

Annex I: Forest Products Market Statement

Overview of forest products markets in 2020 and 2021

1. Highly pessimistic early predictions about the impacts of the pandemic on forest products' markets have mostly proved wrong. Demand for forest product in 2020 evolved unexpectedly better than anticipated by producers and traders. In combination with supply constraints in the forest-based sector this resulted in record prices for semifinished wood products, particularly in North America. The wide-spread stay-at-home orders meant more time and funds available for home improvement projects owing to the lack of travel or any other entertainment possibilities. Do-it-yourself projects started with the lockdowns when people first started to accommodate home working spaces and over the summer to expand outside terraces, both for personal and restaurant use, and finally to expand living areas to satisfy demand for more space. Forecasts for 2021 and 2022 are positive with high demand for wood products being predicted.

2. In addition, a loosened monetary policy across the region led to increased investments in new constructions. COVID-19 related work-at-home orders appear to have led to a migration away from large urban metropolitan areas. The urban outmigration, low interest rates, a limited inventory of houses for sale, pent-up consumer demand, and remodelling were the primary drivers of increased residential construction and renovation activities and sales, particularly in North America.

3. Overall, the consumption of forest products in the ECE region decreased between 2% and 4% in 2020 compared to 2019 and is at its lowest in the past five years, except for wood-based panels (table 1). The outlook for 2021 and 2022 is very positive, with roundwood, sawnwood, panels, paper and pulp production expected to increase between 1 and 4 % in 2021 with more modest growth expected for 2022 with either nearly steady markets or growth up to 3%.¹

4. Wood products for construction, refurbishment and remodeling started to see record price hikes in the last quarter of 2020 all the way into and beyond the second quarter of 2021. These higher prices likely reflect multiple factors, including not only demand but also supply disruptions and constraints, such as curtailed production, trade restrictions and lack of labour force often directly linked to lock down and sanitary measures to mitigate the spread of the COVID-19 virus.

¹ Regional and country forecasts for 2021-2022 are available at <https://unece.org/forests/coffi-market-forecasts>

Table 1
Apparent consumption of industrial roundwood, sawnwood, wood-based panels and paper and paperboard in ECE region, 2016-2020

	<i>Thousand</i>	2016	2017	2018	2019	2020	<i>Change (volume) 2019-2020</i>	<i>Change (%) 2019-2020</i>	<i>Change (%) 2016-2020</i>
Industrial roundwood									
Europe	m ³	410,172	409,358	440,141	431,209	420,245	-10,964	-2.5	2.5
EECCA	m ³	194,721	198,419	226,336	213,290	211,911	-1,379	-0.6	8.8
North America	m ³	516,384	513,350	534,285	517,736	491,767	-25,969	-5.0	-4.8
ECE region	m ³	1,121,277	1,121,127	1,200,762	1,162,236	1,123,923	-38,312	-3.3	0.2
Sawnwood									
Europe	m ³	107,552	110,809	113,159	110,628	109,523	-1,105	-1.0	1.8
EECCA	m ³	16,689	17,792	16,746	17,933	16,777	-1,156	-6.4	0.5
North America	m ³	117,570	118,392	120,097	117,076	114,726	-2,350	-2.0	-2.4
ECE region	m ³	241,811	246,992	250,001	245,637	241,026	-4,611	-1.9	-0.3
Wood-based panels									
Europe	m ³	71,704	74,210	75,854	74,961	71,528	-3,432	-4.6	-0.2
EECCA	m ³	16,687	18,351	21,204	19,364	18,204	-1,160	-6.0	9.1
North America	m ³	54,270	56,603	54,771	55,249	53,421	-1,827	-3.3	-1.6
ECE region	m ³	142,662	149,165	151,829	149,573	143,154	-6,420	-4.3	0.3
Paper and paperboard									
Europe	m.t.	88,407	89,959	89,555	86,296	82,741	-3,554	-4.1	-6.4
EECCA	m.t.	9,561	9,507	10,007	10,103	9,998	-105	-1.0	4.6
North America	m.t.	75,602	75,037	74,055	71,520	68,587	-2,933	-4.1	-9.3
ECE region	m.t.	173,571	174,503	173,617	167,919	161,326	-6,593	-3.9	-7.1

Notes: data as of July 2021; m³: cubic metres; m.t.: metric tonnes (1,000 kg); Sawnwood does not include sleepers in 2016.

Sources: FAOSTAT, 2021; ECE/FAO, 2021.

A. Economic developments with implications for the forest sector

5. The COVID-19 pandemic resulted in a large contraction in economic activity across the ECE region in 2020, albeit with differences at national levels owing to the diverse economic structures and policy responses. Services suffered the most, because of mobility restrictions and changes in consumer behaviour, while the industrial sector fared comparatively better. Output bounced back strongly in the third quarter of 2020, as constraints were eased and consumers adjusted to remote work. Although new virus outbreaks required the re-introduction of restrictions in some countries, the negative impact was more limited than during the first wave; Economies proved increasingly able to adapt to these limitations.

6. The external environment also improved, as global merchandise trade rose to exceed pre-pandemic levels in late 2020. In the United States, a large fiscal stimulus and the acceleration of the vaccination campaign provided a significant impetus to growth in early 2021. In the European Union (EU), after a sharp output decline, the recovery was more tentative, reflecting the continued disruptions from renewed virus outbreaks. The constraining effect of restrictions hit the European services sectors, in particular tourism and hospitality, which are significant economic sectors in many countries in the region. In the Russian Federation, output decline was limited given the absence of generalized lockdown measures.

7. The overall contraction of economic activity had varying impacts on labour markets. In the United States, unemployment soared while the participation rate plummeted. These trends were reversed in the last quarter of 2020, as the unemployment rate more than halved from its recent peak. However, as of June 2021, the destruction of employment remains

significant. In the EU, labour retention schemes and wage subsidies managed to mitigate to a large extent the effects of the crisis on unemployment. Overall, the pandemic also disrupted cross-border labour flows in all regions. This also resulted in depressed incomes in countries where remittances from migrant labour flows are significant.

8. Housing market price dynamics have been generally positive throughout the region, with a marked acceleration of price growth in the United States in the second half of the year, supported by eased access to finance. In the EU, house price increases were significant in many countries but remained unchanged in others. In the Russian Federation, expansion of housing loans led to increased demand which together with higher costs for construction materials in turn triggered house prices to increase throughout 2020 and 2021.

9. Savings rates increased sharply during the first wave of infection and subsequent lockdowns. The recovery of consumption, which was negatively affected by the reintroduction of restrictions, generally trailed behind investment. Savings rates remained elevated and consumer confidence was below pre-pandemic levels in early 2021. As the pace of vaccination advances and pandemic related constraints are removed, consumer demand is expected to drive the strong output expansion that is anticipated for 2021 in most countries in the region.

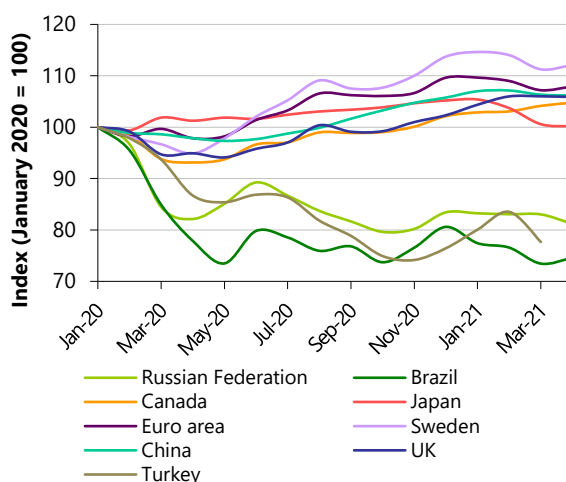
10. Policy support, both fiscal and monetary, has been substantial across the region, albeit with significant differences. In the United States, initial assistance, which included direct payments to families and loans to small business, led to an increasingly expansive fiscal policy stance. New initiatives have boosted household incomes and are expected to significantly increase demand, including through higher infrastructure spending, in the period ahead. In the EU, fiscal support was initially comparatively lower, although spending under the Recovery and Resiliency Facility, which is anticipated to start in late 2021, will provide a substantial fiscal impetus in the coming years.

11. Monetary policy was loosened across the region. The US Federal Reserve cut its target for the federal funds rate by 1.5 percentage points in 2020, bringing the lower bound to zero. Actions included resumed quantitative easing, resulting in rapid growth of its balance sheet. Forward guidance indicated that rates would remain low until inflation is on track to moderately exceed 2 percent for some time. In the Euro area, the European Central Bank launched a new asset purchase programme and reaffirmed its commitment to maintain very favourable financing conditions well beyond the end of the pandemic. By contrast, in some EECCA economies, the monetary policy loosening that marked the initial stages of the crisis has started to be reversed already in the first half of 2021.

12. Consumer price growth slowed down through 2020, leading to temporary deflation in the euro area. However, strong inflationary pressure re-emerged, resulting from a combination of cost pressures driven by higher commodity prices and supply disruptions and increasing demand. In some countries in Eastern Europe, Caucasus and Central Asia (EECCA), the depreciation of national currencies has added to inflationary pressures. Spare capacity suggests that the acceleration of the inflation may be a transitory phenomenon, boosted by base effects and temporary supply bottlenecks. However, while monetary authorities in more advanced countries continue to underline their commitment to expansionary policies, concerns about possible future inflation dynamics have started to be reflected in their financial markets.

13. The US dollar weakened versus the euro through 2020. These movements, which put an end to the trend observed in the last two years, can be explained by narrowing interest rate differentials resulting from the expansive US monetary policy and improved market sentiments regarding Europe's economic performance. The US dollar has weakened since the second quarter of 2020 (graph 1) with increased volatility in 2021.

Graph 1
Major currencies used to trade forest products indexed against the US dollar, January 2020–June 2021



Note: A diminishing index value indicates a weakening of the currency value against the US dollar; an increasing index value indicates a strengthening of the currency value against the US dollar.

Source: International Monetary Fund (IMF Data), 2021.

14. In 2021, the economic outlook has brightened considerably, and rapid recovery and growth can be expected in the region. Forecasts for both 2021 and 2022 are quite positive. The gradual ease of restrictions in all sectors paired with more social interaction and an improving positive outlook is expected to release pent up consumer demand. Fiscal and monetary policies are likely to continue to support for some time the economic activity in most countries in the region. This said, some concerns still remain: the pace of vaccination is still slow in some countries, which limits the generalized elimination of restrictions and facilitates the emergence of new virus mutations. As the economic recovery advances, exiting from ultra-loose fiscal and monetary policies may become challenging, including timing, the ability of some businesses to adapt to new conditions, and the impact on financial markets. While the general outlook for the next years is positive, the pandemic has exposed existing economic fragilities across the region with ensuing recovery expected to be uneven across the region.

B. Policy and regulatory developments affecting the forest products' sector

15. While the timber industry of Eastern Europe, Caucasus and Central Asia (EECCA) sub-region has not been amongst the most affected sectors of the economy, it encountered significant reductions in the production, trade and consumption of wood products. The furniture industry and the production of wood-based panels have been the most affected segments of the forest sector in the region.

16. Based on a defined set of criteria, some countries developed and implemented distinct actions and policies. For example, the Government of the Russian Federation adopted measures to support important enterprises by providing them targeted aid. Under the scheme, 35 timber enterprises and 18 furniture companies were considered eligible for state aid, including: tax and insurance contribution deferrals, state guarantees for loans as well as subsidies for production operations such as:

- Soft loans for working capital financing and saving jobs. The interest rate on these loans is subsidized and does not exceed 5%. About 400 billion rubles (\$5.5 billion) are estimated to have been allocated for this programme;
- A six-month moratorium on bankruptcy;
- 1-year prolongation of the priority projects implementation;

- Deferred or instalment payments for taxes due in 2020;
- Some of the enterprises from the list which are subject to excessive risks can also apply for government guarantees and subsidies to cover business losses;

Authorities of some regions of the Russian Federation provided forestry enterprises involved in the timber industry with an option to defer the payment for forest use. Other significant measures adopted regionally for the timber industry included support to forest tenure holders with forest regeneration and the provision of materials for road rehabilitation. In some regions, the adopted measures included the requirement to use only locally produced wood for construction. As a result the volumes of production and export increased considerably in the first 6 month of 2021. In figures of physical volumes compared to the same period of 2020 plywood and panel exports were +11-27% for different products, pellets +16%, paper and carton +7%, sawn wood +2%. In rubles the volumes of production in the forest sector increased by 44%, export by 38 %. That surplus was much higher than additional revenue caused by the national currency depreciation.

17. The Government of Ukraine adopted a range of financial and economic aid measures to support the citizens and businesses, including businesses in wood processing, which were impacted by COVID-19 in 2020. The Cabinet of Ministers of Ukraine gradually introduced initiatives aimed at supporting small and medium enterprises in April and May of 2020 and modified existing support programs.

18. To respond to the economic and health crises caused by the Covid-19 pandemic, the EU topped up its adopted budget for the years 2021-2027 and adopted a temporary recovery instrument called the “Next Generation EU” in May 2020. This instrument provides 750 billion € of EU funding to protect lives and livelihoods, repair the EU Single Market, and to build a lasting and prosperous recovery. Use of the funds at the national level is earmarked for eligible activities, including *inter alia* affordable public housing and building renovation, often linked to energy efficiency improvements and/or the use of renewable energy sources such as woody biomass. In conjunction with the EU’s Renovation Wave strategy, it is expected that in the coming years, the markets for various forest products used for construction and renovation will develop strongly.

19. The pandemic highlighted the complexity, fragility, and inter-dependence of global value chains, and demonstrated the pivotal role played in the EU by a functional European Single Market with global links. This led the EU to update the objectives of its industrial strategy, which supports the twin goals of green and digital transitions to a low-carbon, net-zero economy by 2030. The strategy aims to build a stronger EU Single Market with reduced supply dependencies, strengthened support for SMEs and start-ups, and efforts to accelerate the twin green and digital transitions.

20. In addition, the EU adopted the new EU Forest Strategy for 2030 with six main objectives:

- Support the socio-economic functions of forests for thriving rural areas and boosting the forest-based bioeconomy within sustainability boundaries;
- Protect, restore, and enlarge the EU’s forests to combat climate change, reverse biodiversity loss, and ensure resilience in multifunctional forest ecosystems;
- Conduct strategic forest monitoring, reporting, and data collection;
- Strengthen the research and innovation strategy to improve our knowledge of forests;
- Build an inclusive and coherent EU forest governance framework;
- Step up the implementation and enforcement of existing EU laws.

21. This strategy aims to help attain the EU’s biodiversity objectives as well as the greenhouse gas emissions reduction targets in its revised Climate Policy, which could influence wood supply in the future. This includes a stepped-up target of 55% reduction in CO₂ emissions by 2030 (from 1990), including increased use of biofuels. The Strategy also highlights an important role of wood products in helping turn the construction sector from a source of greenhouse gas emissions into a carbon sink. This is underlined in many national

programmes, e.g. German “Charter for Wood 2.0”. The Strategy should also contribute to attaining the UN 2030 Sustainable Development Goals, in particular Goal 15.

22. In North America, the Softwood Lumber Agreement between Canada and the US expired on 12 October 2015. In place since 2006, this agreement had addressed tariffs on lumber traded between the two countries as part of a decades-long trade dispute. At the time of this writing, the US Department of Commerce is in the process of making its final determination for the second administrative review regarding specific countervailing and antidumping duties for various Canadian Companies, with release expected in late November 2021..

23. On 1 July 2020, the United States–Mexico–Canada Agreement came into effect and replaced the North American Free Trade Agreement, which expired on 30 June 2020. Discussions about the softwood trade disputes also continue under Chapter 10 of this new United States–Mexico–Canada Agreement.

24. The US Department of Agriculture’s Animal and Plant Health Inspection Service announced the implementation of phase 6 of the Lacey Act enforcement schedule, scheduled to go into effect on 1 October 2020. The Animal and Plant Health Inspection Service ensures compliance with the declaration requirement, and products needing declarations have been phased in since enforcement began in 2009. The additional products proposed to be covered by the phase-6 enforcement schedule included certain essential oils (e.g. cedarwood and sandalwood), wood cases and trunks, oriented strandboard, boxes, crates, pallets and musical instruments (e.g. clarinets and drums). In August 2020, the US Department of Agriculture announced a decision to delay implementation of phase 6 of the Lacey Act enforcement schedule due to impacts of the COVID-19 pandemic.

C. Forest certification

25. The area of certified forests worldwide increased by 0.8% (3.5 million ha) between mid-2019 and mid-2020, to 435.5 million ha, a new all-time high. The two major schemes, the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification, reported a combined total of 530 million ha of certified forest, as of mid-2020. However, after accounting for double-certification (i.e. forest areas certified by both certification bodies), this dropped to 435.5 million ha. Certified area continues to expand, for example Montenegro will introduce FSC certification in the next two years.

III. Summary of regional and subregional markets for key forest products

A. Wood raw materials

26. The total timber harvest in the ECE region fell by 3.4% in 2020 to 1.40 billion m³, split between industrial roundwood (82%) and wood fuel (18%). The most significant decline from 2019 occurred in North America, while the change in the EECCA subregion was minimal.

27. The consumption of industrial roundwood in 2020 declined for the second consecutive year to 1.12 billion m³. Non-coniferous industrial roundwood consumption decreased by 10% y-o-y to 229 million m³, the lowest level since 2009. The reduction in the usage of coniferous industrial roundwood was more modest, down only 1.3% to 895 million m³.

28. The ECE region is a major exporter of industrial roundwood. In 2020, the region accounted for 78% of globally traded coniferous industrial roundwood and 58% of non-coniferous industrial roundwood. Damaged timber losses have been enormous – in Germany alone from 2018-2020 the damage due to drought and bark beetle infestation accounted for 177 million m³ and continues at a high level of 42.7 million m³ in 2021. Total exports reached 93 million m³ in 2020, the highest level in 13 years. The trends over the past five years have been upward in the European subregion (+53%), while downward in the EECCA (-33%) and

North American subregions (-34%). The largest industrial roundwood exporters in the ECE region were the Czech Republic, the Russian Federation, Germany, the US, Poland, and Norway (in descending order). The temporary supply of coniferous industrial roundwood from Central Europe is expected to decline, due to decreasing availability of salvaged wood.

29. European harvests of industrial roundwood fell by 2% y-o-y in 2020 to 426 million m³. The decline followed eight years of consecutive increases. The most significant decreases occurred in Finland, Poland, Austria, and Slovakia, predominantly because of increased log imports from neighbouring countries with ample supplies of insect-and-storm-damaged timber. Czech Republic became the world's second-largest exporter of industrial roundwood in 2020, exporting 15.5 million m³ of coniferous industrial roundwood. The US rose to fifth position. Germany and the Czech Republic plan to reduce harvesting of coniferous industrial roundwood by 15% in 2020-2022 (Germany) and by 27% in 2020-2022 (Czech Republic) due to large amounts of damaged timber harvested in earlier years. Poland harvested 13% less wood in 2020 than in 2018. Over the past ten years, Turkey doubled its annual domestic production of industrial roundwood, reaching 25 million m³ in 2020.

30. Total industrial roundwood exports from the Russian Federation increased slightly in 2020, following a downward trend for over ten years. However, only coniferous industrial roundwood exports declined in the past decade. Non-coniferous industrial roundwood shipments have steadily increased, reaching 8.1 million m³ in 2020, up by 80% from 2010. The most significant increases have been for non-coniferous sawlogs to China and pulplogs to pulpmills in Finland. It is expected that exports coniferous logs will fall significantly, should the Russian Federation implement the announced log export ban.

31. Strong sawnwood markets in Europe and North America moved sawlog prices upward in 2020 and early 2021, with the most significant increases in Eastern and Central Europe, Western Canada, and the U.S.

32. Removals of industrial roundwood in the US amounted to 370 million m³ in 2020, the lowest level in six years, while Canadian removals were 130 million m³, an 11-year low. The decline in timber harvests was predominantly driven by the COVID pandemic, which resulted in labour shortages throughout the entire supply chain.

33. China, the world's largest importer of logs, has relied on the Russian Federation for a significant volume of wood raw material for its forest industry for a long time. However, this might possibly change in 2022 if the Russian Federation really implements a currently proposed ban on log exports, particularly softwood species. The ban is likely to have a far-reaching impact on the global trade flow of industrial roundwood and sawnwood, with China sourcing more sawlogs from Oceania, Europe, and the US.

34. Data supplied by ECE member States (all figures are year-on-year) indicate that removals of industrial roundwood will increase in the ECE region by 1.4% in 2021 and decrease by 0.5% in 2022. Subregionally, the forecast is for European removals to increase by 1.6% in 2021 and to decrease by 0.7% in 2022; EECCA removals to increase by 1.6% in 2021 and shrink by 3.1% in 2022; and North American removals to increase by 1.2% in 2021 and by 0.6% in 2022.

B. Sawnwood

35. The three ECE subregions recorded mixed results in the consumption of sawn softwood in 2020 due to the global pandemic: modest declines were recorded in Europe (-0.4%) and Eastern Europe, the Caucasus and Central Asia (EECCA) (-5.1%) and were offset by a gain in North America (+3.5%). Overall, the consumption of sawn softwood increased by 1% reaching 210.7 million m³. The production of sawn softwood was also mixed: Europe recorded a gain (+1.6%); North America increased by 0.8%; while it contracted in the EECCA (-5.0%).

36. In Europe, lower demand and higher production meant sawn softwood exports increased in volume (+3.9%) as surplus supplies of low-cost spruce-bark beetle timber allowed Central Europe as well as Scandinavia to further expand output and exports. The volume of European sawn softwood exports increased to 58.9 million m³ in 2020, and

average export prices per m³ increased slightly by 0.8%. Sawnwood capacities are being increased for the near-term future.

37. The EECCA subregion produced 47.3 million m³ of sawn softwood in 2020 (-5.0% over 2019). EECCA sawn softwood exports declined to 36.8 million m³ in 2020 (-4.4%).

38. North American sawn softwood output was 101.6 million m³ in 2020 (0.8% over 2019). Exports dropped significantly (-5.2%) to 28.2 million m³, with the U.S. recording a drop of 15.2% (-350,000 m³) while Canada was lower by 4.3% (-1.2 million m³). North America imports increased to 26.3 million m³ (4.3%). The sawn softwood production capacities in the United States have been increasing by about 2 million m³ in the past few years. This is expected to continue at a slightly lower pace in the coming years. Demand is expected to outpace capacity increases, creating scope for further exports to the United States. Prices are declining from their peaks but are expected to stabilize at a higher level than in the past.

39. Sawn hardwood consumption and production in the ECE region was severely affected by the global pandemic in 2020.

40. The ECE region is a net exporter of sawn hardwood, with only the European subregion exporting less than they import. In 2020, the apparent consumption went down by 4.8% in Europe, 17.0% in the EECCA and 27.7% in North America.

41. European hardwood lumber production fell by 2.9% in 2020, to 13.5 million m³, with consumption declining to 13.6 million m³. In the EECCA, sawn hardwood production decreased by 15.9%, to 3.6 million m³, and consumption to 1.7 million m³. North American sawn hardwood consumption decreased in 2020 to 15.0 million m³, and production fell to 17.7 million m³ (-24.7%).

42. China continued to dominate imports of temperate and tropical sawnwood in 2020, with a total volume of 33.9 million m³ (valued at \$7.6 billion). ECE region countries dominated global exports of sawnwood, led by Canada and the Russian Federation.

43. Data supplied by ECE member States (all figures are year-on-year) indicate that the production of sawnwood will increase in the ECE region by 4.2% in 2021 and by 2.3% in 2022. Subregionally, the forecast is for Europe to increase by 4.6% in 2021 and by 1.1% in 2022; the EECCA to increase by 3.0% in 2021 and by 5.1% in 2022; and North America to grow by 4.2% in 2021 and by 2.5% in 2022.

C. Wood-based panels²

44. The wood-based panels sector continued to decline in all three sub-regions in 2020. Panel production decreased by 3.3% overall and apparent consumption was down by 4.3%, mainly due to the impact of the COVID-19 pandemic on the region's economies. The consumption of structural panels declined by 2.2%, while the consumption of non-structural panels fell by 5.6%.

45. Total wood-based panel production in Europe registered a better performance than real GDP in 2020, driven by a relatively stable construction sector and a strong recovery in furniture production in the second half of the year. Higher output of oriented strandboard (+3.5%) partly offset drops in the production of other panel types. The outlook for 2021 is upbeat, with a growth of 5.8% forecast in Europe for wood-based panels production, given political support for increasing the use of wood in construction embodied in initiatives such as the EU Green Deal, the EU Renovation Wave and the New Bauhaus of the European Union. Poland has particularly strong growth prospects for 2022 production with plywood 10% over 2020, OSB 18% and fibreboard 6%.

46. The apparent consumption of wood-based panels decreased by 6.1% in EECCA in 2020, to 19.2 million m³. Production decreased by 3.1% in 2020, to 23.5 million m³. Significant increases in production are foreseen for 2021 and 2022.

² Veneer is not included under panels and is not mentioned here.

47. In North America, the apparent consumption of wood-based panels declined by 3.3% in 2020, despite a recovery in housing starts and the remodelling activities in the US. Production capacity increased slightly (by 0.3%) in the North American structural panel industry in 2020, although capacity utilization decreased from 75.3% in 2019 to 74.5% in 2020. Pandemic-related impacts on supply chains, coupled with a strong demand, caused the prices for structural panels to soar to record levels.

48. Imports of tropical plywood by Japan, the world's largest importer, contracted in volume by 29% in 2020, while the share of domestic plywood increased to 67% of total plywood consumption. In contrast to other major exporters (China, Indonesia and Malaysia), the volume of Viet Nam's tropical plywood exports rose significantly (by 32%) in 2020, in response to growth in demand in the US, the major market.

49. Data supplied by ECE member States (all figures are year-on-year) indicate that the production of wood-based panels in the ECE region will increase by 3.7% in 2021 and by 2.9% in 2022. Subregionally, the forecast is for production to grow in Europe by 3.0% in 2021 and by 1.8% in 2022; expand in the EECCA by 12% in 2021 and by 7.2% in 2022; and increase in North America by 3.0% in 2021 and by 1.3% in 2022.

D. Paper, paperboard and woodpulp

50. The global pulp, paper and paperboard industry experienced general weakness in 2020 owing to fallouts from the COVID-19 pandemic. The production of graphic paper declined significantly in 2020 because of papermill closures and reduced consumption, as the result of increased electronic communication. In contrast, growth continued in the consumption of sanitary and household papers, certain paperboard products and specialty papers, and pulps, including fluff and dissolving pulp.

51. Owing to decreased demand, prices for printing and writing papers and newsprint remained weak in the EECCA sub region in 2020. Prices were relatively stable for paperboard and tissue but increased marginally for market pulp due to closures and very low levels of incremental capacity. A significant rebound in market-pulp prices began in early 2021, aided by stronger demand out of China. It flattened out later in the year.

52. The production of graphic papers declined by 16.3% in Europe in 2020 and by 24.0% in North America but rose by 4.0% in the EECCA. Apparent consumption also fell in Europe (by 2.7%) and North America (by 25.6%) but increased in the EECCA (by 14.8%), in part due to closures of paper mills in Western Europe.

53. The production of packaging materials rose throughout the ECE region in 2020: it increased in Europe by 1.2%, in the EECCA by 4.1% and in North America by 0.6%. The apparent consumption of packaging material fell in Europe by 0.7% and in the EECCA by 5.4%, but it increased in North America by 0.3%.

54. Export and import unit values fell for all graphic grades throughout the ECE region in 2020. Prices for market pulp, graphic and specialty papers and packaging materials rose because of a stronger demand in 2021 when economies re-opened again after the downturn in global activity caused by the pandemic.

55. The COVID-19 measures also had a significant impact on the flow of recovered paper and paperboard throughout the ECE region in 2020. The collection of recovered paper was impeded in many countries owing to health measures or lack of manpower linked to the pandemic. The flows of paper changed as well from office building to private households and communal collection centers. The collection of wastepaper was temporarily suspended, and its cross-border transportation temporarily disrupted.

56. Countries in the ECE generally depend heavily on exporting recovered paper and paperboard to China. During the pandemic, however, China imported only 6.9 million tonnes of recovered paper in 2020, a drop of 33.5% (3.5 million tonnes) compared with 2019. China implemented a complete import ban on recovered paper from any country across all grades in January 2021. This has significant impacts on global flows of recovered paper. On the

other hand, China imported 2.5 million tonnes of recycled pulp (replacing recovered paper) in 2020, three times as much as in 2019.

57. Data supplied by ECE member States (all amounts are year-on-year) indicate that the production of paper and paperboard will increase by 3.8% in the ECE region in 2021 and 1.3% in 2022. Subregionally, the forecast is that paper and paperboard production will increase in Europe by 3.9% in 2021 and by 0.3% in 2022; increase in the EECCA by 7.0% in 2021 and by 5.0% in 2022; and increase in North America by 3.4% in 2021 and 1.8% in 2022. Woodpulp production is forecast to increase by 1.1% in 2021 and decline by 0.3% in 2022 in the ECE region. Subregionally, woodpulp production is forecast to grow in Europe by 2.7% in 2021 and expand slightly by 0.1% in 2022; increase in EECCA by 1.0% in 2021 and 2.0 % in 2022; and in North America increase by 0.2% in 2021 and decline by 0.7% in 2022.

E. Wood energy

58. Wood energy plays a significant role in the renewable-energy portfolios across the ECE region. For example, 50% of households in Slovenia use wood fuels for heating. According to official reports, woodfuel production and consumption decreased slightly (by about 14.1 million m³) in the region in 2020, to 246 million m³. Many member States in the European subregion adopted additional policies that favor the use of wood for heat and power generation in 2021.

59. Much of the recent new demand for wood energy in the ECE region has been triggered by commercial electricity production; future growth might focus on industrial and residential heating and combined heat and power.

60. The consumption of wood pellets is increasing steadily, both for industrial applications (electricity and heat production) and in the residential sector for heating. The ECE region is the global centre for the production and consumption of wood pellets, accounting for 80% of world production and 90% of global exports.

61. A total of 39.4 million tonnes of wood pellets was produced in the ECE region in 2020, an increase of 4.2% over 2019. Amongst the subregions, Europe was the largest consumer and leading exporter in 2020. Wood-pellet production in the Russian Federation grew by 6.5%, year-on-year.

62. Worldwide production of ENplus-certified pellets exceeded 12 million tonnes in 2020 and is expected to surpass 14 million tonnes in 2021. Germany produced the largest volume of certified wood pellets in 2020 in the world, at more than 3 million tonnes.

63. Policies promoting renewable energies and economic recovery in the wake and aftermath of the COVID-19 pandemic could spur additional growth in wood-energy demand and production. The evolution of public policy, including sustainable supply and the efficient conversion of biomass into renewable energy, continues to shape wood-energy systems, as illustrated by recent government actions in the Netherlands, Sweden and the US.

64. Outside the ECE region, Viet Nam has become a major producer of wood pellets. Its exports of 3.1 million tonnes of wood pellets in 2020 made it the world's second-largest wood-pellet exporter, after the US. The Republic of Korea and Japan are now the world's third- and fourth-largest wood pellet importers, respectively, at 3 million and 2 million tonnes in 2020.

65. Data supplied by ECE member States (all figures are year-on-year) indicate that the production of wood pellets in the ECE region will increase by 6.1% in 2021 and by 4.7% in 2022. Subregionally, the forecast is for wood-pellet production to grow in Europe by 4.7% in 2021 and by 4.2% in 2022; to increase in the EECCA by 15% in 2021 and again in 2022; and to increase in North America by 6.1% in 2021 and by 2.7% in 2022.

F. Value-added wood products

66. Value-added wood products are primary wood products that have been further processed into secondary products such as furniture, builders' joinery, and carpentry (BJC), profiled wood, and engineered wood products (EWPs). Demand is linked to drivers such as economic growth, housing and construction, fashion and design, and demographics. Efforts to increase wood use in construction are bearing fruit, for example in Germany the share of wooden single and two-family homes has risen from 6% to 21% in 30 years.

67. BJC comprises a wide array of wood products, including wooden windows and doors; pre-assembled wooden flooring; posts and beams; shakes and shingles; and EWPs, which include I-beams (also called I-joists); finger-jointed sawnwood; glulam (sawnwood glued into beams); laminated veneer lumber (LVL); and mass timber panels, including cross-laminated timber (CLT). Profiled wood is wood shaped by machines, such as mouldings, tongue-and-groove, and lap siding.

68. The furniture sector had a challenging year in 2020, with the pandemic hitting both demand and supply. Worldwide, the consumption of furniture contracted by 10% (\$40 billion) in 2020, to about \$400 billion. Nevertheless, growth in furniture production and trade is expected to resume in 2021, with pre-pandemic import levels expected to be attained in 2022. One segment though declined considerably, the office-furniture. With stay-at-home orders, demand was not only reduced during the pandemic but increased remote work could become a permanent feature also post-pandemic. This might then lead to significant decreases in office furniture demand and office furniture configurations. It can be expected that the impact on office spaces and demand for office furniture will unfold in three phases: the adoption of urgent solutions during the emergency situation; medium-term solutions; and long-term changes in office and public spaces. This will likely lead to a reduction in the total required office space as more people will work remotely at least part of the time.

69. Forecasts in early 2020 were particularly negative for the BJC and profiled-wood segments. Markets for BJC and profiled wood trade are highly concentrated. Imports of profiled wood by the top five importing countries (United States, Germany, France, United Kingdom and Japan) account for more than half of the global trade and markets only weakened significantly in France and Japan.

70. Cross-laminated timber (CLT) production and demand continued to grow. Producers in Austria, Czech Republic, Germany, Italy and Switzerland are reported to have produced slightly more than 1 million m³ of CLT in 2020, an increase of 15% over 2019. The sector in these countries is expected to continue growing in 2021 at a similar or even slightly higher rate. Production in these countries accounts for more than 70% of the produced volume of CLT, and a further expansion of capacities (+650,000 m³) in the five aforementioned countries is expected in 2021 and 2022. In addition to the continued strong role in CLT production in these five countries, large new lines will begin operation in other parts of Europe. Currently, it is reported that capacities of 227,000 m³ in Scandinavia are expected to nearly double to reach 462,000 m³ in 2022. Two CLT plants are also built or are in the testing phase in the Russian Federation, and in Ukraine.

71. A wide variety of products categorized as mass timber products is in production in North America. The current practical capacity of these plants is 910,000 m³, but the majority (slightly over half) of this production continues to be aimed at industrial matting (platforms for equipment to work on in muddy or environmentally sensitive areas). Thus, the practical capacity of mass timber panels for use in buildings in North America is estimated to have reached half a million m³ by the end of 2020. A total of 14 plants were producing mass timber panels in North America, with a further three under construction and three more announced.

72. The availability of data on trade of EWP is expected to significantly improve in 2022 due to the introduction of new trade classifications Glulam (4418.81), CLT (4418.82) and I-beams (4418.83) in the global commodities classification system of the World Customs Organization. A number of efforts to use wood for other value-added purposes are taking place, e.g. textiles from pulp without chemicals and lignin for bio-batteries.