- *A worldwide rise in demand for forest products resulted in the highest timber harvest in the UNECE[4,5] region in six years.*
- *Nevertheless, forest products markets in the UNECE region showed mixed signs of recovery.*
- *984 M m³ of industrial roundwood was harvested in the UNECE region.*
- *Wood energy markets continued to expand as government and industry policies encouraged heat and electricity production from biomass, with demand set to double by 2030.*
- *Efforts to exclude illegal timber from markets were strengthened via the EU Timber Regulation (EUTR) and the Lacey Act in the US.*

An overview of 2014 meeting of the United Nations Economic Commission for Europe (UNECE) Committee on forests and the forest industry[1,2]

Eoin O'Driscoll[3]

Introduction

The November 2014 meeting of the United Nations Economic Commission for Europe (UNECE) Committee on Forests and the Forest Industry discussed:

- roundwood harvest,
- key regional markets,
- key sectoral markets,
- wood-biomass energy and
- green building.

Roundwood harvest (2011-2013)

983 M m³ of industrial roundwood[6] was consumed by the forest products sector in the UNECE region (Table 1). The highest increase in consumption was in Europe. The higher demand for roundwood was largely the result of improved sawnwood markets. The production of sawn softwood increased by 3.3 % to meet higher demand both in the region and in export markets including China, Japan, the Middle East and North Africa.

In addition to the removal of industrial roundwood, 194 M m³ of wood fuel was harvested. Most of this was consumed in Europe, which accounted for almost 60 % of total wood fuel consumption.

Over the period 2011-2013, the annual harvest of industrial roundwood in Europe remained stable, ranging between 370 M m³ and 373 M m³ per annum. In 2013

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1. *Demand is taken as the demand for forest products within the UNECE region. Data are taken fromthe Seventy-second session of the UNECE Committee on Forests and the Forest Industry, Kazan, Russian Federation; November 2014; http://www.unece.org/index.php?id=35336#/*
2. *This meeting was formerly called the UNECE Timber Committee Meeting.*
3. *eoin@drima.com*
4. *The UNECE region covers more than 47 M square kilometres. Its member States include the countries of Europe, but also countries in North America (Canada and the United States), Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) and Western Asia (Israel); http://www.unece.org/oes/nutshell/region.html*
5. *http://www.unece.org/oes/member_countries/member_countries.html*
6. *Industrial roundwood excludes firewood.*

the harvest was 369.5 M m^3, still well below the 10-year high of 413 M m^3 harvested in 2007.

Removals of industrial roundwood in the Commonwealth of Independent States (CIS)[7] were higher in 2013 than in 2012 in each of the three major forest producers in the CIS subregion; Belarus, the Russian Federation and Ukraine. 199.7 M m^3 of industrial roundwood was harvested in the CIS (Table 1) of which 90 % was harvested in the Russian Federation, 5.5 % in Belarus and 4 % in Ukraine. Timber harvests increased dramatically in these three countries in the five years to 2013 as a result of higher exports of un-processed roundwood (from Belarus and Ukraine) and processed forest products (mainly from the Russian Federation and Ukraine). 12 % of the total harvest in the CIS was exported as un-processed roundwood.

Removals of industrial roundwood in North America increased by 0.3 %, to 441.7 M m^3 (Table 1), of which 75 % was softwood. The hardwood harvest in North America accounted for the majority of this increase.

Table 1: Industrial roundwood harvest in the UNECE region (2011-2014f)[8].

Region & roundwood category	2011	2012	2013	2014f
	M m^3 UB			
Europe				
Removals	373.6	362.6	369.5	375.2
Imports	54.1	50.0	56.1	58.0
Exports	41.3	37.9	43.2	43.5
Apparent consumption[9]	386.4	374.7	382.4	389.7
CIS				
Removals	197.6	196.1	199.7	204.6
Imports	0.5	0.7	0.6	0.6
Exports	26.0	23.1	23.8	25.4
Apparent consumption	172.1	173.7	176.5	179.8
North America				
Removals	444.4	440.6	441.7	442.9
Imports	5.2	5.7	5.9	6.0
Exports	11.0	20.3	23.5	23.7
Apparent consumption	438.6	426.0	424.1	425.2
UNECE region				
Removals	1,015.6	999.30	1,010.9	1,022.7
Imports	59.8	56.4	62.6	64.6
Exports	78.3	81.3	90.5	92.6
Apparent consumption	997.1	974.4	983.00	994.5

Consumption of forest products (2009-2013)

The markets for forest products in the UNECE showed mixed signs of recovery (Table 2). The apparent consumption of sawn softwood rose by 5.2 % in North America and by 8.8 % in the CIS. However, in Europe, demand dropped for the third consecutive year, by 1.7 %. In recent years, China has become a key alternative market for sawnwood producers in Canada, Europe and the US.

The consumption of sawn hardwood in North American and in the CIS increased by 12 % to 17 M m^3 in North America and to 2.1 M m^3 in the CIS. Over the same period, the consumption of sawn hardwood in Europe fell by 4.8 %, to 12.3 M m^3.

The consumption of wood-based panels in Europe increased by 2 %, Russian demand and production increased slightly. The consumption of structural panels (i.e. oriented strand board (OSB) and plywood) increased by 7 % in North America, driven by increased construction output.

Paper and paperboard production rose in North America (mainly as a result of an increased demand for packaging) but decreased in Europe and the CIS. Since 2000, North American newsprint capacity has fallen by 55.3 %, declining from 15 M tonnes to just 6.7 M tonnes.

Table 2: Apparent consumption of forest products by product in the UNECE region (2009-2013)[10].

Region & product(s)	Unit	2009	2010	2011	2012	2013	% change 2009-2013
Europe							
Industrial roundwood	M m^3	342.0	385.7	386.4	374.7	383.3	12.3
Sawn timber	M m^3	92.2	101.9	101.5	97.4	95.6	3.1
Wood-based panels	M m^3	61.5	66.6	67.4	64.7	66.0	3.2
Paper & paperboard	M t	87.7	94.4	92.9	89.7	88.5	0.5
CIS							
Industrial roundwood	M m^3	100.9	126.3	172.1	173.7	176.5	74.9
Sawn timber	M m^3	17.4	17.5	17.8	19.7	21.5	25.6
Wood-based panels	M m^3	10.5	12.7	15.4	17.9	18.6	76.2
Paper & paperboard	M t	8.5	9.3	9.6	9.4	8.9	4.7
North America							
Industrial roundwood	M m^3	398.4	414.2	433.4	424.1	424.1	6.5
Sawn timber	M m^3	83.5	87.3	87.0	97.4	97.4	20.1
Wood-based panels	M m^3	46.7	47.3	45.6	46.8	49.3	5.2
Paper & paperboard	M t	78.4	83.2	79.7	74.0	74.2	-5.3
UNECE region							
Industrial roundwood	M m^3	841.3	926.2	991.9	974.4	983.9	17.1
Sawn timber	M m^3	193.1	206.7	206.3	208.8	214.5	12.4
Wood-based panels	M m^3	118.7	126.6	128.4	129.3	133.9	10.3
Paper & paperboard	M t	174.6	186.9	182.2	173.1	171.7	-1.9

7. *Members of the CIS are: Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, the Russian Federation, Tajikistan, Turkmenistan, Uzbekistan and Ukraine:http://www.cisstat.com/eng/cis.htm http://www.cisstat.com/eng/cis.htm*

8. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR-2014-final.pdf*

9. *Apparent consumption = (production + imports) – exports.*

10. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR2013.pdf*

Growth has been moderate in the CIS, Investment in new plants, the Russian Federation's accession to the World Trade Organisation (WTO), stronger domestic consumption and the proximity of key export markets for most products have given the sub-region grounds for optimism.

North America has seen fairly strong and positive movements in most forest products markets. This is due to the recovering housing sector, the improved economic situation in the US and increased exports of North American forest products to Asia.

Regional overviews (2013)

North America

market for forest products in North America continued to improve. This was largely due to the recovery in the US housing sector (Table 3), an improved economic situation and increased exports of forest products and roundwood to Asia and of wood pellets to Europe.

The US housing market was the primary driver behind softwood lumber and wood-based panel (WBP) demand in North America. For comparison, housing starts in 2005 were a record high of 2.1 M units. In 2012, US housing starts had dropped to 780,600 units. In 2013, US housing starts grew to 924,900 units; an increase of 18.5 % over 2012. However, this level of output is still well below the long-term (20 year) average of 1.4 M starts per annum. The US housing market is still in the early stages of recovery. However, US housing starts and new house sales remain at the lowest levels recorded since 1963.

Apparent sawn softwood consumption increased in North America by 5.2 %, to 80.33 M m^3, due to gains in new residential housing starts and an increased investment in repairs and remodelling (Table 3). Apparent sawn softwood consumption increased in the US by 7.1 % (to 65.95 M m^3), but it declined in Canada by 2.6 % (to 14.38 M m^3) due to a general slowdown in the overheated Canadian housing market (Table 4).

Table 3: US housing starts by type (2000-2015f)[11,12,3,14,15].

Year	Single-use	Multi-family	Total
	000 homes		
2000	1,242	332	1,574
2001	1,256	315	1,571
2002	1,325	323	1,648
2003	1,386	292	1,679
2004	1,532	310	1,842
2005	1,636	296	1,931
2006	1,655	325	1,980
2007	1,218	284	1,503
2008	819	301	1,120
2009	520	274	794
2010	496	155	652
2011			609
2012			781
2013f			925
2014f			1,197
2015f			1,233

Table 4: Sawn softwood balance in North America (2007-2014f)[16].

Item	2007	2008	2009	2010	2011	2012	2013	2014f	% change (2012-2013)
	M m^3								
Production	110.7	89.9	71.6	79.9	82.9	88.2	92.6	93.9	5.2
Imports	31.5	22.0	15.6	16.7	16.2	17.8	20.0	20.2	15.0
Exports	33.8	25.2	20.4	24.3	26.8	27.6	32.3	33.7	11.1
Apparent consumption	108.4	86.7	66.8	72.3	72.3	78.4	80.3	80.5	
2007 = 100		80.0	61.6	66.7	66.7	72.3	74.1	74.3	

This increase in housing output had a positive effect on the forest products sector in North America. In 2013, the production of structural panels (i.e. OSB & plywood) in the US was 8.0 % above that of 2012, while consumption was 10.3 % above that in 2012. Over the same period, the consumption of sawn hardwood in North America grew by 11.9 % to 17.0 M m^3. Low mortgage rates, an improved jobs market and higher consumer confidence bolstered home sales.

China has become a significant offshore market for roundwood and forest products exports from North America. Over the period 2001-2013, the annual exports of sawn softwood lumber from Canada to China have increased from 0.26 M m^3 to 7.96 M m^3. Demand in China is driven by Government housing projects, the construction of private multi-storey residential projects and by the demand for non-residential construction.

[11] *http://www.econstats.com/hs/hs_a15.htm*
[12] *http://www.calculatedriskblog.com/2012/10/wells-fargo-raises-housing-forecasts.html*
[13] *f: forecast*
[14] *http://www.unece.org/fileadmin/DAM/timber/mis/tos/2014/USA_2014.pdf*
[15] *http://www.unece.org/fileadmin/DAM/timber/meetings/20141118/presentations/14-glass.pdf*
[16] *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR2013.pdf*

Commonwealth of Independent States (CIS)

In 2013, the demand for forest products in the Commonwealth of Independent States (CIS)[17,18] experienced moderate growth, assisted by a strong year for construction in the Russian Federation and in many of the other CIS countries. 200 M m^3 of roundwood was harvested in the CIS[19], 12 % of which was exported as un-processed roundwood.

The consumption of sawn softwood increased by 8.8 % to 19.44 M m^3. Over the same period, the production of sawn timber was 35.78 M m^3, an increase of 4.0 % over 2012. Fuelled by strong export demand as well as the strength of the euro and the US dollar relative to the rouble, sawmills increased production and improved price returns by 25 % compared with 2012. In 2013, Russian exports of sawn timber increased: to China (by 21.5 %, to 7.5 M m^3); Uzbekistan (by 28 %, to 2.66 M m^3); Azerbaijan (by 16 %, to 1.0 M m^3); Tajikistan (by 14 %, to 0.96 M m^3); but dropped to Egypt (- 21 % to 1.37 M m^3).

The demand for wood-based panels in the Russian Federation grew by 3.9 %. Over the same period, the consumption of OSB in the Russian Federation increased by more than 20 %.

Europe

370 M m^3 of roundwood was harvested from European forests. The largest increases in roundwood removals were in Finland (+ 4.7 M m^3), Romania (+1.3 M m^3), Spain (+0.64 M m^3) and Poland (+0.91 M m^3)[20]. As the European demand for sawn softwood stabilised and as exports increased, the production of sawn sawnwood in Europe grew by 1.3 %, to 97.9 M m^3. This growth was led by increased production in Finland, Romania and Poland, which collectively added 1.3 M m^3 of new production.

Over the same period, European consumption and production of sawn hardwood fell by 4 %, to 12.6 M m^3. The decline in consumption was due partly to a lack of supply, as sawn hardwood was diverted to more active markets in North America and in emerging economies. Despite the overall sluggish economy, the consumption of wood-based panels grew in Europe by 2.0 %.

The European Union (EU) was the world's largest market for wood pellets in 2013, with demand for pellets forecast to increase in Belgium, the Netherlands and the UK.

The top-five wood energy producers in the EU were Germany (15.0 %), France (11.4 %), Sweden (10.5 %), Finland (9.7 %) and Poland (8.1 %).

Sectoral overviews (2013)

Sawn softwood

The demand for sawn softwood was characterised by recoveries in North America and in the CIS countries and by varying conditions, from unsettled to improving in Europe.

Sawn softwood consumption rose by 5.2 % in North America and by 8.8 % in the CIS. However, European demand declined by 1.7 % (Table 5). Germany, Sweden and the UK recorded the greatest consumption gains, by volume. The Czech Republic, France, Portugal and Spain recorded the largest falls.

The new residential housing market in the US is recovering. When combined with favourable activity in the repair and renovation markets in 2013, this led to a 4.5 % increase in the consumption of sawn softwood in North America to 80.3 M m^3. A similar increase is expected in 2014.

Fuelled by strong export demand, sawn softwood production in the CIS rose by 4.0 % in 2013, to 35.8 M m^3. This was primarily as a result of a 3.9 % increase in the production of softwood in the Russian Federation (output: 31.2 M m^3). China has become a key alternative market for sawnwood producers in the UNECE region, with Canada (6.8 M m^3), Europe (1.3 M m^3) and the US (0.9 M m^3) all exporting record volumes.

Table 5: Sawn softwood balance in Europe (2012-2014f).

Item	2012	2013	2014f	% change (2012-2013)
		M m^3		
Production	96.6	97.9	100.4	1.3
Imports	31.8	31.6	32.1	-0.8
Exports	43.8	46.2	47.3	5.6
Apparent consumption	84.6	83.3	85.2	-1.7

Sawn hardwood

During the global financial crisis, there was a significant shift in sawn hardwood trade away from the UNECE region and towards emerging economies. However, this trend slowed in 2013 as demand in the UNECE region began to recover.

Following two years of decline, the demand for sawn hardwood in the UNECE region began to recover, with consumption rising by 5.1 %, to 31.5 M m^3. European consumption of sawn hardwood fell by 3.9 %, to 12.6 M m^3, due partly to low economic and construction activity and partly to a lack of supply as sawn hardwood was diverted to more active markets in Asia and North America. The output of the joinery and furniture industries in Europe remained static[21]. European consumption is forecast to recover modestly in 2014.

[17] *Member States of the Commonwealth of Independent States (CIS) are: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan: http://www.cisstat.com/eng/cis.htm*

[18] *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR2013.pdf*

[19] *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR2013.pdf*

[20] *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR-2014-final_01.pdf*

[21] *http://www.unece.org/fileadmin/DAM/timber/meetings/20141118/presentations/12-indufor.pdf*

The Member States of the European Union (EU28) imported 1.85 M m^3 of sawn hardwood from non-EU countries, 8 % less than in 2012. In both 2012 and 2013, EU sawn hardwood imports were divided almost equally between temperate and tropical sources. In 2013, the EU imported 0.93 M m^3 of sawn temperate hardwood, down by 8 % over 2012. Imports were stable from the US, the largest non-EU supplier, but declined from Belarus, Bosnia-Herzegovina, the Russian Federation and Ukraine. The EU imported 0.92 M m^3 of sawn tropical wood, down by 8 % from 2012. Declining imports from Brazil, Cameroon, Ghana, Indonesia, Côte d'Ivoire and Malaysia were only partly offset by increases from the Republic of the Congo, the Democratic Republic of the Congo and Gabon.

Sawn hardwood consumption in the CIS increased by 12 %, to 2.1 M m^3. Production increased by 2 %, boosted by inward investment in the Russian Federation's sawmill industry and by rising demand from that country's buoyant residential construction sector.

The consumption of sawn hardwood in North America increased by 11.9 %, to 17.1 M m^3. Low mortgage rates, an improved jobs market and higher consumer confidence bolstered home sales and led the US economic recovery.

Legal cases were brought in the US under the Lacey Act and in the EU under the EU Timber Regulation (EUTR) against companies accused of trading in illegally harvested hardwood. These cases are putting pressure on hardwood enterprises to show evidence of legal sourcing. Governments in some hardwood-producing countries; *e.g.*, the Russian Federation, Romania and tropical countries participating in the EU's Forest Law Enforcement, Governance and Trade Voluntary Partnership Agreement (VPA) programme[22] are developing new forest codes and regulatory frameworks, which will also increase the level of scrutiny on harvesting operations and internal timber-supply chains.

Trade in American ash is subject to restrictions in North America and export markets, with the aim of controlling the spread of the emerald ash borer (*Agrilus planipennis*). All ash sawn hardwood exported from designated quarantine areas in both the US and Canada must now be square-edged.

Tropical forest products

Over the period 2010-2013, the output of tropical forest products sector grew by 1.5 % (Table 6).

Table 6: Output of tropical forest products sector (2010-2013)[24].

Item	2010	2011	2012	2013	% change 2010-2013
	000 m^3				
Tropical industrial roundwood	207,391	213,333	216,215	212,776	2.6
Sawn tropical timber	49,260	49,405	49,171	49,065	-0.4
Tropical veneer	3,661	3,831	3,753	3,777	3.2
Tropical plywood	11,976	11,568	12,046	10,877	-9.2
Total	272,289	278,137	281,185	276,494	1.5

Over the period 2010-2013, the use of tropical forest products in Europe, North America and the Asia-Pacific grew by 4 %. This was largely driven by an increased demand for tropical forest products from the Asia-Pacific. Over the same period, the use of tropical forest products declined by 21.6 % in Europe and by 3.6 % in North America (Table 7).

Table 7: Use of primary tropical forest products by region (2010-2013)[23].

Item	2010	2011	2012	2013	% change 2010-2013
	000 m^3				
Europe					
Industrial tropical roundwood	470	479	296	312	-33.5
Sawn tropical timber	1,744	1,716	1,475	1,382	-20.8
Tropical veneer	215	212	169	199	-7.4
Tropical plywood	968	948	730	769	-20.5
Sub-total	3,396	3,355	2,670	2,663	-21.6
North America					
Industrial tropical roundwood	4	3	5	7	85.3
Sawn tropical timber	404	516	360	431	6.9
Tropical veneer	26	27	28	25	-2.1
Tropical plywood	756	549	615	684	-9.6
Sub-total	1,190	1,096	1,008	1,147	-3.6
Asia-Pacific					
Industrial tropical roundwood	9,320	9,412	9,566	10,407	11.7
Sawn tropical timber	4,308	4,942	5,074	4,608	7.0
Tropical veneer	396	448	552	766	93.7
Tropical plywood	3,961	4,196	4,366	3,795	-4.2
Sub-total	17,985	18,997	19,557	19,576	8.8
Total					
Industrial tropical roundwood	9,794	9,893	9,867	10,726	9.5
Sawn tropical timber	6,455	7,174	6,909	6,421	-0.5
Tropical veneer	637	687	749	991	55.6
Tropical plywood	5,685	5,693	5,711	5,247	-7.7
Total	**22,571**	**23,448**	**23,236**	**23,386**	**3.6**

Builder's joinery and carpentry

Markets for builders' joinery and carpentry (BJC) continued to recover in the US, the UK and Germany but declined in France. These markets are characteristically regional, with most imports originating close-by. The exception is the US market, which Asian producers have penetrated strongly.

[22] *http://www.euflegt.efi.int/vpa*
[23] *http://www.itto.int/annual_review_output/*
[24] *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR-2014-final_01.pdf*

Wood-based panels

The consumption of wood-based panels (WBP) in Europe increased by 2 % to 66 M m^3 (Table 8). Over the same period, the consumption of fibreboard increased by 4.3 %, with Turkey remaining the largest European consumer of these products, increasing consumption by 7 %, to 4.4 M m^3. Over the period 2007-2013, the demand for OSB in Europe grew by 10 %, while fibreboard (mainly MDF) showed more modest growth (+2.8 %). Growth in particleboard demand was marginal (+0.6 %)[24]. Particleboard dominates WBP use in Europe, with production totalling 35.5 M m^3. The production of OSB in Europe grew by 9.9 %, reaching almost 6 M m^3. Fibreboard production in the European subregion of the UNECE increased by 2.8 % to 21.3 M m^3, up from 20.7 M m^3 in 2012.

Table 8: Wood-based panel balance in Europe (2012-2014f)[25].

Item	2012	2013	2014f	% change (2012-2013)
		M m^3		
Production	67.3	68.2	71.4	1.3
Imports	28.6	29.8	29.8	4.1
Exports	31.2	32.0	32.2	2.4
Apparent consumption	64.7	66.0	69.0	2.0

Demand for wood-based panels began to improve in the CIS, with the production of WBP increasing in the Russian Federation by 0.4 %, to 12.7 M m^3. The Russian plywood industry recovered strongly, increasing production by 5 % to 3.3 M m^3. This increase was driven by a combination of strong exports and by increased domestic demand. The consumption of wood-based panels increased by 3.9 %, to 18.6 M m^3. Consumption of plywood increased by 1 %, particleboard by 1 %, fibreboard by 6 % and OSB by more than 20 %.

Growth in the demand for housing, as well as an increased demand for interior products such as cabinets and furniture, increased the consumption of wood-based panels in North America by 5.4 %. The consumption of OSB grew by 11.7 % over 2012. Two OSB mills opened in the 2012-2013 period, with no mills closures[26].

The California formaldehyde emission regulation[27] (CARB 2), which came into effect in 2009, and phased in increased restrictions in 2012, limits the allowable amount of formaldehyde emissions from wood-based panels. The US Environmental Protection Agency (EPA) is in the final stages of modifying and adopting the California formaldehyde emissions regulations for implementation at a national level. The EPA plans to publish its final rule at the end of 2014, with implementation likely to start a year later.

Paper, paperboard and wood pulp

Electronic communication via the internet and the use of smart phones continued to play a major role in the evolution of the pulp and paper segments, while paperboard use has benefited from increased online shopping.

The pulp, paper and paperboard market remained in flux in 2013 as graphic paper capacity continued to be rationalised in Europe and North America, a development that has persisted now for a decade.

Globally the sector faced another challenging year. Despite significant capacity closures across several pulp, paper and paperboard grades in Europe, Japan and North America, production capacity was still too high when measured against falling or static demand for most grades of paperboard. Output and consumption of paperboard rose in Europe and North America. Pulp production in Europe was almost unchanged, at 40 M tonnes, due largely to closures of integrated mills. Exports grew by 5.1 % and imports by 1.9 %; as a result, consumption fell by 0.6 %. In the CIS, the production of chemical wood pulp, paper and paperboard fell by 2.0 %, to 15.1 M tonnes. In North America, another round of closures occurred in the pulp, paper and paperboard industry. This was due to a combination of excess capacity within the sector and falling paper demand, itself the result of the increasing use of electronic communications.

Pulp production declined across all chemical grades due to closures at integrated and market pulp facilities. Some 1.1 M tonnes of chemical pulp capacity were shut down permanently in 2013 while a further 375,000 tonnes of capacity were converted to dissolving pulp.

Wood-biomass energy[28]

Wood is the main source of renewable energy in the UNECE region, accounting for 38.4 % of all renewable energy use. Most of the demand is concentrated in the EU. Wood pellets dominate international wood energy trade, with Canada, the US and the Russian Federation being the main exporters of wood pellets to the EU.

The rise of the wood energy market has benefited forest owners, encouraging forest management by opening up market opportunities for lower quality wood and pre-commercial thinning. Currently, 10.2 % of world energy demand is supplied by bioenergy[29].

The Canadian forest sector makes widespread use of forest biomass in the co-generation of heat and electricity for use in industrial processes and sale to 3rd parties. In 2012, the biomass installed generating capacity was 2,050 MW, 78 % of which was installed at pulp and paper facilities. In addition, several private utilities generate electricity using wood wastes and other biomass materials as fuel. In 2012, forest biomass accounted for 3 % of Canada's domestic energy production.

[25] *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR-2014-final_01.pdf*
[26] *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR-2014-final_01.pdf*
[27] *http://www.arb.ca.gov/toxics/compwood/consumer_faq.pdf*
[28] *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR2013.pdf*
[29] *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/David_Pare__green_life_of_wood.pdf*

The most recent data from the UNECE/FAO Joint Wood Energy Enquiry (JWEE)[30] showed that in 2011, wood energy was the principal source of renewable energy, accounting for 38.4 % of all renewable energy use in 28 member countries of the UNECE. By sector, the largest consumer of wood energy is the forest-products sector (46.8 %), followed by the residential (32.6 %) and the power-and-heat sectors (18.3 %). In 2013, 41 % of wood-biomass energy within the UNECE region was used in the residential sector, followed by industrial and power and heat use at 29 % and 28 % respectively (Table 9).

Eurostat[31] data showed that 327 M m^3 of wood waste was used for energy production in the EU-27 region in 2011. This generated an energy output of 3,270 Petajoules (PJ). This represents a 45.6 % rise in absolute wood energy consumption since 2002. The top-five wood energy producers in the EU-27 were Germany (15.0 %), France (11.4 %), Sweden (10.5 %), Finland (9.7 %) and Poland (8.1 %).

Wood pellets dominate trade of wood energy feedstock with the EU-27. In 2012, the US was the main exporter of wood pellets to the EU-27, followed by Canada and the Russian Federation. Total imports into the EU-27 from Canada, the Russian Federation, the US and the rest of the world reached 4.5 M tonnes. However, trade within the EU-27 is still the largest market in the world, accounting for about 4.7 M tonnes of wood pellets. In 2012, Canada and the US produced 1.7 M and 4.1 M tonnes of wood pellets respectively. Over the same period, wood pellet production in the Russian Federation remained at 1.5 M tonnes.

Growth in the EU's wood energy consumption has been primarily driven by a demand for industrial pellets for co-firing, combined heat-and-power (CHP) and district heating, and pellets for residential heating. The use of wood-biomass energy within the UNECE region for the period 2011-2013 is shown in Table 9.

Table 9: Use of wood-biomass energy by sector within the UNECE region (2011-2013).

Energy use	2011	2013
	% energy use	
Residential	39	41
Industrial	38	29
Power and heat	20	28
Other	3	2

In May 2013, the Government of the Russian Federation issued a Federal Plan regarding "*measures to create favourable conditions for the use of renewable wood resources for the production of heat and electricity*". This gives priority to developing the use of wood energy, which consists of twelve activities to boost the sector. These include investigating best practices worldwide, the development of legislation regarding municipal heating, forest management, and regional support for the wood-energy sector. The plan allows preferential interest rates for the development of renewable energy projects and prohibits the construction of boiler houses and power plants using fossil fuels in remote regions with a good supply of wood biomass[32].

In 2013, the European Commission issued a Green Paper entitled '*A 2030 framework for climate and energy policies*'[33]. This outlines renewable energy targets beyond 2020. It stresses that by 2030 greenhouse gas emissions should be reduced by 40 % in the EU and by 2050 between 80-95 % in order to be consistent with the internationally agreed target to limit atmospheric warming to below 2°C.

The Green Paper's proposed Energy Roadmap 2050 suggests a share of around 30 % in 2030 for renewable energy of which wood energy in the form of pellets will likely play an important role.

The commercialisation of cellulosic biofuels remains one of the most anticipated developments in the wood energy sector, but its economic feasibility remains elusive.

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Independent forest certification

By May 2013, the global area of certified forest was 417 M ha, an 8 % increase over 2012. However, the area of certified forest is not evenly distributed. More than half (51 %) is in North America, 25 % in Western Europe, 13 % is in other Europe and the Commonwealth of Independent States (CIS). The remaining 11 % is spread throughout the southern hemisphere (Table 10).

The overwhelming proportion (96 %) of certified roundwood supply originates from North America and from Europe. Sustainable forest management (SFM) certification remains low in tropical countries (Table 10).

In 2013, 180.5 M ha of forest were certified by the Forest Stewardship Council, a 7% increase over 2012[34]. Over the same period, 251.3 M ha were certified by the Programme for the Endorsement of Forest Certification (PEFC)[35].

One of the most significant areas of North American forest that is not certified is the 78 M ha managed by the US Forest Service. To date, it has decided not to seek certification for the forests it manages[36].

[30] *http://www.unece.org/forests/jwee.html*
[31] *http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/*
[32] *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR-2014-final_01.pdf*
[33] *http://ec.europa.eu/clima/policies/2030/index_en.htm*
[34] *https://ic.fsc.org/en/annual-review/2013*
[35] *http://pefc.org/resources/webinar/747-pefc-global-certification-forest-management-chain-of-custody*
[36] *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR2013.pdf*

Other issues affecting the supply of certified forest products in the UNECE region include:

- The US Government moved in 2008 to prohibit the trade of illegally sourced wood under the Lacey Act Amendment[37].
- As of 15 December 2008, an amendment to the US Lacey Act made it unlawful to import certain plants and plant products without an import declaration[38]. This amendment targets the prevention of illegal logging. It requires increased due diligence by US businesses that source and sell forest products[39].
- The Lacey Act is a concern for wood manufacturers in China, Thailand and Vietnam. It has already caused many Asian firms to acquire Chain-of-Custody (CoC) certification in order to track their wood materials through the supply chain[40].
- In May 2012, the Due Care Standard for the Lacey Act addressing illegally logged wood was approved in the US. This standard provides pathways for meeting the mandate of the Lacey Act using the FSC the PEFC or an alternative approach developed by the American Hardwood Export Council (AHEC) for their members[41].
- From 3 March 2013, the EU Timber Regulation (EUTR)[42,43] makes it illegal to place illegally harvested timber and timber products on the EU market.

The legislation requires that due diligence is applied to all timber first placed on the EU market and that traders, further down the supply chain, keep track of from whom timber or timber products were bought from, and where applicable, who they were sold to. It covers a wide range of timber products; including solid wood products, flooring, plywood, veneered panels and similar laminated wood, cellular wood panels, pulp and paper. Both imported and domestically produced timber and timber products are covered[44]. Recycled products, as well as printed papers such as books, magazines and newspapers are not however. Meanwhile the EUTR has a due diligence system[45] that recognises both FSC and PEFC programmes.

Table 10: Potential global and regional supply of roundwood from certified resources (2012-2013)[46].

Region	Total forest area	Certified forest area		Certified forest area		Estimated industrial roundwood from certified forests		Estimated proportion of total roundwood production from certified forests	
		M ha		%		M m3		%	
	M ha	2012	2013	2012	2013	2012	2013	2012	2013
N. America	614.2	198.0	215.8	32.2	35.1	224.0	244.2	12.7	13.8
Europe	168.1	95.4	100.2	56.7	59.6	224.7	236.1	12.7	13.3
CIS	836.9	47.5	53.4	5.7	6.4	9.1	10.2	0.5	0.6
Oceania[47]	191.4	13.2	11.9	6.9	6.2	3.8	3.4	0.2	0.2
Africa	674.4	7.3	7.5	1.1	1.1	0.8	2.2	0.0	0.1
L. America	955.6	14.7	15.7	1.5	1.5	2.9	1.2	0.2	0.1
Asia	592.5	9.5	12.5	1.6	1.6	3.2	4.0	0.2	0.2
Total	**4,033.1**	**385.6**	**417.0**	**9.6**	**10.3**	**468.5**	**501.3**	**26.5**	**28.3**

2013 marked the tenth anniversary of the adoption of the EU's Forest Law Enforcement, Governance and Trade Action Plan. A key output of the Plan is the creation of Voluntary Partnership Agreements (VPAs) between the EU and tropical timber-supplying countries. VPAs have been signed with six countries; Cameroon, the Central African Republic, the Republic of the Congo, Ghana, Indonesia and Liberia[48].

[37] *www.fs.fed.us/.../Lacey_Act_amendments_public_summary.doc*
[38] *USDA Aphis 2012; www.aphis.usda.gov/plant_health/lacey_act/*
[39] *www.bdlaw.com/news-511.html*
[40] *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/UN-ECE_2012_Eastin.pdf*
[41] *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
[42] *http://illegal-logging.info/uploads/l29520101112en00230034.pdf*
[43] *http://www.euflegt.efi.int/files/attachments/euflegt/summary_eu_timber_regulation_27012012.pdf*
[44] *http://www.cpet.org.uk/eutr/timber-and-timber-products*
[45] *http://www.cpet.org.uk/eutr/due-diligence-system*
[46] *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR-2014-final_01.pdf*
[47] *Oceania is a region centered on the islands of the tropical Pacific Ocean.*
[48] *http://www.euflegt.efi.int/vpa*