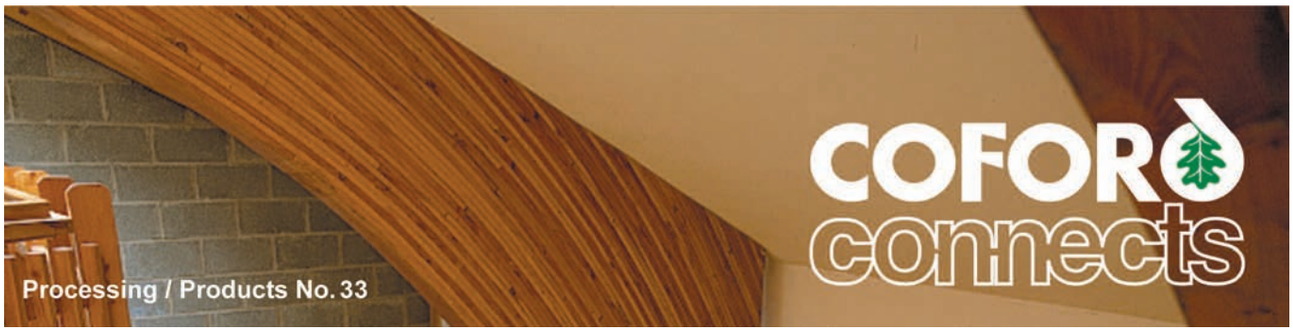

- *In 2011, removals of industrial roundwood in the UNECE[2,3] region increased by 2.4%, reaching 970 million m³. Consumption of forest products within the region grew by 0.9% over 2010.*
- *Exports of wood raw material and wood products to Asia continued to offset flat demand for forest products within the UNECE region.*
- *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.*
- *Fuelwood production in the UNECE region accounted for 18% of total roundwood removals.*
- *Demand for wood-biomass energy within the UNECE region is set to double by 2030.*
- *Efforts to exclude illegal timber from markets are being strengthened via the EU Timber Regulation (EUTR) and the Lacey Act in the US.*
- *Some 9.6% of the world's forests are now certified by a number of voluntary forest certification schemes.*

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An overview of the 2012 UNECE Timber Committee Meeting

Eoin O'Driscoll[1]

Introduction

The October 2012 meeting of the United Nations Economic Commission for Europe (UNECE) Timber Committee discussed:

- Roundwood harvest,
- Key regional markets,
- Key sectoral markets,
- Wood-biomass energy and
- Green building.

Roundwood harvest in the UNECE region

Over the period 2010-2011, the harvest of roundwood in the UNECE region grew by 3% (Table 1). However, the consumption of industrial roundwood was 14% lower than in 2007. There were three main reasons for the growth in harvest: increased exports of roundwood from North America to China, expanded manufacturing of wood-based panels (WBP) in the Russian Federation and higher sawnwood production in North America and Europe.

The biggest increase in roundwood consumption in 2011 was in the Commonwealth of Independent States (CIS)[4], where the demand for industrial roundwood grew by 12.4%. This was driven by higher production at sawmills and plywood plants in the Russian Federation and the Ukraine.

Table 1: Roundwood harvest in the UNECE region (2009-2011)[5].

	2009	2010	2011	% Change 2010-2011
	M m³ UB			
Europe	439	477	483	1.3
North America	450	466	469	0.6
CIS	179	202	227	12.4
TOTAL	1,068	1,145	1,179	3.0
2007 = 100	87	93	96	

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2. *The UNECE region covers more than 47 million 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*
3. *http://www.unece.org/oes/member_countries/member_countries.html*
4. *The Commonwealth of Independent States (CIS) is comprised of 12 Member States; Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.*
5. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*

Consumption of forest products in the UNECE region (2007-2011)

Over the past year, the demand for forest products within the UNECE region increased by 0.9%. However, this demand showed a 16% reduction on 2007 (Table 2), largely driven by the ongoing recession and a reduction in residential construction output.

In 2011, the consumption of forest products increased by 1.6% in Europe and by 8.9% in the Commonwealth of Independent States (CIS). Over the same period, the consumption of forest products declined by 1.2% in North America.

Table 2: Apparent consumption of forest products in the UNECE region (2007-2011)[6].

	Unit	2007	2008	2009	2010	2011	% change 2010-2011
Sawn timber	M m^3	279	229	192	208	212	1.9
Wood-based panels	M m^3	150	135	118	123	126	2.2
Paper & paperboard	M mt	206	197	176	183	183	0.0
Apparent consumption	m^3 RWE[7]	1,516	1,362	1,189	1,255	1,266	0.9
2007 = 100			89.8	78.4	82.8	83.5	

Regional overviews (2011)

North America

US domestic consumption of softwood logs fell 1.5% from 2010, and was 29% lower than in 2007. This downward trend was mainly the result of the sharp decline in US housing starts, as well as reduced demand for sawnwood by the construction sector. Log consumption by the pulp and wood panel sectors has fallen much less than in the sawmilling sector.

469 million m^3 of roundwood was harvested in North America, a 0.8% increase over 2010 (Table 3). This was comprised of 426 million m^3 of industrial roundwood and 43 million m^3 of fuelwood. However, over the period 2007-2011, US roundwood harvest has declined from 379 million m^3 to 284 million m^3, largely caused by the fall in output of the US housing market[8]. In 2011, demand for sawn timber in the US was 29% lower than in 2007. This downward trend was caused by the sharp decline in US housing starts as well as reduced demand for sawn timber by the non residential construction sector.

The housing market is the key driver of forest product use in North America. It is estimated that 70% of the demand for structural building materials in North America is linked to the demand for residential housing. Almost 40% of the sawnwood which is consumed in the US is used in new residential construction. However, the output of the US housing sector has been in steep decline since 2007. Forecast data provided by the US Bureau of the Census[9] shows that from a high of 1.9 million house starts in 2006, that housing output for 2012 is estimated to be 651,000 units (Table 4). The US housing market is still undergoing a slow economic recovery. In 2011, US housing starts were less than 30% of 2006 output. This output was the lowest recorded level of housing starts and sales since 1963[10]. However, US housing starts are forecast to increase to 990,000 in 2013 and 1.17 million in 2014 (Table 4).

In the first half of 2012, Canadian housing starts improved by 18.4% over the corresponding period in 2011. However, a slowdown in Canadian housing starts is anticipated as tighter mortgage qualifications become effective following a Federal Government announcement in mid 2012[11].

Historically, Canada's sawn softwood industry has been heavily dependent on the United States. However, strong demand in Asia, particularly from China (see case study), has continued to reduce its reliance on U.S. markets[12]. In 2011, the value of Canadian lumber exports to China increased by 61.2% over 2010. Over the same period the consumption of sawn softwood in North America grew by 1% over 2010 (Table 5).

The consumption of sawn hardwood in North America grew by 4.7% over 2010 (Table 6).

Table 3: Roundwood balance in North America (2007-2011)[13,14].

	2007	2008	2009	2010	2011	% change 2010-2011
	M m^3 UB					
Production	619	536	451	466	469	0.6
Imports	8	6	7	6	5	-16.6
Exports	14	13	14	14	18	28.6
Apparent consumption	613	529	444	458	457	-0.4
2007 = 100		86.3	72.4	74.7	74.6	

6. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
7. *Roundwood equivalent (RWE) is based on the following conversion factors; 1 m^3 of sawn timber = 1.89 m^3 roundwood; 1 m^3 wood-based panels = 1.64 m^3 roundwood; 1 tonne paper = 3.60 m^3 roundwood. These conversion factors are based on UNECE/FAO Discussion Paper No 49; http://live.unece.org/fileadmin/DAM/timber/publications/DP-49.pdf*
8. *http://www.unece.org/fileadmin/DAM/timber/country-info/usa2012.pdf*
9. *http://www.census.gov/construction/nrc/*
10. *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/3-item_4_Market_developments2.pdf*
11. *http://www.unece.org/fileadmin/DAM/timber/country-info/canada2012-e.pdf*
12. *http://www.unece.org/fileadmin/DAM/timber/country-info/canada2012-e.pdf*
13. *http://www.unece.org/fileadmin/DAM/timber/country-info/usa2012.pdf*
14. *http://faostat.fao.org/site/626/default.aspx#ancor*

Table 4: US housing starts by type (2000-2014f)[15,16,17].

	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	447	138	585
2012f	485	167	651
2013f	680	210	990
2014f	820	350	1,170

Table 5: Sawn softwood balance in North America (2007-2011)[18].

	2007	2008	2009	2010	2011	% change
			M m^3			2010-2011
Production	110.7	89.9	71.6	79.9	83.4	4.4
Imports	31.5	22.0	15.6	16.7	16.4	-1.8
Exports	33.8	25.2	20.4	24.3	26.8	10.2
Apparent consumption	108.4	86.7	66.8	72.3	73.0	1.0
2007 = 100		80.0	61.6	66.7	67.3	

Table 6: Sawn hardwood balance in North America (2007-2011)[19].

	2007	2008	2009	2010	2011	% change
			M m^3			2010-2011
Production	27.0	24.6	17.3	16.4	17.2	4.9
Imports	2.3	2.0	1.3	1.2	1.2	0.0
Exports	3.6	2.7	1.9	2.6	2.7	3.8
Apparent consumption	25.7	23.9	16.7	16.4	15.7	4.7
2007 = 100		93.0	65.0	58.4	61.1	

Over the past year, the wood-based panel market in North America was essentially flat. Despite a modest increase in housing starts in both the US (+ 3.5%) and Canada (+ 2.1%), demand for structural panels actually declined slightly, by 0.4% in the US and by 0.2% in Canada. The continued weak demand for structural panels was especially difficult for the plywood industry. This caused the closure of six plywood mills in the US and one in Canada. Demand for non-structural panels grew substantially in 2011 and 2012, led by an increased demand for medium density fibreboard (MDF). This caused the consumption of wood-based panels in North America to increase by 0.8% over 2010. However, the North American market for wood-based panels remained 25.9% below demand levels in 2007 (Table 7)[20].

Table 7: Apparent consumption of wood-based panels in North America (2007-2011)[21].

	2007	2008	2009	2010	2011	% change
			M m^3			2010-2011
Apparent consumption	62.31	50.51	47.79	45.82	46.19	0.8
2007 = 100		81.10	76.70	73.50	74.10	

Commonwealth of Independent States (CIS)[22,23].

The consumption of roundwood in the CIS grew by 13.2% over 2010 (Table 8). Industrial roundwood removals in the Russian Federation were 153 M m^3, with 87% consumed domestically. Over the same period, sawn hardwood production in the CIS was 3.52 M m^3. The consumption of forest products in the CIS grew by 8.9% over 2010 (Table 9). In the first quarter of 2012, 111,800 new housing units with a floor space of 9.8 M m^2 were built in the Russian Federation, a 5.7% increase over the first quarter of 2010.

Wood-based panel consumption in the CIS grew by 17.5% over 2010. Plywood and fibreboard production in the Russian Federation grew by 10% with particleboard up by 20%.

The exports of sawn softwood from the Russian Federation increased by 10.1% over 2010 to reach almost 19 M m^3. China accounted for 37% of these exports, an increase of 39% in one year.

It is expected that the accession of the Russian Federation to the World Trade Organisation (WTO) will have an impact on global trade of forest products with Russia via substantial reductions in export and import duties[24].

15. *http://www.econstats.com/hs/hs_a15.htm*
16. *http://www.calculatedriskblog.com/2012/10/wells-fargo-raises-housing-forecasts.html*
17. *f: forecast*
18. *http://faostat.fao.org/site/626/default.aspx#ancor*
19. *http://faostat.fao.org/site/626/default.aspx#ancor*
20. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
21. *http://faostat.fao.org/site/626/default.aspx#ancor*
22. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
23. *The countries of the CIS are: Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Uzbekistan and the Ukraine.*
24. *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/3-item_4_Market_developments2.pdf*

This should result in the reduction of export duties on sawlogs. Lower duties were scheduled to take place from August 2012 when the log export tax was to be reduced from 25% to 15% on pine and 13% on spruce. It is expected that sawmills in Finland and the Baltic States will enjoy the largest benefits, simply because of their proximity to the forests of the Russian Federation.

Growth in the consumption of paper and paperboard in the Russian Federation was forecast to increase by 2% in 2011 and by a further by 3% in 2012. This will raise consumption to 6.9 million tonnes in 2012. In addition, pulp production in the Russian Federation is forecast to grow by 1% in 2011 and 2012 to reach 6.1 million tonnes. However, the Russian Federation currently has a trade deficit in paper and paperboard products of $2 billion. This is because it exports mostly low value grade pulp and paper products but it imports high quality printing paper, packaging and tissue grades. As a result, there are large investment opportunities to refurbish existing pulp and paper mills in the Russian Federation[25].

Table 8: Roundwood balance in the CIS (2007-2011)[26].

	2007	2008	2009	2010	2011	% change
	M m³ UB					2010-2011
Production	207.0	181.4	178.8	203.3	226.6	11.5
Export	49.3	36.8	27.2	27.0	27.0	0.0
Import	0.3	0.3	0.8	0.5	0.5	0.0
Apparent consumption	158.0	144.9	152.5	176.8	200.1	13.2
2007 = 100		91.7	96.5	111.9	126.6	

Table 9: Apparent consumption of forest products in the CIS (2007-2011)[27].

	Unit	2007	2008	2009	2010	2011	% change 2010-2011
Sawnwood[28]	M m³	17.42	16.30	17.84	17.56	18.38	4.7
Wood-based panels	M m³	13.72	15.56	11.05	12.90	15.16	17.5
Paper & paperboard	M mt	9.18	9.10	8.57	9.33	10.05	7.7
TOTAL	RWE[29] M m³	88.46	89.09	82.70	87.93	95.77	8.9
2007 = 100			100.7	93.5	99.4	108.3	

Europe

The harvest of industrial roundwood in Europe was 375 M m³, virtually unchanged on 2010. Over this period, the softwood harvest accounted for 77%, with the balance being hardwood. Including firewood, total removals for 2011 were 483 M m³. Over the period 2010-2011, the consumption of roundwood in Europe grew by 0.8% (Table 10) while the consumption of forest products in Europe grew by 1.6% (Table 11).

Table 10: Roundwood balance in Europe (2010-2011)[30].

	2010	2011	% change
	M m³ UB		2010-2011
Production	476.7	482.6	1.2
Export	45.6	50.5	5.4
Import	57.1	60.2	10.7
Apparent consumption	488.2	492.3	0.8

Table 11: Apparent consumption of forest products in Europe (2007-2011)[31].

	Unit	2007	2008	2009	2010	2011	% change 2009-2010
Sawnwood[32]	M m³	127.32	101.90	90.74	101.47	104.89	3.4
Wood-based panels	M m³	74.54	67.90	59.59	63.13	65.82	4.2
Paper & paperboard	M mt	101.07	99.69	90.02	93.91	93.68	-0.2
Apparent consumption	RWE[33] M m³	726.75	662.82	593.28	633.38	643.42	1.6
2007 = 100			91.20	81.60	87.20	88.50	

Europe's softwood sawmillers faced another challenging year. With domestic demand almost flat and no buoyant offshore market that might have offered a much-needed outlet, most mills saw operating margins shrink to low levels. Persistent high sawlog prices in many parts of Europe aggravated the situation. This marks the fourth year in a row of poor markets, with no immediate relief in sight[34].

25. *http://forestindustries.eu/content/unece-region-forest-products-markets-rebound-after-two-years-falling-production-and-consumpt*
26. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
27. *http://faostat.fao.org/site/626/default.aspx#ancor*
28. *This includes sawn softwood and sawn hardwoods*
29. *RWE: roundwood equivalent*
30. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
31. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
32. *This includes sawn softwood and sawn hardwoods*
33. *RWE: roundwood equivalent*
34. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*

Sectoral overviews (2011)

Sawn softwood

The consumption of sawn softwood increased modestly over 2010. This increase was 1.0% in North America, 2.8% in Europe and 5.9% in the CIS. However, consumption levels remained 20.3% lower than in 2007 (Table 12).

The European sawmill sector continues to be squeezed by a combination of high raw material prices and globally depressed market prices. US consumption rose by 4.8% to 58.1 M m^3, driven by a modest housing recovery as well as an improved repair and renovation market (RMI).

Between 2010 and 2011, the exports of Russian sawn softwood increased by 10.1% to 18.9 M m^3 of which 37% went to China. Over the same period, Canadian and US sawmills benefited from increased exports, especially to China[35].

CE marking of sawn softwood, which was introduced under the Construction Products Directive 89/106/EEC in 1989, is to become compulsory for all sawnwood sold within the EU from 1 July 2013, in accordance with the new EU Construction Products Regulation 305/2011[36].

Table 12: Apparent consumption of sawn softwood in the UNECE region (2007-2011)[37].

	2007	2008	2009	2010	2011	% change 2010-2011
	M m^3					
Europe	106.44	95.87	78.20	89.36	91.90	2.8
CIS	12.04	13.15	15.56	15.04	15.92	5.9
North America	108.36	86.64	66.77	72.32	73.03	1.0
Apparent consumption	226.84	195.66	160.54	176.72	180.85	2.4
2007 = 100		86.30	70.80	77.90	79.70	

Sawn hardwood

The consumption of sawn hardwood in the UNECE region[38] grew by 0.8% over 2010 (Table 13). In 2011, European production of sawn hardwood decreased by 1.4% over 2010. 71% of European hardwood production for 2011 was supplied by the Member States of the EU-27 (Table 13). Oak consolidated its dominant position in the European finishing sectors in 2011, increasing its share of total parquet production from 56% in 2008 to 67% in 2011. Over the same period, tropical hardwood flooring saw its market decline from 14.7% in 2008 to 7.4% in 2011[39].

Table 13: Production of sawn hardwood in Europe (2010-2011)[40].

	2010	2011	% change 2010-2011
	M m^3		
Europe of which	12.80	12.60	-1.4
Turkey	2.26	2.27	0.4
Romania	1.61	1.54	-4.3
France	1.42	1.47	3.5
Germany	0.90	1.01	12.1
Slovakia	0.80	0.74	- 6.6
Croatia	0.58	0.64	10.3
EU-27	9.21	8.96	-2.7

Within the UNECE region, the consumption of sawn hardwood increased by 0.8% over 2010 (Table 14). Sawn hardwood production in the CIS increased by 6.8%. Growth was boosted by exports to China. In 2011, sawn hardwood production in North America increased by 4.4% as domestic consumption stabilised and export demand, particularly from China and Vietnam increased[41].

Table 14: Apparent consumption of sawn hardwood in the UNECE region (2007-2011)[42].

	2007	2008	2009	2010	2011	% change 2010-2011
	M m^3					
Europe	17.98	15.06	12.54	13.07	12.99	-0.6
CIS	3.35	2.67	2.28	2.38	2.46	-12.1
North America	25.79	23.79	16.68	14.99	15.63	4.6
Apparent consumption	47.12	41.52	31.50	30.44	31.08	0.8
2007 = 100		88.1	66.9	64.6	66.0	

In the long term, there is likely to be continuing strong demand for North American and European hardwood logs from China and Vietnam, but also rising demand for sawn temperate hardwood in China, Southeast Asia and Latin America. These opportunities are all the more welcome in the light of a likely slow market recovery in the traditional markets for sawn hardwood i.e. Europe and North America[43].

35. *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/3-item_4_Market_developments2.pdf*
36. *http://ec.europa.eu/enterprise/sectors/construction/legislation/index_en.htm*
37. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
38. *http://www.unece.org/oes/nutshell/region.html*
39. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
40. *http://www.unece.org/fileadmin/DAM/timber/publications/06.pdf*
41. *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/3-item_4_Market_developments2.pdf*
42. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
43. *http://www.unece.org/fileadmin/DAM/timber/publications/06.pdf*

Tropical hardwood[44,45].

In 2011, oak has continued to consolidate its dominant market position in the European flooring and joinery sectors. Tropical hardwoods have continued to lose market share due to limited product availability and to increased competition from the development of innovative new products for use in external applications. Over the period 2008 to 2011, tropical hardwood's share of the European wood flooring market declined from 14.7% to 7.4%.

During 2011, tropical sawn hardwood continued to lose market share in Europe. Exports of tropical sawn hardwood to the EU-27 for 2011 were 1.16 M m^3, a 3% decline over 2010. In 2011, tropical hardwoods accounted for 43% of all hardwood imports to the EU-27, down from 45% in 2010. These figures compare to a 53% market share for tropical hardwood which was typical a decade ago[46]. This has been caused by a combination of factors. The availability of tropical hardwoods to European buyers has declined following the closure of many sawmills in key African producer countries during the recession and by the increased diversion of tropical sawn timber to China and to other regional markets in the tropics.

In addition, around 30 companies across Europe are now operating thermal treatment plants with a total capacity of over 300,000 m^3. This market has grown from an output of 100,000 m^3 in 2007[47]. These companies offer a widening range of heat-treated temperate hardwood and softwood products that are marketed as alternatives to tropical hardwood in the external joinery and furniture sectors[48]. In France such heat treated products are being used for decking and cladding[49].

The production and trade data for tropical forest products are shown in Table 15.

Table 15: Production and trade of primary tropical forest products (2007-2011)[50,51,52].

	2007	2008	2009	2010	2011	% change
			M m^3 UB			2010-2011
Roundwood						
Production	141.8	145.6	141.7	138.4	137.66	-0.5
Imports	15.3	13.2	11.5	13.6	14.34	5.4
Exports	13.6	12.9	10.9	12.0	12.12	1.0
Sawnwood						
Production	43.4	43.5	42.4	43.2	42.7	-1.2
Imports	8.8	8.1	6.6	8.3	7.2	-13.3
Exports	11.0	8.9	8.0	9.1	9.7	6.6
Plywood						
Production	20.0	17.8	18.2	18.3	18.4	0.5
Imports	8.1	6.5	5.4	5.1	6.3	23.5
Exports	8.9	7.3	5.3	5.2	7.5	44.2

Wood-based panels

Over the period 2010-2011, the consumption of wood-based panels (WBP) in the UNECE region grew by 2.2% (Table 16). In 2011, the largest producers of WBP in the world were China[53], the United States of America, Germany, the Russian Federation and Canada. These five Member States accounted for 61% of global WBP production (176 M m^3). In 2011, China (a non Member State of the UNECE) accounted for 38% of world WBP production. Over the period 2007 to 2011, the output of WBP from China grew by 47%[54].

Table 16: Estimated consumption of wood-based panels in the UNECE region (2007-2011)[55].

	2007	2008	2009	2010	2011	% change
			M m^3			2010-2011
Europe	74.55	67.89	59.59	63.13	65.82	4.3
CIS	13.72	15.56	11.05	12.90	15.16	15.2
North America	61.64	51.45	47.20	47.45	45.25	-4.6
Apparent consumption	149.91	134.90	117.84	123.48	126.23	2.2
2007 = 100		90.0	78.6	82.4	84.2	

In 2011, particleboard production in Europe contracted by 1.9%, while MDF production increased by 3.7% and oriented strand board (OSB) production decreased by 5.2%. Europe's wood-based panel sector continued to face significant increases in production costs, especially for resins and energy. The picture for particleboard across Europe is far from uniform. Finland, Germany, Hungary and Ireland suffered large falls in demand and production, whereas Estonia and Romania saw increased production. Production of OSB in Europe in 2011 fell by 5.2% to 4.5 M m^3. Germany remained the largest European producer, followed by the Czech Republic and Poland. In 2011, the consumption of MDF in Europe was 12.1 M m^3, a 3.8% increase over 2010.

44. *http://www.itto.int/annual_review_output/?mode=searchdata*
45. *http://www.unece.org/fileadmin/DAM/timber/publications/06.pdf*
46. *Forest Industries Intelligence, 2012 ; http://www.sustainablewood.com/*
47. *http://www.unece.org/fileadmin/DAM/timber/docs/tc-sessions/tc-65/md/presentations/17Militz.pdf*
48. *EUWID, 2010; www.euwid.de*
49. *http://www.shpmedia.com/images/AT%20Website/Featured%20Article%20Dec%20%2012.pdf*
50. *http://www.unece.org/fileadmin/DAM/publications/timber/FPAMR_2010-2011_HQ.pdf*
51. *ITTO annual review and assessment of the world timber situation 2011; http://www.itto.int/annual_review/*
52. *http://www.itto.int/annual_review_output/?mode=searchdata*
53. *China is not a Member State of the UNECE*
54. *http://www.fao.org/fileadmin/user_upload/newsroom/docs/2011%20GFP%20Facts%20and%20Figures.pdf*
55. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*

In 2011, North American production of wood-based panels was little changed from 2010, as the US housing market remained weak with few signs of improvement. Over the same period the consumption of WBP in North America declined by 4.6% (Table 16). However, the American Plywood Association (APA[56]) forecasts that the demand for structural panels (OSB and plywood) increased by 5% in 2012. Demand for non-structural wood-based panels is also positive. The Composite Panel Association (CPA)[57] forecasts that in 2012 the demand for particleboard and MDF increased by 5.8% and 9.1% respectively.

Expansion of the Russian wood-based panel sector continued in 2011 due to an increased demand for residential construction (+ 5.1%) and furniture manufacturing (+ 6.2%). Plywood and fibreboard production volumes increased by more than 10% over 2010 levels with particleboard production increasing by more than 20%[58].

Another development affecting the WBP sector is that from January 2011, the California Air Resources Board (CARB) legislation, designed to reduce formaldehyde emissions in wood-based panels[59], moved into Phase II for both particleboard and medium density fibreboard (MDF). This now forms the basis for new Federal Regulations limiting formaldehyde emissions from wood-based panels in all US States.

Paper, paperboard and wood pulp

2011 and the first half of 2012 proved difficult for paper and paperboard producers in all markets, as the recovery from the 2008 financial crisis stalled. Pulp producers enjoyed stronger production and higher shipments, almost all of which was due to growing demand from China. A wave of consolidations and takeovers reduced the demand for pulp commodities across Europe and North America. However, volumes to Asia, particularly China were stronger in 2011 and in early 2012.

In 2011 and 2012, the closure of paper and paperboard mills resulted in a loss of production capacity of 7.4 million tonnes in North America and Europe. This was caused by the ongoing decline in the demand for paper. This is driven in part by the rise in the use of electronic media. There has also been a shift in the geographic distribution of production capacity. As a result, China has become a world powerhouse in the paper industry. The estimated consumption of wood pulp and paper/paperboard products in the UNECE region are shown in Tables 17 and 18, respectively. Over the period 2010-2011, the consumption of wood pulp in the UNECE region declined by 7.4%, while over the same period, the consumption of paper and paperboard remained static.

Table 17: Estimated consumption of wood pulp in the UNECE region (2007-2011)[60,61].

	2007	2008	2009	2010	2011	% change
	M metric tonnes					2010-2011
Europe	54.54	52.81	42.61	45.07	43.61	-3.2
CIS	5.45	5.19	5.28	5.76	5.61	-2.6
North America	68.20	62.66	60.00	60.00	56.99	-5.0
Apparent consumption	128.19	120.66	107.89	114.69	106.21	-7.4
2007 = 100		94.1	84.2	89.5	82.9	

Table 18: Estimated consumption of paper and paperboard in the UNECE region (2007-2011)[62].

	2007	2008	2009	2010	2011	% change
	M metric tonnes					2010-2011
Europe	101.07	99.69	90.02	93.91	93.68	-0.2
CIS	9.18	9.10	8.57	9.33	10.05	7.7
North America	96.19	88.30	77.23	80.00	79.37	-0.8
Apparent consumption	206.44	197.09	175.82	183.24	183.10	0.0
2007 = 100		95.5	85.2	88.8	88.7	

Wood-biomass energy[63]

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[64].

In the UNECE region, wood energy is the principal source of renewable energy[65]. Most of the demand is concentrated in the European Union (EU). Wood pellets dominate international wood energy trade, with Canada, the United States and the Russian Federation being the main exporters of wood pellets to the EU.

The global wood energy market has continued to expand, encouraged by policy commitments to reduce reliance on

56. *http://www.apawood.org/*
57. *http://compositepanel.org/*
58. *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/pqnfilov1.pdf*
59. *http://www.arb.ca.gov/toxics/compwood/factsheet.pdf*
60. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
61. *http://faostat.fao.org/site/626/DesktopDefault.aspx?PageID=626#ancor*
62. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
63. *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/AGUILAR_Wood_Energy_2013_and_beyond_10-13-12.pdf*
64. *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/David_Pare__green_life_of_wood.pdf*
65. *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/David_Pare__green_life_of_wood.pdf*

fossil fuels and driven by market factors, such as sharp increases in the price of other energy sources such as oil and gas. Among the policy drivers is the EU's ambitious target to lift the share of renewable energy from the present, roughly 9% of total energy needs, to 20% by 2020, accompanied by a target to reduce overall energy consumption by 20% by 2020. Currently, wood energy accounts for almost half of the renewable energy supply in the Member States of EU-27, the largest single source of renewable energy at present. In future, agricultural biomass and dedicated energy crops may be expected to make a more significant contribution to renewable energy portfolios[66].

The same trend can be observed in North America. In the US, the demand for wood to meet projected energy needs is forecast to more than double between 2011 and 2014, from around 43 M m^3 to almost 112 M m^3. While this increase seems dramatic, it represents only a fraction of the North American market. Recorded harvests for North America in 2005 and 2006 were more than 680 M m^3.

Large utility companies, especially in countries such as the United Kingdom, appear to be embarking on a rapid expansion of electricity generation, based on biomass (fired alone or co-fired with coal), and are looking to North and South America and the Russian Federation for guaranteed long-term supplies of wood fuel. It is expected that there will be a huge expansion in the production of industrial-quality wood pellets to help meet the projected energy demands.

Growth in the EU's wood energy consumption has been primarily driven by the demand for wood pellets for co-firing, combined heat-and-power (CHP) district heating and residential heating. The use of wood-biomass energy within the UNECE region is shown in Table 19.

Table 19: End use of wood-biomass energy within the UNECE region (2011)[67].

	% energy use
Residential	39
Industrial	38
Power and heat	20
Other	3

Forest industries in the UNECE region are investing in biomass energy and energy efficiency projects in exchange for carbon credits. Most are taking place under the clean development mechanism (CDM)[68], based around sawmill co-products and forest residue/biomass energy projects. There are four on-going wood-waste to energy and biomass utilisation JI (Joint Implementation) projects in the Russian Federation's pulp and paper mills. This is in addition to several biomass and cogeneration projects in Eastern Europe.

Climate change mitigation through better management of forest carbon can include using wood energy. However, the absence of specific sustainability standards for wood energy has given rise to concern among various sector stakeholders. The development of ISO 13065 (Sustainability Criteria for Bioenergy, currently targeted for 2014)[69] should help to create greater acceptance of bioenergy projects.

Wood pellets

The European Union (EU) remains the main market in the UNECE region for wood pellets and will remain as such for the next several years. Between 2008 and 2010, the production of wood pellets in the EU increased by 20.5%, reaching 9.2 million tonnes in 2010, equal to 61% of global production. In the same period, EU wood pellet consumption increased by 43.5% to reach over 11.4 million tonnes in 2010, equal to nearly 85% of the global wood pellet demand. In 2010, 81% of the demand for wood pellets in the European Union (EU-27) was supplied by European manufacturers. However, the gap between production and consumption in the EU has grown from only 262,250 tonnes in 2008 to 2,148,000 tonnes in 2010, a more than 8-fold increase[70].

Data provided by EUROSTAT shows that in 2010, the EU-27 imported more than 2.6 million tonnes of pellets from non EU countries.

Canadian and US industrial wood pellet production is largely driven by demand from the EU, which has set a target to meet at least 20% of its total primary energy supply from renewable energy by 2020. 81% of Canadian wood pellets are exported to Europe. 80% of US pellets are used domestically, with the remaining 20% exported, almost entirely to the EU[71].

In 2010, pellet production in the Russian Federation has been estimated to be around 1 million tonnes, of which 80% is exported, mainly to Europe. In 2011, the world's largest pellet manufacturing plant, with a production capacity of one million tonnes per annum, commenced production in the Leningrad Region. Plans exist to construct new plants at 13 locations in Northwestern and Central Russia. These will have a projected production capacity of 3 million tonnes per annum[72].

66. *http://forestindustries.eu/content/unece-region-forest-products-markets-rebound-after-two-years-falling-production-and-consumpt*
67. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
68. *http://unfccc.int/kyoto_protocol/mechanisms/clean_development_mechanism/items/2718.php*
69. *http://www.kommers.se/upload/Analysarkiv/In%20English/New%20projects/Climate%20Standards%20Project/Reports%20%26%20Comments/NL%202%2010%20ISO%20bioenergy.pdf*
70. *http://www.bioenergytrade.org/downloads/t40-global-wood-pellet-market-study_final.pdf*
71. *http://www.bioenergytrade.org/downloads/t40-global-wood-pellet-market-study_final.pdf*
72. *http://forestindustries.eu/content/unece-region-forest-products-markets-rebound-after-two-years-falling-production-and-consumpt*

Other issues

Green building

The European Union (EU) 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_2 emissions), the emphasis on lightweight materials and recyclability, should lend an advantage to forest products.

In March 2012, the International Green Construction Code (IgCC)[73] was released. This code focused on new and existing commercial buildings addressing green building design and performance. It also influences residential construction. The IgCC has already been adopted by several US States and cities.

Building with forest products has a significant positive impact upon the environment. These include a 50% reduction in carbon dioxide (CO_2) emissions (Table 20).

Table 20: The effect of building with forest products compared to building the same structure in concrete[74].

	Benefits %
Consumption of natural resources	-70
Consumption of energy in the manufacturing process	-40
Carbon dioxide (CO_2) emissions	-50

Constructed from cross-laminated timber (CLT) panels[75] from the first floor upwards, Stadthaus, Murray Grove, London[76,77], is the tallest modern timber structure in the world. The nine-storey building is the first of this height to construct load bearing walls and floor slabs as well as stair and lift cores entirely from timber. This building stores 186 tonnes of carbon within its structure for its lifetime.

The process of building in pre-fabricated timber is fast, the entire building was completed within forty-nine weeks. It is also incredibly accurate. This building system provides a healthy environment to both work on and live in. Upon its completion the building had zero defects and 100% tenant approval, successfully demonstrating that solid timber construction is a financially viable, environmentally sustainable and aesthetic replacement for concrete and steel in high-density housing.

Moreover, if a similar building was built in steel or concrete, it would have resulted in greenhouse gas emissions (GHG) of 124 tonnes of carbon dioxide (CO_2)[78].

A study[79] undertaken by the Technical Research Centre of Finland (VTT) in Finland regarding options for the construction of a 5-storey 1,800 m^2 residential building again shows that forest products have strong environmental and carbon benefits (Table 21). In addition, CLT systems are faster to build than traditional concrete building systems.

Table 21: A comparison of the environmental impact of differing building systems in Finland[80].

Building system	Building weight	Embodied CO_2	CO_2 absorbed
	tonnes		
Concrete	1,900	360	0
Timber framed	600	120	240
CLT	910	180	580
75% timber frame 25% CLT	680	130	320

Independent forest certification

By May 2012, the global area of certified forest was 385.6 million ha, a 2.9% increase over 2011. However, the area of certified forest is not evenly distributed. More than half (51%) is in North America, 25% in Europe, 12% is in other Europe and the Commonwealth of Independent States (CIS). The remaining 12% is spread throughout the southern hemisphere. 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 22).

One of the most significant areas of North American forest that is not certified is the 78 million ha managed by the US Forest Service. To date, it has decided not to seek certification of the forests it manages[81].

73. *http://www.iccsafe.org/cs/igcc/pages/default.aspx*
74. *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/DieterUNECE2.pdf*
75. *http://www.willmottdixongroup.co.uk/assets/c/r/cross-laminated-timber-frames-v3-april-2010.pdf*
76. *http://www.waughthistleton.com/projects/MurrayGroveVideo.mov*
77. *http://www.waughthistleton.com/project.php?name=murray&img=1*
78. *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/DieterUNECE2.pdf*
79. *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/Hakkinen_WOOD_LCA_TH_2.pdf*
80. *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/Hakkinen_WOOD_LCA_TH_2.pdf*
81. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*

Table 22: Area of certified forest by region (2009-2012)[82].

	2009	2010	2011	2012	% of forest area which is certified	Industrial roundwood production from certified forests
	M ha					M m^3
Europe	82.2	85.0	85.3	95.4	32.2	224.0
N. America	180.3	199.8	201.0	198.0	56.7	224.7
CIS	25.2	29.9	44.3	47.5	5.7	9.1
Oceania	10.3	11.6	12.3	13.2	6.9	3.8
Africa	5.6	7.3	7.6	7.3	1.1	0.8
L. America	14.6	14.4	16.1	14.7	1.5	2.9
Asia	3.0	8.6	8.1	9.5	1.6	3.2
TOTAL	321.2	356.7	374.9	385.6	9.6	468.5

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.
  - o 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. This amendment targets the prevention of illegal logging. This requires increased due diligence by US businesses that source and sell forest products.
  - o 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[86].
  - o In May 2012, the Due Care Standard for the Lacey Act addressing illegally logged wood was approved in the United States. This Standard provides pathways for meeting the mandate of the Lacey Act using the Forest Stewardship Council (FSC)[87], the Programme for the Endorsement of Forest Certification (PEFC)[88] or an alternative approach developed by the American Hardwood Export Council (AHEC) for their members[89].
- A new EU Timber Regulation (EUTR)[90,91], which entered into force on 2 December 2010 will, as of 3 March 2013, make it illegal to place illegally harvested timber and timber products on the EU market. The legislation will require 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.
  - o 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. Both imported and domestically produced timber and timber products are covered under the legislation[92].
  - o Recycled products, as well as printed papers such as books, magazines and newspapers are not included in the EUTR.
  - o The EU Timber Regulation (EUTR) has a due diligence system[93] that recognises both FSC[94] and PEFC[95] programmes.

82. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
83. *www.fs.fed.us/.../Lacey_Act_amendments_public_summary.doc*
84. *USDA Aphis 2012; www.aphis.usda.gov/plant_health/lacey_act/*
85. *www.bdlaw.com/news-511.html*
86. *http://www.unece.org/fileadmin/DAM/timber/meetings/20121015/UN-ECE_2012_Eastin.pdf*
87. *https://ic.fsc.org/about-us.1.htm*
88. *http://www.pefc.org/*
89. *http://www.unece.org/fileadmin/DAM/timber/publications/FPAMR_2012.pdf*
90. *http://illegal-logging.info/uploads/l29520101112en00230034.pdf*
91. *http://www.euflegt.efi.int/files/attachments/euflegt/summary_eu_timber_regulation_27012012.pdf*
92. *http://www.cpet.org.uk/eutr/timber-and-timber-products*
93. *http://www.cpet.org.uk/eutr/due-diligence-system*
94. *https://ic.fsc.org/*
95. *http://www.pefc.org/*
96. *http://www.unece.org/fileadmin/DAM/timber/publications/dp-57.pdf*
97. *http://www.fao.org/docrep/014/am256e/am256e00.pdf*
98. *http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Annual%202010_Beijing_China%20-%20Peoples%20Republic%20of_7-28-2010.pdf*
99. *http://www.fao.org/news/story/en/item/166938/icode/*
100. *China is not a Member State of the UNECE. However, it is an important producer and consumer of forest products.*

A case study on the Chinese forest products sector[96,97,98,99,100]

China is not a Member State of the UNECE. However it has become a significant powerhouse in the international market for forest products. In 2011, China planted 6.1 million ha of forest, 3.2 million ha by the State and a further 2.9 million ha by private forest owners. This increases China's forest cover to 200 million ha. By 2015, it is estimated that Chinese forests will cover an area of 207 million hectares, an increase of 12 million ha over 2008.

China is also increasing its importance as a producer of forest products. In 2011, it produced 11% of the world's sawnwood, 38% of wood-based panels and 26% of world paper[101]. After the USA, China is the world's second largest producer of sawnwood.

In addition, China is also playing a key role in the international trade in forest products, being the largest importer of industrial roundwood, sawnwood, pulp and wastepaper and the largest exporter of wood-based panels. Despite a huge increase in domestic production, China is the fifth largest importer of paper and paperboard, since 2007. China's imports of forest products for 2011 amounted to $43 billion and now account for 16% of the global trade in forest products.

Almost one-third of China's industrial roundwood consumption for 2011 was satisfied by imports (43 million m^3 in 2011). The Russian Federation accounts for a large share of these imports, although imports from other countries are increasing in importance.

In 2011, China produced 582 million m^2 of wood flooring, a 32% increase over 2010. Solid wood flooring and laminated/engineered flooring production totalled 122 million m^2 and 460 million m^2, up 9% and 40%, respectively over 2010. For 2012, China's wood flooring production is estimated to increase slightly to 600 million m^2 in response to rising domestic demand.

According to the State Forestry Administration, China's wood-based panel output for 2011 (209 million m^3) was a 36% increase over 2010. Products produced included plywood (99 million m^3), fibreboard (56 million m^3), particleboard (26 million m^3) and other panels, mostly blockboard (29 million m^3). Over 60% of total wood-based panel production is used for furniture manufacture, followed by construction (20%), packaging (8%) and flooring (7%).

The growth in the output of the Chinese forest products sector for the period 2008-2011 is shown in Table 23. The growth in the exports of forest products from China over the period 2009-2011 is shown in Table 24.

Table 23: The output of the Chinese forest products sector (2008-2011)[102,103].

Product	Unit	2008	2009	2010	2011	% change (2010/2011)
Roundwood	M m^3	81.08	70.68	80.90	81.46	1
Industrial roundwood	M m^3	73.57	64.76	75.14	74.50	-1
Fuel wood	M m^3	7.51	5.92	5.76	6.96	21
Sawn timber	M m^3	28.41	32.30	37.23	44.60	20
Wood chips	M m^3	10.00	12.86	18.74	22.37	19
Wood-based panels	M m^3	94.10	115.46	153.61	209.19	36
Plywood	M m^3	35.41	44.51	71.40	98.70	38
Fibreboard	M m^3	29.07	34.89	43.54	55.62	28
Particleboard	M m^3	11.42	14.31	12.64	25.59	102
Other	M m^3	18.20	21.76	26.02	29.28	12
Block board	M m^3	13.04	14.79	16.52	20.34	23
Wood flooring	M m^2	376.89	378.00	440.00	582.00	32
Laminate/ engineered flooring	M m^2	115.75	127.16	328.00	122.00	9
Solid wood flooring	M m^2	123.22	81.39	112.00	460.00	40

Table 24: Growth in the export of forest products from China (2009-2011)[104].

Product	Unit	2009	2010	2011	% Growth (2009-2011)
Hardboard	m^3	268,285	302,815	323,920	20.74
Insulating board	m^3	19,365	17,515	12,887	-33.45
MDF	m^3	1,927,851	2,009,947	2,259,716	17.21
Particleboard	m^3	126,483	167,086	206,174	63.01
Plywood	m^3	7,515,495	7,699,170	9,724,170	29.39
Sawnwood (coniferous)	m^3	277,813	270,906	295,359	6.32
Sawnwood (non coniferous)	m^3	551,791	563,020	540,863	-1.98
Veneer sheets	m^3	121,373	163,585	252,520	108.05
Bleached sulphate pulp	Tonnes	34,880	44,163	29,000	-16.86
Bleached sulphite pulp	Tonnes	461	1,149	628	36.23
Case materials	Tonnes	578,140	497,524	572,709	-0.94
Chemical wood pulp	Tonnes	38,246	48,980	30,507	-20.23
Coated papers	Tonnes	1,972,384	1,683,665	1,931,953	-2.05
Dissolving wood pulp	Tonnes	12,531	295	14,632	16.77
Folding boxboard	Tonnes	1,089,470	1,253,720	1,579,243	44.96
Household and sanitary paper	Tonnes	136,908	90,741	98,512	-28.05
Mechanical wood pulp	Tonnes	230	155	592	157.39
Newsprint	Tonnes	211,189	116,139	18,205	-91.38
Other fibre pulp	Tonnes	56,324	73,643	80,878	43.59
Other paper and paperboard	Tonnes	2,058,415	2,219,920	2,673,826	29.90
Other papers packaging	Tonnes	55,684	65,201	61,751	10.90
Paper & paperboard not elsewhere specified (NES)	Tonnes	45,178	67,776	69,268	53.32
Printing & writing paper	Tonnes	2,629,393	2,545,430	2,920,652	11.08
Recovered fibre pulp	Tonnes	418	292	379	-9.33
Recovered paper	Tonnes	1,099,448	1,286,413	1,369,004	24.52
Semi-chemical wood pulp	Tonnes	4	313	3	-25.00
Unbleached sulphate pulp	Tonnes	2,730	1,805	852	-68.79
Unbleached sulphite pulp	Tonnes	175	1,863	27	-84.57
Uncoated mechanical	Tonnes	97,470	104,959	124,089	27.31
Uncoated wood free	Tonnes	559,539	756,806	864,610	54.52
Wood charcoal	Tonnes	47,413	53,635	54,412	14.76
Wrapping papers	Tonnes	153,035	244,958	292,343	91.03

101. *http://www.fao.org/news/story/en/item/166938/icode/*
102. *http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Annual%202010_Beijing_China%20-%20Peoples%20Republic%20of_7-28-2010.pdf*
103. *http://static.globaltrade.net/files/pdf/20120809011616343.pdf*
104. *http://faostat.fao.org/site/626/DesktopDefault.aspx?PageID=626#ancor*