:

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Trade and Timber Division  
United Nations Economic Commission for Europe  
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CH-1211 Geneva 10, Switzerland

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ECE/TIM/SP/27

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## UNECE/FAO GENEVA TIMBER AND FOREST STUDY PAPERS

The UNECE/FAO Geneva Timber and Forest Study Paper series contains annual and periodic analyses of the forest and forest industries sector. These studies are the official outputs of regular activities conducted within the Integrated Programme of Work of the UNECE Timber Committee and the FAO European Forestry Commission and as such should contribute to policy formation. Target audiences are governments, industry, research institutions, universities, international organizations, non-governmental organizations as well as experts from other sectors. These publications often form the basis for discussions of the Timber Committee and the European Forestry Commission and their subsidiary bodies.

Study Papers are usually based on statistics, forecasts and information submitted by country correspondents in the UNECE region (Europe, North America and 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 the UNECE/FAO.

Study Papers are translated whenever possible into the three official languages of the UNECE: English, French and Russian. They are UN sales documents and are distributed accordingly via UN bookstores and their affiliates. They are automatically distributed to heads of delegation of the Committee and the Commission, as well as nominated repository libraries, information centres and official distribution lists. They are also available via the Sales and Marketing Sections in Geneva and New York via [unpubli@unog.ch](mailto:unpubli@unog.ch) and [publications@un.org](mailto:publications@un.org) respectively. Study papers are also available on the Timber Committee and European Forestry Commission website at: [www.unece.org/timber](http://www.unece.org/timber)

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The *Forest Products Annual Market Review* is a comprehensive analysis of markets across the UNECE region, stretching from North America, through Europe and the Russian Federation to the Caucasus and Central Asian republics. It covers the range of products from the forest to the final consumer, i.e. from roundwood and primary-processed products such as sawnwood, to value-added products like furniture and engineered wood products. Underlying the analysis is an extensive collection of data, some of which is presented in the statistics-based chapters covering sawn softwood, sawn hardwood, wood-based panels, wood raw materials and paper, paperboard and wood pulp. Other chapters analyse markets for forest carbon, wood energy, certified forest products, value-added wood products and tropical timber.

The Review opens with an overview of markets in 2010 and early 2011 and gives background information about factors affecting markets including policy developments and the general economic situation. The Review's analysis and detailed statistics on forest products markets are key background information for the annual UNECE Timber Committee Market Discussions but have value also for policymakers, researchers, investors and forest products marketing specialists in governments, research institutions, universities and the private business sector.

Further information about forest products markets, as well as information about the UNECE Timber Committee and the FAO European Forestry Commission is available on the website [www.unece.org/timber](http://www.unece.org/timber).

The Review has a statistical annex available at <http://timber.unece.org/>