

- ▶ *Industrial roundwood production in the UNECE region¹ increased by 4.3% to 1.17 billion m³ in 2007.*
- ▶ *The effects of globalisation and a reduced demand for housing in key world markets continue to cause problems for the forest products sector in the UNECE region.*
- ▶ *The global financial crisis is likely to prolong the adverse market conditions for housing, resulting in continued weak demand for sawnwood and for wood-based panels.*
- ▶ *An increased use of wood products and wood biomass would stimulate the expansion of Europe's forests while also reducing greenhouse gas (GHG) emissions.*

An overview of the 2008 UNECE Timber Committee meeting

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Introduction

In October 2008, the United Nations Economic Commission for Europe (UNECE) Timber Committee met on:

- A review of key forest product markets;
- Sectoral overview;
- Wood energy;
- Climate change and forests;
- Promoting timber usage.

Green building systems (GBS)

Green building is the practice of increasing the efficiency with which buildings use energy, water and building materials, while reducing the impact on human health and on the environment during the building's lifecycle. This is achieved through better siting, design, construction, operation and maintenance².

Green buildings are designed to reduce the overall impact of the built environment on human health and on the natural environment by:

- efficiently using energy, water, and other resources;
- protecting occupant health and improving employee productivity;
- reducing waste, pollution and environmental degradation during the building's lifecycle.

¹ Member States of the UNECE are Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia, and Herzegovina Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, The former Yugoslav Republic of Macedonia, Turkey, Turkmenistan, Ukraine, United Kingdom, United States of America and Uzbekistan.

² Frej, Anne B. Editor. *Green Office Buildings: A Practical Guide to Development*. Washington, DC: ULI-The Urban Land Institute, 2005. p 4-8.

Two green building certification schemes and the countries in which they operate are:

- **Building Research Establishment (BRE) Environmental Assessment Method [BREEAM]** (United Kingdom)³: It was first developed in 1990 and is the longest-standing and most widely used environmental assessment method for buildings⁴. Versions are updated regularly in line with UK building regulations. BREEAM enables owners, users and designers to review and improve the environmental performance of a building. It is a widely accepted scheme which sets a benchmark for environmental performance (Table 1) and provides a wide range of benefits. It is independent and authoritative, being based on many years of construction and environmental research carried out at the Building Research Establishment (BRE)⁵, together with the input and experience of the construction and property industries, government and building regulators.
- **Leadership in Energy and Environmental Design [LEED]** (US and Canada)⁶: The US Green Building Council (USGBC)⁷ is a non-profit, trade organisation that promotes sustainability in how buildings are designed, built and operated (Table 1). It is best known for the development of the Leadership in Energy and Environmental Design (LEED) rating system and Greenbuild⁸, a green building conference that promotes the green building industry in the US and Canada. Through its Green Building Certification Institute⁹, USGBC offers industry professionals the chance to develop expertise in the field of green building and to receive accreditation. The uptake of green building systems has been slow; however, the LEED programme

Table 1: BREEAM and LEED rating indices for green building systems.

Measure	BREEAM (UK)	LEED (US)
	Rating points	
Energy	22	
Energy and atmosphere		17
Quality of the internal environment		15
Materials	14	
Materials and resources		14
Health and wellbeing	14	
Ecological development of the site		14
Use of space and ecology	12	
Efficient management of water		5
Water use	10	
Innovation and design process		5
Pollution	10	
Transport	8	
Total	90	70

was introduced in January 2008 but to date only 1,041 LEED certified homes have been built in the USA. However, over the next five years, it is estimated that the US market for green homes will increase ten fold, from \$2 billion to \$20 billion.

Other green building schemes

Green building systems are helping to drive the acceptance of forest certification systems in construction markets in Europe and in the United States^{10,11}. Other green building certification schemes and the countries in which they operate include Sbttool¹² (Canada), Verde (Spain), Casbee¹³ (Japan), Minergie-Eco (Switzerland), Ecopass (Austria), Démarche Hqe¹⁴ (France), Maisons De Qualité (France), Habitat et Environnement Effinergie (France) and Lense¹⁵ (an EU-funded project).

³ <http://www.breeam.org/>

⁴ <http://www.bre.co.uk/page.jsp?id=829>

⁵ www.bre.co.uk

⁶ <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=222>

⁷ www.usgbc.org

⁸ <http://www.greenbuildexpo.org/About/>

⁹ www.gbci.org

¹⁰ <http://www3.law.nyu.edu/journals/lawreview/issues/vol81/no4/NYU404.pdf>

¹¹ <http://www.unece.org/timber/docs/certification/2008-cert.pdf>

¹² www.iisbe.org/iisbe/sbc2k8/sbc2k8-dwn.htm

¹³ www.ibec.or.jp/CASBEE/english/overviewE.htm

¹⁴ <http://www.certivea.fr/>

¹⁵ www.lensebuildings.com

Promoting wood use – An architect’s perspective

Adrian Joyce of the Architects’ Council of Europe¹⁶ explained that while many architects want to ensure sustainability in construction projects, they are often cautious about using timber products. He stated that architects are legally responsible for the long-term performance of a building. Concrete and steel are in common usage, with their performance being well understood by architects. By contrast, the performance of timber in building structures is less well understood by architects and by specifiers. In addition, he stated that architects learn little regarding timber and forest products either while at university or during continuous professional development (CPD).

Common prejudices regarding the use of timber products in construction include:

- wood burns;
- wood rots;
- wood is flimsy;
- wood is not permanent.

Counter arguments to promote the use of forest products include:

- Burning rates of wood are slow and predictable;
- Wood, properly detailed and kept dry does not rot;
- Weight-for-weight, wood is stronger than steel and reinforced concrete;
- Wood, used in buildings, is a store for carbon;
- Wood is entirely renewable.

In addition, timber products have the lowest embodied energy¹⁷ of building materials in common use (Table 2).

The benefits to be gained by using forest products (in construction projects) need to be better marketed to key end-user groups in a focused and professional manner. Such

Table 2: Embodied energy in building materials¹⁸.

Building Material	Embodied energy GJ per tonne ¹⁹
Timber	40
Plaster	60
Steel	140
Plastic	140
Concrete	220

end-user groups would include architects, developers and specifiers. However, the forestry and forest products sector has traditionally been poor in promoting its benefits, and this must improve if the sector is to develop and to better compete in new markets.

For example, in North America, forest products have just a 15% market share of the non-residential construction market. The remainder is shared between steel and concrete. However, forest products have the potential to target at least 50% share of this construction sector^{20,21}. Architects and specifiers are among the most important specifiers of structural materials in this market segment. It is important that producers and suppliers of forest products work to better market the benefits of their products to this key audience.

A study undertaken by FORINTEK²² recommends that to grow market share (in construction markets) forest products need to be branded and marketed. This would include the promotion of:

- *Wood as a sustainable building material*: many forest products in use in the UNECE region are certified as a sustainable building product²³. In addition, they act as a carbon store.
- *Forest products have low embodied energy*: timber products used in construction have the lowest embodied energy of any building material in common usage (Table 2).

¹⁶ www.ace-cae.org

¹⁷ Energy that has gone into the making of a material.

¹⁸ <http://www.cmit.csiro.au/brochures/tech/embodied/index.cfm?printmode=yes>

¹⁹ Source: CSIRO www.csiro.au

²⁰ <http://www.unece.org/timber/workshops/2008/Green%20Building-Rome/presentations/06-robichaud.pdf>

²¹ O’Connor, J. Kozak, R. Gaston, C., and Fell, D. 2004; Wood Use in Non-residential Buildings: Opportunities and Barriers. *Forest Products Journal*. 54(3): 19-28.

²² Robichaud, F., Richelieu, A. and Kozak, R.A. Wood use in nonresidential construction: An experimental study on the role of brands and communications with architects; Accepted for publication in *Forest Products Journal*, October 2008; Submitted to *Journal of Advertising Research*, February 2009.

²³ This includes products certified by the FSC and by PEFC.

- *The substitution effect:* every cubic metre (m³) of wood that displaces other building materials reduces carbon dioxide (CO₂) emissions by an average of 1.1 tonnes.
- *Thermal efficiency:* wood continues to save CO₂ throughout a building's life, because its natural thermal efficiency saves energy.

Engineered wood products (EWP)

Engineered wood products (EWP) include I-beams, glulam and parallam. They are highly efficient in their use of material and can incorporate wood fibre recovered from the manufacturing process as well as fibre from fast-growing and under-utilised tree species.

Pre-fabricated systems

If properly used, prefabrication systems (including timber frame) can improve the quality of buildings, reduce the volume of construction waste generated on site and can help to reduce hazards. Their use demands more accurate design but they gain by reducing building costs and by reducing construction time.

The use of EWPs and pre-fabricated building systems can also help to address concerns regarding the use of timber as raised by architects. Such products are man-made, are uniform in consistency and have defined performance characteristics.

Such systems were used by Waugh Thistleton Architects to design a 9-storey residential building in London, now claimed to be the tallest timber building in the world (see UK case study).

The tallest occupied timber building in the world – a UK case study²⁴

Andrew Waugh of Waugh Thistleton Architects Ltd. presented a case study on the use of pre-fabricated timber systems at Murray Grove, Hackney, London. Waugh

Thistleton used cross-laminated timber to design and build a development of 29 apartments²⁵. Produced by KLH Massivholz GmbH in Austria, this building material is manufactured to predefined performance characteristics²⁶. Built on a small urban site in central London, the building was constructed to a height of nine storeys in just 49 weeks. Building the same structure using conventional building methods would have taken 66 weeks. In addition to the considerable time saving, building using cross-laminated timber saved 300,000 kg of carbon dioxide emissions over its construction cycle. It is now claimed to be the tallest modern timber residential building in the world.

Key forest products markets

North America

The US housing market is a key driver of forest products use in North America. However, this marketplace is in crisis. US housing starts have been in a freefall since the beginning of 2006. “We are in a crisis situation”, stated Sandy Dunn, Chairman National Association of Home Builders [NAHB]²⁷. “Tremendous economic uncertainties have driven consumers from the housing market. It’s going to take some major incentives to bring them back.” Between 2005 and 2007, US housing starts have declined by an unprecedented 50%. This is having a drastic impact on the output of the North American forest products sector, as well as on prices for sawnwood and for wood-based panels. Actual and estimated output of the US housing sector for the period 2001 – 2012 are presented in Table 3.

In October 2007, US housing starts and permits for future construction both dropped to record lows, signs that the downturn in the US housing sector may extend into a fourth year²⁸. Moreover, in October 2008, US construction starts fell by 4.5%, to an annual rate of 791,000 completions. This is the lowest US housing output since records began in 1959. There is little sign that the crisis in the US housing market will end soon.²⁹

²⁴ <http://www.waughthistleton.com/project.php?name=murray&img=1>

²⁵ <http://www.unece.org/timber/workshops/2008/Green%20Building-Rome/presentations/07-waugh.pdf>

²⁶ <http://www.klh.at/produkt-brettsperholz-klh.html?L=3>

²⁷ The US National Association of Home Builders www.nahb.org

²⁸ <http://www.bloomberg.com/apps/news?pid=20601068&sid=ayFpFXHa5bvU&refer=home>

²⁹ Source: United Nations Economic Commission for Europe (UNECE).

Table 3: US housing starts (2001–2012f)³⁰

Year	Annual housing starts (million)
2001	1.57
2002	1.82
2003	2.06
2004	2.04
2005	1.99
2006	1.65
2007	1.00
2008f ³¹	0.91
2009f	0.88
2010f	1.14
2011f	1.55
2012f	1.88

In 2005, the US market had a normal inventory of unsold homes of 4.5 to 6 months. In 2008, the inventory reached 10.5 months. It remains at record levels. Tightening credit will likely keep inventories high in the short term and will dampen future demand for new housing. Housing starts are therefore expected to remain weak into the second half of 2009. House values have declined by 21.1% since June 2006 and by 16.8% in the past year alone. In the third quarter of 2008, the five largest U.S. homebuilders³² reported total combined losses of \$1.09 billion.

This decline in housing output has significantly reduced the market for forest products in the US. This has caused up to a quarter of the North American forest products sector to curtail its output or to close facilities. As a result, the output of the US forest products sector declined by 10.6% in 2007 to 109.6 million m³. In 2007, consumption of industrial roundwood in the US fell by 6.8% to 266 million m³. From 2005 to 2007, North American sawnwood production has declined by 14%. Lower market demand has also lowered

prices. For example, over the period 2004–2008, the market price of wall studding has fallen by 30%³³. Over the period 2005 to 2007, the output of the US WBP sector has fallen by 11%. The OSB sector has been particularly hard hit, with output declining by 23.9%³⁴ while plywood production declined by 17.9%³⁵. Moreover, since 2004, the price paid for US composite structural panels³⁶ has fallen by 35%³⁷.

US panel manufacturers are increasingly looking to export markets to bridge this demand gap. Panel exports to Canada have surged, while Canadian exports to the US have dropped substantially.

The Russian Federation

The Russian Federation is a major producer of roundwood within the UNECE region³⁸ (Table 4).

On 24 March 2006, the Government of the Russian Federation increased export tariffs on roundwood that is exported unprocessed³⁹. These taxes will increase significantly in the coming years (Table 5). The aim is to encourage foreign and domestic companies to invest in Russia's timber processing industry. However, despite strong export markets, the Russian Federation currently lacks the capacity to significantly expand the processing capacity of its forest products sector. While there is some

Table 4: Production and consumption of roundwood in the Russian Federation (2005 – 2008)^{40,41}

Item	2005	2006	2007	2008
	million m ³			
Production	185.0	190.6	207.0	201.1
Export	43.8	51.1	49.3	34.2
Import	1.0	0.5	0.3	0.3
Consumption	142.2	140.0	158.0	167.2

³⁰ Source: (APA) – The Engineered Wood Association <http://www.apawood.org>

³¹ f: forecast

³² These are D.R. Horton, Pulte Homes, Lennar, Centex and Toll Brothers.

³³ Source: UNECE.

³⁴ In 2008, the US OSB sector was operating at just 68% of capacity.

³⁵ In 2008, the US plywood sector was operating at 86% of capacity.

³⁶ OSB and plywood

³⁷ Source: Random Lengths; www.randomlengths.com

³⁸ The UNECE Member States include the countries of Europe, Canada, the United States, Israel and the Central Asian Republics of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan <http://www.unece.org/oes/nutshell/region.htm>

³⁹ http://www.fas.usda.gov/ffpd/Newsroom/Russia_Increases_Export_Tax_on_Logs.pdf

⁴⁰ Source: Nikolay Burdin, Moscow (2008).

⁴¹ <http://www.unece.org/timber/mis/market/market-66/russian.pdf>

Table 5: Proposed export taxes on unprocessed roundwood exported from the Russian Federation.⁴²

Roundwood type	Rate Min. Amount	1/7/2007	1/4/2008	1/1/2009
Softwood logs	Percentage	20	25	80
	Euro/m ³	10	15	50
Hardwood logs	Percentage	20	20	40
	Euro/m ³	24	24	50
Poplar	Percentage	10	10	80
	Euro/m ³	5	5	50
Semi-finished products with barkthickness 15 cm or less	Percentage	10	15	50
	Euro/m ³	20	25	80

evidence of increased foreign investment in the Russian wood processing sector⁴³, analysts do not expect significant improvement in processing capacity before 2010. The introduction of log export taxes has accelerated the decline in the export of unprocessed roundwood⁴⁴. The export of softwood logs from the Russian Federation declined in 2007.

Exports of unprocessed roundwood to Europe fell by 44% in the first quarter of 2008. Exports to Asia fell by 15% in the same period. It is estimated that imposition of roundwood export taxes could halt Russian roundwood exports in 2009.⁴⁵

Importers of roundwood from the Russian Federation are shown in Table 6.

Table 6: Main importers of roundwood from the Russian Federation (2007).⁴⁶

Importing country	Volume imported from Russia (2007) million m ³
China	27.6
Finland	10.1
Japan	4.5
Baltic States	2.1
Sweden	1.6
Republic of Korea	1.2
Total	47.1

There is concern among importers of Russian roundwood. China imported 27.6 million m³ of Russian softwoods in 2007.

Pulp producers in Europe and Asia that have relied on pulp exports from the Russian Federation will be badly affected by the imposition of these export tariffs. An export tariff of €50 per m³ on birch pulpwood exported from Russia will come into effect from January 2011 (Table 7).

The forest products industry in Eastern Finland is located close to the Russian border. As a result of Russian log taxes, this industry is facing considerable structural change. In 2007, Finland imported 10.1 million m³ of roundwood from Russian forests. These logs make up as much as 17% of Finland's total roundwood supply. Analysts estimate that the tax increase will add €15-20 million per annum to Finland's wood processing costs. The possible downstream impact on Finnish sawn softwood and paper exports is not yet clear. However, as the Finnish forest industry is highly export-oriented, selling 70 to 90% of its production abroad, the proposed tax can only have a negative impact on Finland's international competitiveness. Finland and Sweden have brought the proposed tariffs to the attention of the World Trade Organisation (WTO)^{47,48}. After bilateral efforts failed to solve the timber conflict, Finland and Sweden pinned their hopes on Russia's ongoing WTO accession talks. The Nordic neighbours argued that the EU should insist on Russia cancelling the projected tax hike on the grounds that

Table 7: Historic and proposed Russian Federation roundwood export tariffs.⁴⁹

Log type and year	Russian export tariff €/m ³
Softwood sawlogs	
2006	4
July 2007	10
April 2008	15
January 2009	50
January 2011	50
Birch pulpwood	
January 2011	50

⁴² http://www.ihb.de/fordaq/news/Russia_export_tax_logs_14732.html

⁴³ <http://www.unece.org/timber/docs/fpama/2008/FPAMR2008.pdf>

⁴⁴ Source: UNECE

⁴⁵ Current indications are that introduction of the tax will be delayed by 9-12 months from its proposed introduction on 1 January 2009.

⁴⁶ <http://www.unece.org/timber/mis/market/market-66/russian.pdf>

⁴⁷ www.wto.org

⁴⁸ <http://ictsd.net/i/news/bridges/27601/>

⁴⁹ http://www.ihb.de/fordaq/news/Russia_export_tax_logs_14732.html

it had pledged not to raise export taxes earlier in the WTO accession process.

China

Within the last decade, China has become a major exporter of forest products. In 2007 the total value of roundwood, sawnwood, panels, paper and pulp produced in China approached \$155 billion⁵⁰. According to data provided by the Chinese State Forestry Administration (SFA)⁵¹, the output of the Chinese forest products sector rose significantly in 2007, to 1.25 trillion yuan. This was an increase of 17.7% over 2006^{52,53}. From 2007 to 2008, China has expanded its production and exports of hardwood products. This is largely based on the use of imported sawlogs and veneer logs. Chinese sawn timber output grew by 13.8% over the period 2006–2007. In 2007, 28.29 million m³ of sawnwood were produced in China, 1.45 million m³ of which was tropical sawnwood.

A total of 88.38 million m³ of wood-based panels was produced by China in 2007, up 19.0% on 2006 (Table 8). Production is concentrated in six provinces in coastal areas: Jiangsu, Shandong, Hebei, Guangxi, Fujian and Zhejiang. Between 1994 and 2004, Chinese plywood production grew from 2.6 to 21.0 million m³. China became a net exporter of plywood in 2001⁵⁴. Production is largely based on imported logs.

In 2007, 343.43 million m² of wooden flooring was produced in China, up 47% over 2006 (Table 9).

In 2007, China imported 13.8 million m³ of hardwood logs. These were mainly used as raw material for the veneer industry, which produced 12.65 million m³ of veneer in 2007. In addition, in recent years China has become the largest exporter of furniture, overtaking Italy. China sells about 40% of its furniture output overseas, with half its exports shipped to the US, according to the China National Furniture Association⁵⁵. In 2007, wooden furniture to a value of \$11 billion was exported⁵⁶.

Table 8: China's wood-based panel output by product (2007).

Product	Output	
	million m ³	%
Plywood	35.61	41
Fibreboard	27.30	31
MDF	24.99	
Other fibreboard	2.31	
Particleboard	8.29	9
Other products	17.18	19
Blockboard	13.24	
Other products	3.94	
Total	88.38	100

Table 9: China's flooring output by product type (2007).

Product	Output	
	million m ²	%
Solid composite flooring	113.48	33
Solid wood flooring	77.84	23
Laminated flooring	94.86	28
Bamboo/wood composite flooring	20.48	6
Other flooring	36.77	10
Total	343.43	100

Consumption of printing and writing paper has doubled since 1995, to reach approximately 13.5 million tons per year (2005). A large volume of pulp production is based on the use of imported recovered paper, most of which comes from within the UNECE region. China's rapidly growing pulp and paper sector is placing heavy pressure on natural forests, both in China and in the surrounding region. Since 1990, China has accounted for over 50% of the world's overall growth in paper and paperboard production. To meet growing domestic demand, the Chinese Government is promoting the development of large, high-tech paper mills. Demand for wood pulp is projected to increase from approximately 9 million tonnes in 2003 to 15 million tonnes by 2010. Government has provided significant capital investment to 13 high priority pulp and paper projects. It is also subsidising the development of up to 5.8 million ha of fast-growing pulpwood plantations. These, it is hoped, will provide the new mills with a sustainable supply of wood fibre⁵⁷.

⁵⁰ <http://www.unece.org/timber/docs/fpama/2008/FPAMR2008.pdf>

⁵¹ http://english.gov.cn/2005-10/03/content_74286.htm

⁵² <http://www.globalwood.org/market1/aaw20080701d.htm>

⁵³ 1 Chinese yuan = 0.146357 U.S. dollars.

⁵⁴ <http://www.forest-trends.org/documents/publications/China%20and%20the%20Global%20Forest%20Market-Forest%20Trends.pdf>

⁵⁵ <http://www.reuters.com/article/ousivMolt/idUSPEK1092220080727>

⁵⁶ <http://www.unece.org/timber/docs/fpama/2008/FPAMR2008.pdf>

⁵⁷ <http://www.forest-trends.org/documents/publications/China%20and%20the%20Global%20Forest%20Market-Forest%20Trends.pdf>

Europe

In 2007, Europe remained a net exporter of particle board, MDF and OSB. This was despite increasing competition and the strengthening of the euro relative to the US dollar (Table 10).

Europe's forests

Large national and regional variations exist in the supply and use of forest resources across Europe. Europe's forests cover an area of 166 million ha or 43.2% of the land area within the EU-27 region. There are 16 million family forest owners in Europe. The average size of forest holdings is 13 ha. However, many are less than 5 ha. In addition, many of these owners do not actively manage their forests. Only 60% of the annual increment in European forests is harvested. This additional resource could be used in part to fuel the growing demand for wood fibre for energy use.

Mobilising wood fibre for wood energy/biomass use

The EU Biofuels Directive 2003/30⁶⁰, targeting a 5.75% use of biofuels in transport by 2005 has not been achieved. The EU Renewable Energy Directive (January 2008)⁶¹ has confirmed a binding target of a 20% share of energy to be supplied from renewable energy sources. This includes a binding minimum target of 10% of biofuels in transport, to be achieved by each Member State by 2020.

Space and water heating make up the majority of energy demand within the UNECE region. The sources of wood biomass that can be used for this sector are outlined in Table 11.

A survey of wood energy use within the UNECE⁶³ has determined wood fibre use within traditional wood processing and the wood biomass sector (Table 12).

In 2007 and early 2008, the development programme for the production of cellulosic ethanol has accelerated. On a worldwide basis, forty production plants are in various

Table 10: An overview of the European forest sector⁵⁸.

Item	Value	Notes
Annual turnover of the European ⁵⁹ woodworking, pulp and paper (manufacturing and converting) and printing sectors	€340 billion	8% of EU manufacturing output
Number of jobs within the EU-27 forest products sector	1.25 - 2.5 million jobs	9% of EU manufacturing jobs
Percentage of the timber used in the EU-27 which is from SFM sources	90%	
Volume of forest products from SFM sources used in EU-27 per annum	315 million m ³	

Table 11: Sources of wood biomass.⁶²

Direct Sources	Indirect Sources	Recovered Sources
Logging residues	Co-products	Post consumer recovered wood including construction and demolition waste
Thinnings	Densified/processed wood fuels including pellets, charcoal and biofuels)	
Short Rotation Coppice (SRC)		

Table 12: Wood fibre use in the UNECE by end use type.

Fibre source	Wood fibre used by the wood processing sector in the UNECE %	Wood fibre used for energy production in the UNECE %
Wood removals from forest and wood biomass outside forests	71	29
Wood co-products, residues and recovered wood	38	62
Total supply	58	42

stages of planning or production. Most proposed plants are located in the US, where the Department of Energy has commenced a funding programme to support the sector. This has the objective of making cellulosic ethanol cost effective by 2012.⁶⁴

⁵⁸ Source: Jeremy Wall; European Commission; DG Enterprise and Industry; Directorate G, Unit 4; Textiles, Fashions and Forest Based Industries.

⁵⁹ i.e. EU-27.

⁶⁰ ec.europa.eu/energy/res/legislation/doc/biofuels/en_final.pdf

⁶¹ www.euractiv.com/en/energy/eu-renewable-energy-policy/article-117536

⁶² Source: Florian Steierer, Wood energy data specialist UNECE/FAO Timber Section.

⁶³ UNECE/University of Hamburg JWEE study (2005).

⁶⁴ www.energy.gov/news/4827.htm

Integrated biorefinery and bioenergy concepts are being explored at pulp mills in Europe and in North America. These have already been explored by the Södra Group. Based in Southern Sweden (Södra is a pulp producer). In addition to producing wood pulp for use in paper manufacture it also produces lignin pellets (for energy) and combined heat and power.⁶⁵

Increasing wood availability for energy generation in the EU⁶⁶

A report recently undertaken by the UNECE showed that an additional 233.7 million m³ of wood fibre could be made available for use as wood biomass or as industry feedstock within the European Union (Table 13).

It is estimated that improved forest management practices could increase fibre harvest in the EU-27 by up to 20%, using a combination of the following:

- improved silviculture;
- improved planting stock;
- fertilisation.

Sectoral overview

Sawn softwood

In 2007, moderate growth occurred in the production and consumption of sawn softwood in Europe. Output growth was led by German sawmills.

The severe reduction in US housing output has caused up to a quarter of the North American sawmilling capacity to close or to curtail production in order to meet lower demand. In 2007, US prices for sawn softwood declined to their lowest levels since 1991. Prices paid for sawn softwood in Europe have declined since the start of 2008

Sawn hardwood

The effects of globalisation and a reduced demand for housing in key world markets continue to cause problems in many hardwood and woodworking sectors. In 2007, sawn hardwood production and consumption in the UNECE region fell by 2.1%, down to 47.2 million m³ and 47.0 million m³ respectively.

Table 13: Sources of existing and potential wood fibre in the EU-27.

Source of wood supply (EU-27)	Current use (2005)	Potential new supply
	million m ³	
Stemwood	355.2	81.2
Aboveground biomass		
From current harvest	11.2	52.1
From additional harvest		10.1
Belowground biomass	2.6	0.0
Other wooded area	1.1	6.5
Trees outside forest	7.1	1.3
Forest expansion		22.8
Wood fibre from agriculture		18.7
Co-products and residues from the wood processing sector	113.8	2.0
Post consumer recovered wood (PCRW)	28.6	39.0
Total	519.6	233.7

European and American white oak increasingly dominate the global sawn hardwood market, representing nearly 57% of all European hardwood production in 2007. In 2007, the output of sawn hardwood in North America declined by 6.9% to 27.0 million m³. This reflects weak demand in the US, together with increased competition from China for logs. The demand for veneer quality logs remains high in China.

Pulp and paper⁶⁷

Pulp and paper producers in Asia, Europe, and North America account for 92% of worldwide paper and paperboard output. In mid 2008, pulp and paper prices were at or near historic peak levels. However, global demand is weakening. Industry profits were eroded in 2007 as upward pressure on energy prices has led to higher prices for fuel, freight, pulpwood, recovered paper, chemicals and other inputs. Expanding pulp and paper capacity in China is having a huge impact on paper and paperboard markets, and on global competition for wood fibre, for recovered paper and for pulp.

⁶⁵ <http://www.unece.org/timber/docs/tc-sessions/tc-66/pd-docs/presentations/pde-omholt.pdf>

⁶⁶ Roland Beck, European Commission, DG AGRI.

⁶⁷ Paper and pulp markets and forecasts, Dr. Peter J. Ince; Forest Products Laboratory, US Forest Service.

Rising biofuel production and concerns about bioenergy produced from food crops has been drawing industry attention to competition for wood-based biofuels as well as to the relationships between forestry, food production, climate change and land use change.

Integrated forest product biorefinery concepts are being explored in Europe and in North America. They are being promoted as a means of obtaining an optimal recovery of energy and chemicals, as well as producing conventional pulp and paper products. The Södra Group, the Swedish pulp producer utilises 18 million m³ of wood fibre per annum producing wood pulp for paper and tissue markets. In recent years it has invested heavily to enable it to produce lignin pellets (for energy use), modified cellulose and combined heat and power (CHP)⁶⁸. This development by Södra is supported by a statement issued by the Confederation of European Paper Industries (CEPI)⁶⁹: “bioenergy policies should focus more on and include incentives for the mobilisation of existing biomass resources and the activation of new biomass sources whilst taking into account the existing sustainable and environmentally friendly industries”.

Wood-based panels (WBP)

In 2007, consumption of wood-based panels in Europe and in the CIS rose by 4.0% and 7.1% respectively. However, WBP consumption in North America fell by 11.3% over the same period to 61.8 million m³.

In Europe, there is increasing competition for residues and for small dimension roundwood between WBP manufacturers, pulp/paper manufacturers and the energy sector. However, despite increasing competition and the strengthening of the euro against the dollar, Europe remains a net exporter of particle board, MDF and OSB. However, the European WBP sector had a challenging year in 2007. The sector is facing increasing competition for wood fibre from wood biomass use. In addition, escalating oil prices

have not only increased transport costs, but have also raised resin costs for all manufacturers of wood-based panels.

In 2007, the output of WBP in the EU was 56.5 million m³ as follows:⁷⁰

- Chipboard/particleboard rose by 3.5% to 39.4 million m³;
- MDF production grew by 2.5% to 12.8 million m³;
- OSB production grew by 6.0% to 4.3 million m³.

In Europe, WBP prices weakened in mid 2007 and were falling again in mid 2008.

Eleven panel mills were closed and three opened in North America⁷¹ in 2007, which led to a capacity reduction of two million m³, bringing capacity utilisation in the sector to its lowest level since the 1990s. In 2007, reduced US market demand, together with a weak dollar, led to a 27% drop in the volume of WBP imported to the US. The largest drop was felt by OSB exports from Canada. The closure of sawmills in the western US and Canada has caused considerable raw material constraints for composite panel manufacturers⁷². In 2007, the weakened US dollar helped US WBP mills increase their exports by 6%.

Since the mid 1990s, production of WBP in the Commonwealth of Independent States (CIS) and particularly in the Russian Federation has been increasing steadily. In 2007, production of plywood in the CIS region totalled 3.1 million m³, with Russia contributing 2.8 million m³. Production of particleboard and hardboard/MDF within the CIS region stood at 7.0 and 1.6 million m³ respectively.

In 2007, there was a strong growth in the export of plywood from China. This is largely driven by price. In 2007, China's tropical plywood exports were under investigation for illegality of supply by the US International Trade Commission. In the EU, importers took steps to extend anti-dumping duties on okoume plywood, to include other red faced tropical plywood.

High oil and energy prices, though moderating of late, will continue to squeeze profits for the WBP sector.

⁶⁸ <http://www.unece.org/timber/docs/tc-sessions/tc-66/pd-docs/presentations/pde-omholt.pdf>

⁶⁹ www.cepi.org

⁷⁰ Source: European Panel Federation (EPF).

⁷¹ Plywood, Oriented Strand Board (OSB) and Engineered Wood Products (EWP).

⁷² Particleboard/Chipboard and Medium Density Fibreboard (MDF).

New formaldehyde emission regulations as issued by the California Air Resources Board⁷³ will cause WBP manufacturers to modify the panel products which they export to the US.

It is estimated that increased demand for wood waste by the bioenergy sector will continue to drive up raw material costs for particleboard and for MDF manufacturers.

Climate change and forests

The Intergovernmental Panel on Climate Change (IPCC)⁷⁴ estimates of sectoral contributions to greenhouse gas emissions are outlined in Table 14.

Table 14: Sectoral contributions to greenhouse gas emissions.

Sector	Contribution %
Forestry	17.4
Waste and wastewater	2.8
Energy supply	25.9
Transport	13.1
Residential and commercial buildings	7.9
Industry	19.4
Agriculture	13.5
Total	100.0

European forests will be significantly affected by climate change. An average increase in temperature of 2°C will change species composition and forest management. The EU's commitment is to reduce overall greenhouse gas (GHG) emissions by at least 20% below 1990 levels by 2020. By 2050, global greenhouse gas emissions need to reduce by at least 50% below their 1990 levels. The forestry sector plays a key role in the mitigation of climate change by acting as a carbon sink. "In the long-term, sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual yield of timber, fibre, or energy from the forest, will generate the largest sustained mitigation benefit" (IPCC).⁷⁵

Filip De Jaeger, General Manager, CEI-BOIS⁷⁶, noted that wood helps combat climate change by reducing greenhouse gas (GHG) emissions and increasing carbon sinks. He emphasized the need to place wood at the centre of the UNFCCC COP15⁷⁷ in Copenhagen in 2009, and to include harvested wood as a carbon sink in the post-2012 Kyoto arrangements.

Harvested wood products (HWP) and climate change

Every cubic metre (m³) of forest products used in place of other building materials reduces carbon dioxide (CO₂) emissions by an average of 1.1 tonnes. Moreover, forest products have the lowest embodied energy of any building material (Table 2). Wood continues to save further CO₂ throughout a building's life, because its natural thermal efficiency saves energy. Modelling shows that the carbon pool contained within has increased over last decades. However, long-lived wood products are currently excluded from accounting under the Kyoto Protocol⁷⁸, but are being considered for inclusion under a post Kyoto climate change regime⁷⁹. The EU and its Member States are working to include the use of wood products in the new Climate Protocol: "The EU believes that the ... review of current accounting rules ... should seek to provide a basis for further incentives to promote ... the use of wood products". If included in a post-Kyoto agreement, a proposal regarding HWP is required by mid-2009. Agreement on an accounting approach (for the calculation of HWP gains) is also required.

Further negotiations on climate change measures and HWP issues will take place at the COP 14⁸⁰ conference to be held in Poznan, Poland, in December 2008. The recognition of HWPs, including panels, as carbon stores as measured in the Kyoto Protocol could help to increase their use within green building programmes.

⁷³ www.arb.ca.gov/research/resnotes/notes/97-9.htm

⁷⁴ www.ipcc.ch

⁷⁵ Intergovernmental Panel on Climate Change www.ipcc.ch

⁷⁶ www.cei-bois.org

⁷⁷ <http://en.cop15.dk/>

⁷⁸ www.environ.ie/en/Environment/Atmosphere/ClimateChange/KyotoProtocol/

⁷⁹ i.e. Post 2012.

⁸⁰ Conference of the Parties www.poznan2008.com

An overview of forest certification schemes in the UNECE region

Two main forest certification schemes are in operation within the UNECE region:

- Forest Stewardship Council (FSC)⁸¹;
- Programme for Endorsement of Forest Certification schemes (PEFC)⁸².

The FSC has a market share (of certification schemes) of 33%, with the PEFC having a 67% share. FSC has a 69% share of chain-of-custody certificates, with 31% held by the PEFC.

The total area certified is 320 million ha, or 8.3% of world forests (13.4% of the world's managed forest area). Over half of the area certified is in Western Europe with one third in North America. Less than 0.1% of the area certified is in Asia and Africa.

Almost all demand for certified forest products comes from markets in Europe and in North America. These markets are primarily supplied from forests within the regions. Certification drivers include green building, demand from retailers and other private sector users, demand from government (for certified products), investment policies and biomass.

Green building schemes and standards operate in 15 countries worldwide. Their main focus is on energy efficiency and on the minimisation of construction waste. Timber is recognised as a renewable raw material in such schemes. Some green building schemes recognise all certification systems, while others prefer the FSC.

Retailers remain the biggest driver of forest certification schemes. This is particularly evident in the do-it-yourself (DIY) sector. Other sectors, notably pulp and paper have been important in the development and promotion of forest certification schemes.

An increasing number of countries have national timber procurement policies. These include the UK⁸³, the Netherlands, Denmark, France, Japan, Germany and New Zealand. Governments are a significant player in the construction sector. This is especially relevant in sectors

including schools, hospitals and government buildings. Such government procurement policies require timber from legal and sustainable sources. Some schemes, including that operated in the UK, require evidence of compliance. In practice, the use of certification schemes is the easiest way to demonstrate compliance. Most recognise both FSC and PEFC.

Use of certified forest products - US

A US survey has found that just 40% of the builders surveyed reported that they have heard of certified timber. Only a quarter of builders felt that their customers would pay a premium for a house built from certified timber. A substantial number of builders are already using certified timber to build homes. This use is greatest in the western states. However, only a quarter of all builders using certified timber felt that their customers would pay a premium for a home built using certified timber.

The acceptance of timber certified under the SFI⁸⁴ programme by the LEED green building programme could substantially increase the volume of certified forest products used in North America.

Certification outlook

The world is currently experiencing a global economic recession with construction in a serious slump. It is unclear how environmental commitments will be affected. It is likely that demand for forest products will certainly be reduced for some time.

The area of certified forests continues to grow. The markets for certified forests are predominantly located in Europe and in North America.

⁸¹ www.fsc.org

⁸² www.pefc.org

⁸³ www.proforest.net/cpet

⁸⁴ www.sfiprogram.org