

Market Statement of the Slovak Republic 2022

**to the eightieth session of the ECE Committee on Forests and the Forest Industry
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**Ministry of Agriculture and Rural Development of the Slovak Republic
National Forest Centre – Forest Research Institute Zvolen**

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1. General economic trends affecting the forest and forest industries sector

Basic national and sectoral macro-economic indicators, including the overview of most important forest sector indicators in 2021 are in Table 1-1.

Table 1-1
Trends of selected indicators in forestry and its comparison with Slovak national economy

Indicator	Unit	Year					
		2010	2015	2017	2019	2020	2021
GDP in current prices	billion €	68,49	79,89	84,44	94,05	92,08	97,12
of that: Forest Sector		0,39	0,57	0,62	0,63	0,60	0,72
Increment of GDP	%	5,6	3,3	3,4	2,4	-4,8	3,0
Investment in current prices	mil. €	14 453	18 971	17 896	20 296	18 073	18 571
of that: Forest Sector		41	51	52	61	39	39
Employment	thousand persons	2 170	2 267	2 372	2 450	2 399	2 385
of that: Forest Sector		23,3	21,4	19,6	17,9	16,8	16,8
Average monthly salary	€	769	883	954	1 092	1 133	1 211
of that: Forest Sector		632	868	914	1 084	1 022	1 206
Value-added labour productivity	€	27 543	29 099	32 304	34 305	34 356	36 299
of that: Forest Sector		13 102	19 414	18 986	17 239	13 046	18 936

The Slovak economy continues to recover from the pandemic-induced recession. Although weaker than expected in the spring, real GDP growth is forecast to reach 1.9% in 2022, and 2.7% in 2023. The aftereffects of the Russian military aggression against Ukraine are set to constrain economic growth over the forecast horizon. The recovery of industrial exports slowed down due to the weakening of global demand. A stronger-than-expected increase in consumption in the first quarter of 2022 was partially offset by strong reductions in investment.

Table 1-2
Summer 2022 Economic Forecast (14/07/2022)

Indicator	2020	2021	2022	2023
GDP growth (%)	-4,4	3,0	1,9	2,7
Inflation (%)	2,0	2,8	10,5	8,2

Despite rising consumer prices and elevated uncertainty, private consumption grew by 3.1% in the first quarter of 2022. A newly introduced package supporting families with children, combined with other government measures, should support higher consumer spending in 2023. However, the losses in purchasing power of households are set to keep a lid on private consumption growth.

Slovakia's large export-driven industry sector remains constrained by supply chain disruptions and increasing prices of inputs. In addition, Slovakia's main export markets are expected to grow at a slower pace. Both of these effects are set to reduce the contribution from export of goods to growth. At the same time, recovering consumer demand should lead to higher imports. In 2023, gradually easing supply constraints should support export growth.

Inflation continued to exceed expectations in the second quarter of 2022, driven by higher energy and food prices. Yet another sharp increase in regulated energy prices of natural gas for households is set to drive inflation to 8.2% in 2023, following a 10.5% increase in consumer prices in 2022. Food, service and industrial good price increases are expected to persist also in 2023 but at a slower pace than in 2022. Without alleviating measures for gas prices and an agreement on price freeze for electricity, inflation in 2023 could be significantly higher.

2. Policy measures taken in your country over the past 18 months

In 2021, the new National Forest Programme (NFP) SR 2022-2030 "Forests for Society" was developed and submitted to the approval process. The second thematic part of the new NFP SR 2022-2030 is focused on the issue of "Forests and Wood". It contains the following 4 strategic goals, 7 specific goals and 17 proposed measures to solve the most urgent problems of the forestry and timber sector.

Strategic goal IV: Increase the competitiveness of the forestry and timber sector through more efficient use of wood and the production of products with higher added value based on the principles of circular bioeconomy.

Specific goals:

- To improve the quality structure of supplies of raw wood assortments and to increase its domestic consumption.

The goal is aimed at creating optimal conditions for the effective use of the production and quality potential of domestic wood resources. In particular, investments in the expansion of the hitherto missing capacities for the processing of the most valuable assortments of quality class I and II and hardwood sawmill assortments should contribute to the fulfillment of this goal; consequently, domestic demand for these assortments will increase. Subsequently, it is assumed that the export of the abovementioned assortments will be reduced and their processing into products with a higher added value in the country achieved. This will also contribute to the increase of carbon sequestration in wood products with a longer lifespan, thus supporting the "Fit for 55" package of measures, as well as the strategic document Vision and Strategy for the Development of Slovakia until 2030.

The goal results from the actual structure of the raw wood assortments supply which is considerably unfavourable compared to the available potential. In the average annual supply of raw wood, the actual share of more valuable assortments of quality classes I, II and III was lower for conifers by 11.7% and for hardwoods by 13.9%. The highest quality assortments of classes I and II accounted for only 0.2% of the total supply of raw wood, despite the fact that their domestic annual production potential is approximately 8.7% for hardwoods and 7.5% for softwoods. The limited processing capacities of the wood processing industry (WPI) also lead to an increased export of hardwood saw logs (class III). In the case of the maximum realization of the available potential, the annual monetization of wood supplies could be higher by 77 mill. €.

- To implement technological modernization and increase the added value of forestry

This specific goal is aimed at: a) increasing the added value, efficiency and competitiveness of the wood processing industries; b) reducing the export of assortments of raw wood and wood products with low added value and c) creating innovations with a focus on strengthening the domestic processing and use of wood biomass and the demand for wood and paper products. In order to achieve the goal, it will be necessary to overcome lagging digitization of the sector, ensure its technological modernization, and eliminate the discontinuity and disconnection of technologies. From the point of view of investment policy, special attention will be paid to the support of the development of industries with higher added value, with a negative trade balance and the modernization of technology and technology in sawmill production.

The reason for setting this goal was the high technical-technological debt of domestic enterprises, especially those for mechanical wood processing. Due to their lower production efficiency, they are mostly subcontractors of semi-finished products with a lower degree of finalization for foreign companies. It does not apply to larger and medium-sized multinational companies. In particular, the pulp and paper industry is one of the most powerful sectors of the economy in the SR. Currently, WPI has processing capacities that are sufficient to process the

full volume of softwood harvested in Slovakia. On the other hand, the production of wood products with high added value, namely veneer, laminated material and fiberboard (MDF) for the furniture industry, is absent. There is a negative trade balance in the production of these products with a higher added value: hardwood veneers, fiberboards, OSB boards and in industries dealing with the production of secondary paper products and the processing of waste paper.

- To increase the cascade and circular use of wood.

The goal is aimed at increasing the cascade processing and utilization of wood. This consists in the efficient multiple use of biomass for different purposes before it reaches the end of its life cycle. It is implemented with the preference of the chain: mechanical processing - chemical processing - recycling of products after their useful life - energy use. Wood by-products and waste generated in the production process will primarily be used for further material production. The proposed measures are aimed at increasing the cascade coefficient with the main emphasis on ensuring the highest possible rate of wood reuse in industrial processing chains, as well as on increasing the yield and degree of finalization in the processing of wood raw materials. Supporting the massive use of recycled wood for the production of agglomerated composite materials, paper and biofuels will also contribute to the achievement of the goal.

The cascade coefficient in 2018 reached a value of 1.78. It was calculated as the share of the values of "resources" (11.95 million m³) and "use" (6.68 million m³) in a given year. The accuracy of determining its value largely depends on the quality of available data on the flows, consumption and processing of raw wood, which are insufficient in several cases (especially in the case of by-products and waste and their use). In the SR, among the WPI industries, the most important producer of by-products and wood-based waste is the sawmill industry (40% of the volume of processed wood), while its energy use is currently preferred. This does not correspond to the principles of cascade use of wood.

Strategic goal V: To optimize the energy use of wood biomass.

Specific goal:

- To optimize the energy use of fuel wood biomass on forest and non-forest land, recycled wood and residues after wood processing.

The aim is to optimize the technological procedures of production, transport, storage, modification of the energy properties of fuelwood biomass and subsequent energy conversion, including the use of residues after its energy use. The main optimization criteria will be the production costs per unit of energy, the energy efficiency of the evaluated technological procedures and ecological aspects. Fuel wood biomass will primarily be used for heat production and, in suitable conditions (medium and larger energy sources), for the combined production of electricity and heat. Part of the goal is the quantification of the usable potential of fuelwood biomass with a forecast of its development. Replacing part of fossil fuels with renewable energy sources will contribute to the reduction of greenhouse gas emissions, thereby supporting the "Fit for 55" package of measures.

The current state of energy use of wood fuel biomass is characterized by insufficient use of potential possibilities in individual production sectors, as well as significant reserves in energy and economic efficiency. There are also problems in the area of using solid residues (ash) and excessive production of emissions in small combustion facilities. The creation and especially the implementation of a long-term strategy for the use of renewable energy sources and its diversification with non-renewable sources, including harmonized legislation of support mechanisms, is absent. The necessary cooperation of the individual departments involved is missing, which is often replaced by a campaign-like approach.

Strategic goal VI: To build a comprehensive information system providing data on the market for wood and wood products.

Specific goals:

- To improve the statistical detection of information on raw wood and wood products.

The goal is to build a comprehensive information system about "wood", which will be based on data corresponding to the needs of the development of a modern and competitive forestry and timber sector. Data collection and processing will be ensured by adequate use of mathematical and statistical methods.

The collection, processing and provision of some production-economic data in the wood production and processing sectors are currently ensured by several institutions (National Forest Centre, Statistical Office of the Slovak Republic, larger enterprises of wood producers and processors) according to their own mutually incompatible methodologies and procedures. In several cases, such data do not exist at all, or are incomplete and inaccurate. The collection of the respective data is currently ensured by the NFC mainly through reports on wood supplies in forestry and on the production of wood products. The Statistical Office of the Slovak Republic provides annual data on the export and import of assortments of raw wood and wood products, as well as the results of business management (revenues and costs, the result of management before taxation, the average registered number of employees, etc.).

- To improve the availability of data on raw wood

The goal is aimed at improving the processes of creation, processing, use and sharing of information about the overall flows of wood within the entire forestry and timber sector. This mainly concerns information on the volume and qualitative structure of timber production potential, supplies of raw wood assortments, type and volume of production and use of by-products and wood-based waste, etc.

The current availability of official data on raw wood and its material flows is insufficient in the SR. In some cases, such data do not exist at all due to incomplete statistical surveys, especially in the case of small businesses that are not subject to statistical surveys, or due to the non-existence of a comprehensive marketing information system. The last national forecast of timber harvesting in the SR was processed in 2012. This forecast is no longer valid, as it does not reflect the extremely high extent and frequency of damage caused by harmful agents in the last approximately 15 years. They significantly negatively affected the structure of forests and the potential of felling opportunities in the next and following decades. Intensive felling is also carried out in forests outside forest lands (so-called "white plots"), which are under the responsibility of the Ministry of the Environment of the SR. At the same time, there is no record of the volume of wood obtained from these plots, which causes a lack of transparency in the flow of wood in the SR, especially in the volume of wood felling and supply, including its export and energy use.

Strategic goal VII:

To support the use of raw wood as a renewable and sustainable raw material.

Specific goal:

- To support certified timber products and consumer chains.

The goal is to support the production of wood and its use through the certification of forests and consumer chains with voluntary globally recognized instruments. Within them, forest managers, production and trading companies undertake to observe and fulfill the principles of sustainable forest management. The intention is to implement support policies for the purpose of increasing the area of certified forests as well as creating opportunities for a wider and more favourable application of certified wood and products from it.

Currently, according to the PEFC scheme, 1,226.4 thousand ha are certified in the SR and according to the FSC scheme 323.0 thousand ha. Due to the fact that 253.7 thousand ha are covered by double certification (PEFC and FSC), in 2021 the total area of certified forests in the SR was 1,295.6 thousand ha of forests, i.e. j. 66.2% of the total area of forest land.

3. MARKET DRIVERS

a. Trends in production indicators

The area of forests growing on forest lands in Slovakia in 2021 was 1,952.8 thousand ha with forest cover 41.3% (Figure 3a.1). Since 1990, the area of forest crop lands (forest stands) has increased (mainly by changing the kind of land use) by 31.1 thousand ha (by 1.6%), i.e. on average by 1,003 ha per year. In addition to forests on forest lands there is about 288±39 thousand ha of forests on the non-forest land (agricultural, other) that were identified within the National Forest Inventory and Monitoring (NFIM) of the SR 2015-2016. So, forest cover in Slovakia including forests on non-forest land would be about 45.7±0.9%.

The volume of growing stock in forests on forest lands according to the data of Forest Management Plans was 487.3 mill. m³ in 2021. The volume of growing stock has been increasing in the long term – as compared to 2000 and 2010 it has increased by 19.0% and 5.5% respectively in 2020 (Figure 3a.2). The main reason for this increase is the current uneven age composition of forests with over-normal share of forests older than 70 years (age classes 8th and higher). The present increasing trend is caused mainly by the development of growing stock of broadleaved tree species volume of which is still rising. The volume of coniferous growing stock has been decreasing since about 2010 (Figure 3a.2). Volume of growing stock by age classes and tree species is depicted in Figure 3a.3 and development of growing stock by age classes since 1980 is depicted in Figure 3a.4.

Total current increment (TCI), i.e. the volume of wood that grows in the forest in one year was 11.98 million in 2021. m³, respectively 6.22 m³ per 1 ha. Since 2015, TCI has been slightly reducing (Figure 3a.5). In 2021, carbon stock in the forests of the SR in living biomass, necromass and forest soil reached a value of 508.9 million tonnes (1.13 million tonnes more compared to 2020), while the largest amount has been stored in the soil (Figure 3a.6).

b. Harmful agents in forests

Slovak forests has been subjected to an unprecedented intensity and frequency of biotic and abiotic harmful agents during the last years. However, the volume of trees damaged by listed agents in 2021 was the lowest since the last about twenty years (2,81 mil. m³), of which 1.04 million m³ were damaged by abiotic and 1.77 million m³ by biotic agents. The development of the wood volume of trees damaged by abiotic harmful agents is presented in Figure 3b.1 and by biotic in Figure 3b.2.

The largest damage in forests in Slovakia has been in long term caused by bark beetle. It mostly affects coniferous forests, with the volume of damaged trees of 1.6 million m³. Game also belongs among the important damaging agents, youngest forest stands being damaged by browsing, older (pole-young stands and older) by bark stripping. In 2021, the total cost of game damage in forestry was €0.75 million (in 2020 €0.64 million). Fires damaged 159 ha of forest, the lowest area and number of fires since 2000, causing losses €206 thousand.

Current unfavourable development of forest health results mainly from the fact that the necessary measures were not often implemented in a timely and sufficient manner. The reasons included restrictions and ban on forestry operations imposed by various regulations, in particular by the Act No. 543/2002 Coll. on nature and landscape protection, protracted public procurement of salvage operations ignoring bark beetle bionomics, and inconsistency in the timely removal of infested timber from forests and its subsequent haulage (raw timber, wood chip biomass).

c. Limiting conditions of nature conservation

There is 1.25 million ha of forest stands in both national and European networks of protected areas, which represents 64,2 % of forest-stand area in the SR (Figure 3c.1). Restrictions and prohibited activities for each from the 2nd to the 5th levels of protection are in general specified in Act No. 543/2002 Coll. on nature and landscape protection. The first level of protection applies throughout the territory of the SR, unless another generally binding legal regulation provides otherwise. As the level of protection increases, the range of prohibitions and restrictions expands. Forest management is completely excluded only in the 5th degree of protection.

Determining the level of protection applied is increasingly problematic due to the complicated and unclear system of nature protection mainly in the case of overlapping PAs of different categories and networks. The level of protection and its more detailed specification for each protected area is determined by a generally binding legal regulation by which the protected area was declared.

The European network of protected areas (PAs) NATURA 2000 includes two partially overlapping networks of the Special Protection Areas (SPAs), designated under the Birds Directive 2009/147/EC, and the Sites of Community Importance (SCIs), designated under the Habitats Directive 92/43/EEC. At present, there are 41 SPAs in Slovakia encompassing around 836 thousand ha (43%) of forest. In general, the first level of protection applies in SPAs, but the regulation by which they are declared specifies also prohibited activities that correspond to the nature conservation restrictions from the second up to the fifth levels of protection. The parts of the SPAs on which the prohibited activities apply are defined in the care programmes. At present, there are 642 SCIs in Slovakia which cover 497 thousand ha of forest, which is approximately one quarter of the total forest land area in the country. The European Commission assesses the sufficiency of the extension of the SCIs.

The national network of PAs includes national parks, protected landscape areas (so-called large-scale protected areas – LSPAs) and nature reserves, national nature reserves, nature monuments, national nature monuments and protected sites (so-called small-scale protected areas – SSPAs). Both of these types of PAs can be zoned (divided into sections with a different level of protection). In 2021, there were significant year-on-year changes in the national network of the PAs. The process of declaring SCIs as PAs of national network based on Council Directive 92/43/EEC continued. As a result of the mentioned changes the total forest land area in the national network of PAs reached 792 thousand ha. In the future, additional changes are expected in the size of certain PAs due to the zonation of LSPAs. Additional changes might result from the incorporation of existing SCIs into the national network.

Both the national network of PAs and NATURA 2000 network also overlap in places with sites protected under other international agreements on nature conservation, e.g. UNESCO biosphere reserves (MAB) and Ramsar sites. In 2021, the process of declaring the so-called "Primeval Beech Forests of the Carpathian" included among the UNESCO world natural heritage sites finished.

The total areas of NATURA 2000 (an area of mutually overlapping SCIs and SPAs is included only once) in Slovakia is approximately 1,463 thousand ha (of which 951 thousand ha are forest land). The overlap between NATURA 2000 network and a national network of protected areas is around 778 thousand ha. The existing system of three networks PAs (national, European, other international) is very confusing from a forest management point of view. Overlapping areas typically have an overlap of requirements and restrictions resulting from both the Act on Nature and Landscape Protection and European directives. They are often conflicting and redundant, which makes systematic management of forests in these areas considerably complicated.

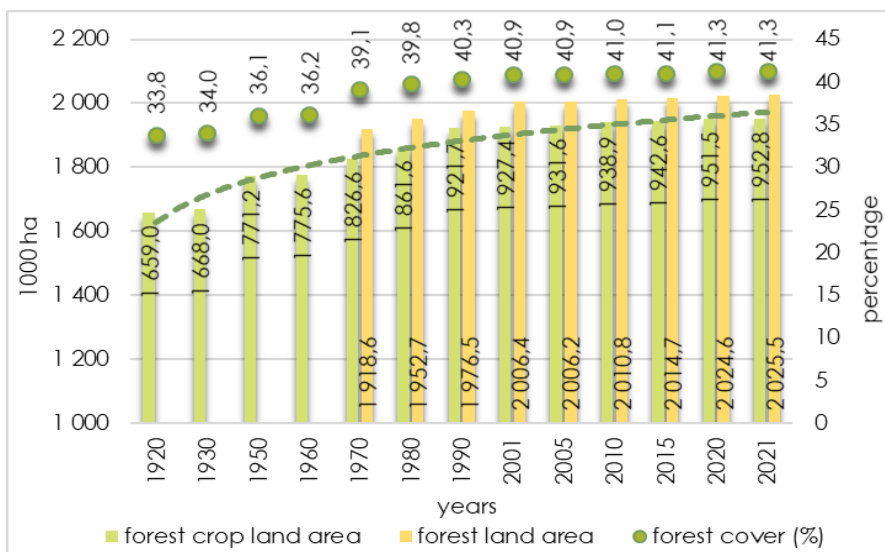


Figure 3a.1
Development of forest area and forest cover

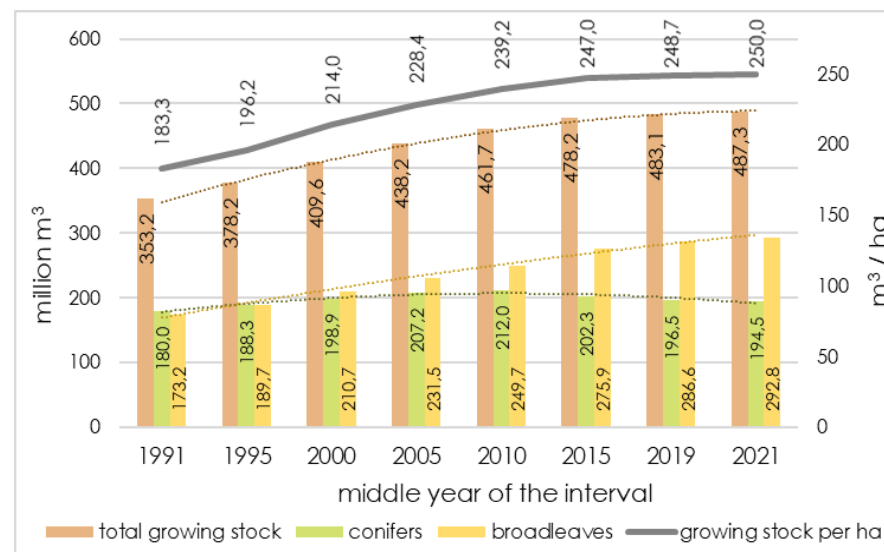


Figure 3a.2
Development of timber growing stock

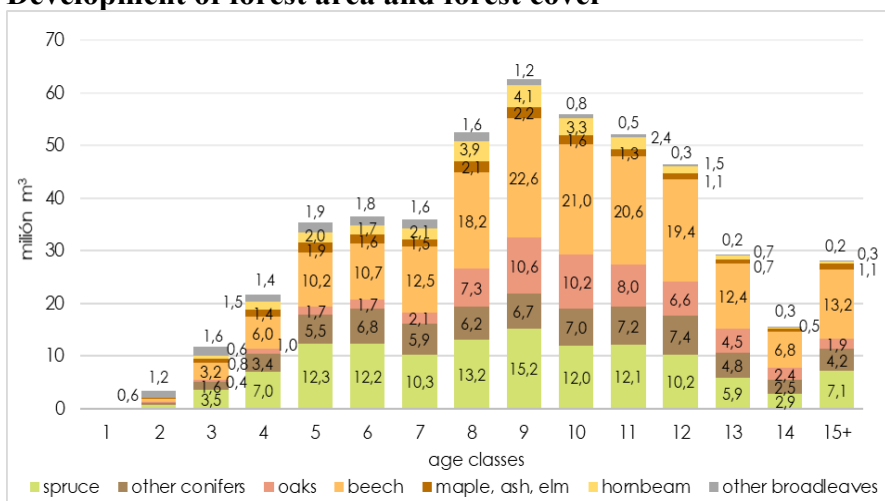


Figure 3a.3
Timber growing stock by age classes and tree species

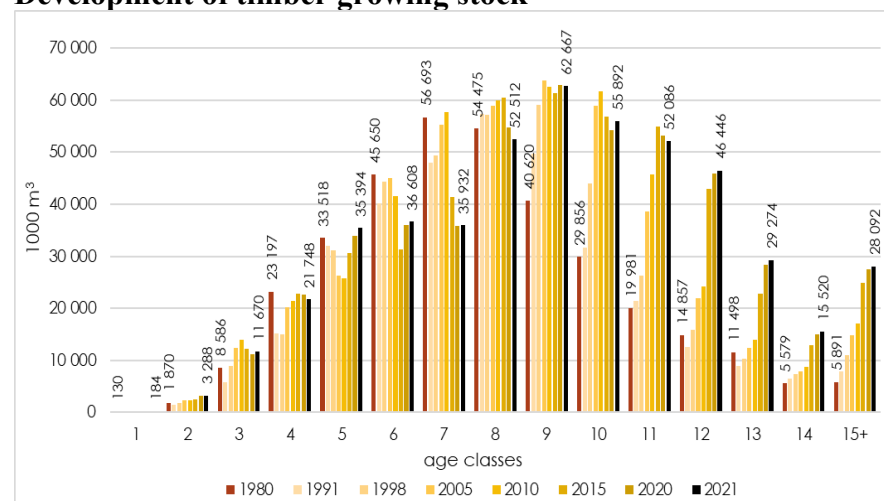


Figure 3a.4
Development of timber growing stock by age classes

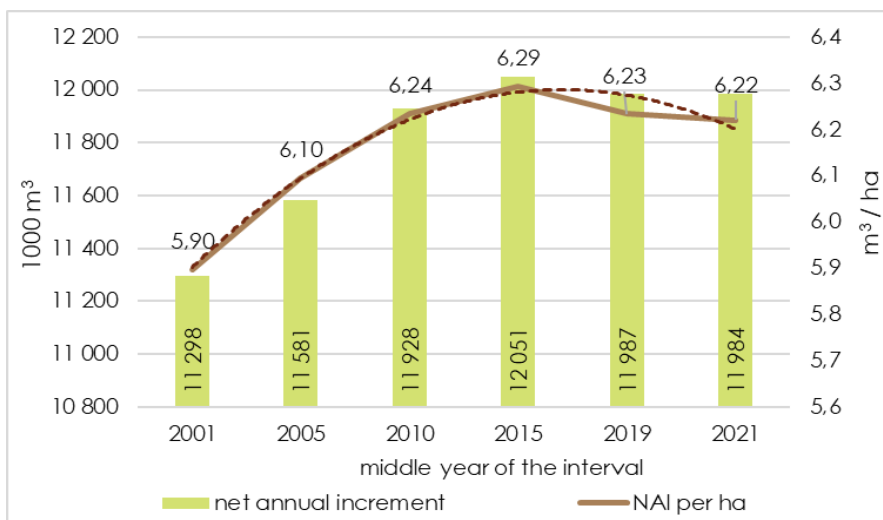


Figure 3a.5
Development of total current increment

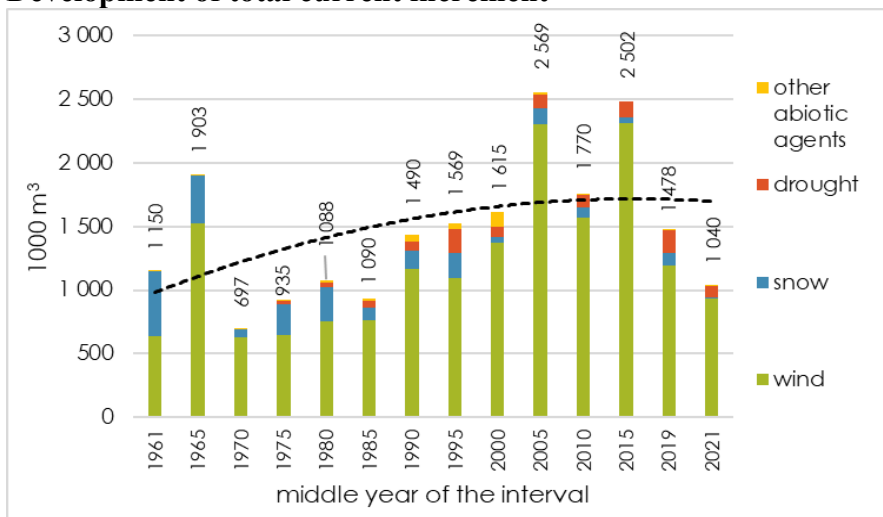


Figure 3b.1
Volume of trees damaged by abiotic agents

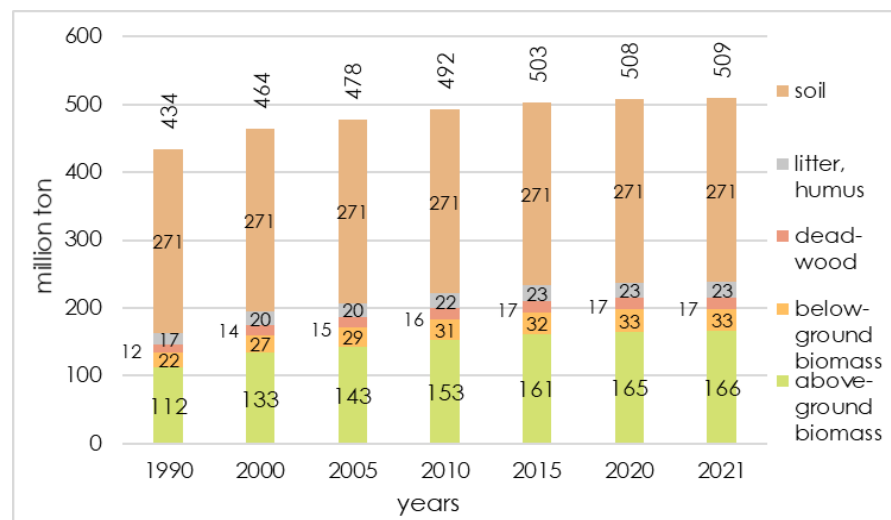


Figure 3a.6
Development of carbon stock in forests

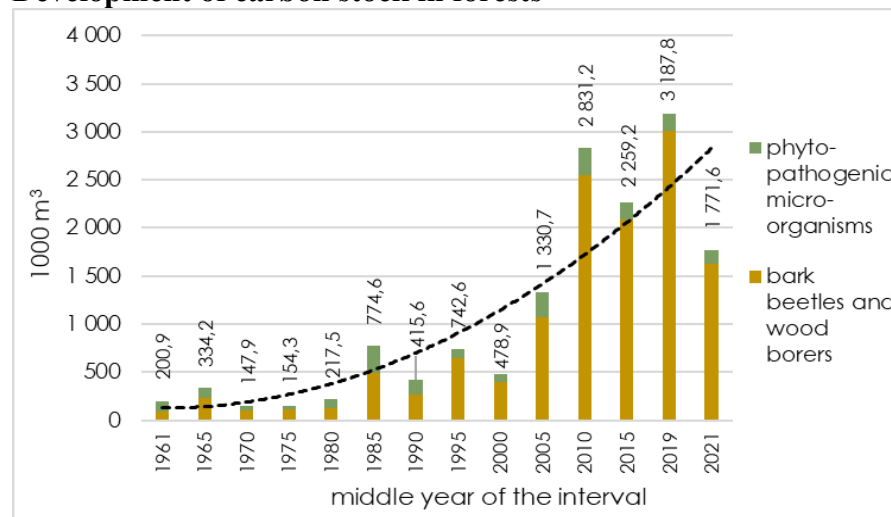


Figure 3b.2
Volume of trees damaged by biotic agents

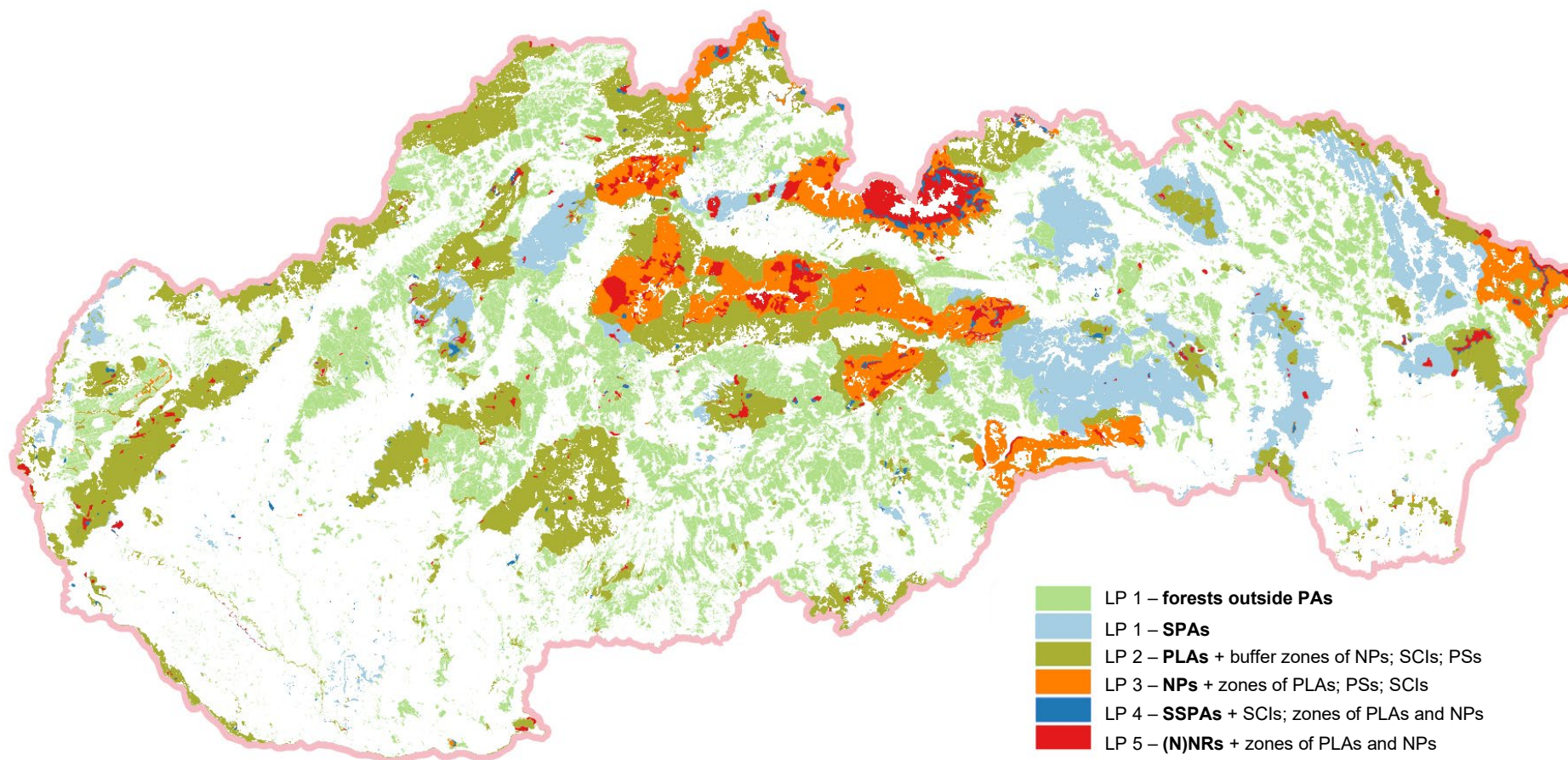


Figure 3c.1

Forests in Slovakia by a level of protection

Notes: LP – Level of Protection; PAs – Protected Areas; SCIs (NATURA 2000) – Sites of Community Importance outside the national network of PAs; SPAs (NATURA 2000) – Special Protection Areas (so called: protected bird areas) outside SCIs and the national network of PAs; PLAs – Protected Landscape Areas; NPs – National Parks; SSPAs – Small-scale Protected Areas which includes: (N)NRs – (National) Nature Reserves, (N)NMs – (National) Nature Monuments, PLEs – Protected Landscape Elements, PSs – Protected Sites.

d. Trends in timber felling

Current age structure of the commercial forests with the high proportion of 70-year-old and older stands and therefore with large volume of accumulated growing stock increases the opportunities of sustainable felling (regeneration) of mature forest stands. In 2021, 7.64 million m³ of timber were felled in the SR, which was about 0.13 million m³ more than last year and at the same time it was the second lowest volume of timber felled since 2005. The actual timber felling was lower by 2.1 million m³ compared to the planned felling, determined on the basis of the current felling possibilities. The reduction in felling was caused by several reasons, among them: the COVID 19 pandemic, restrictions enforced by nature protection authorities, a high increase in softwood prices, as a result of which forest managers achieved the necessary sales and revenues even with a lower volume of timber felling.

From the abovementioned volume of timber felling 2.92 million m³ (38.2%) mainly coniferous trees damaged by harmful agents were felled (Figure 3d.1). This was the lowest proportion of incidental (calamitous) felling since 2002. Realized timber felling was at the level of 63.7% of the net annual increment (NAI), which reached 11.98 million m³ in 2021 (Figure 3d.2). The data show a gradual decrease in timber harvesting and its share of the NAI, which was lower by 24.2% compared to the year 2010 (middle year of the period 2008 – 2012).

The current uneven age structure of forests in the SR causes cyclical changes in the development of basic production indicators, including felling possibilities. It is expected that annual timber felling in all forests in Slovakia could be until 2035 balanced, about 9 million m³. However, species structure will gradually change with the decrease of conifers felling (from 4.4 to 4.1 million m³) and the increase of broadleaves felling (from 4.5 to 4.9 million m³) in 2035 (Figure 3d.3). Annual volume of regeneration felling only in commercial forests (without protection and special purposes forests) calculated according to selected logging indicators of the Decree of the Ministry of the Slovak Republic no. 453/2006 Coll. ranged from 6.0 to 6.6 mil. m³ (with an average value of 6.4 mil. m³). With the average planned annual intermediate felling (1.6 million m³), the actual annual felling opportunities in commercial forests are 8.0 million m³. The remaining 1.0 million m³ is projected for timber felling in protection and special purpose forests.

Yearly exceeding the volume of the annual projected felling of spruce wood was caused by incidental (calamitous) events and it has a negative impact on the current and future felling possibilities of this tree species. Since 2012, timber felling of spruce exceeded projected felling by 11.3 mil. m³, i.e. 1.25 million m³ more on average every year. The highest average annual over felling was in the middle age classes 5 – 9 (41 – 80 years old stands), of which the highest in the 8th age class was approximately 370 thousand m³ followed by the 7th age class with 300 thousand m³. If damage to spruce continues to approximately the same extent as in the previous decade, then there would be a decrease in the supply of spruce wood from the current 115 million m³ to 87 million m³ (by 24%) in 2030 and to 74 million m³ (by 36%) in 2040. In the years 2021-2030, the 10-year felling of spruce wood would be realized in the volume of 42.6 million m³. Subsequently, it would fall to 32.0 million m³ in the years 2031-2040 and finally only to 25.7 million m³ in the years 2041-2050 (Figure 3d.4).

Norway spruce is the most widespread and economically important coniferous tree species in Slovakia. Its logs belong to the most important assortments of forestry in terms of delivered quantity. Spruce wood is versatile in construction, carpentry, furniture, pulp and paper and chemical industries, and energy. Therefore, also from the point of view of ensuring the wood production function and economic viability of forestry and timber sector, maintaining its optimal representation in forests of the SR is highly desirable. For these reasons, it is necessary to adopt and implement effective measures for a principal change of management of the commercial spruce forests, including shortening the rotation periods, reconstruction and gradual rebuilding of their current structure to the forests closer to nature.

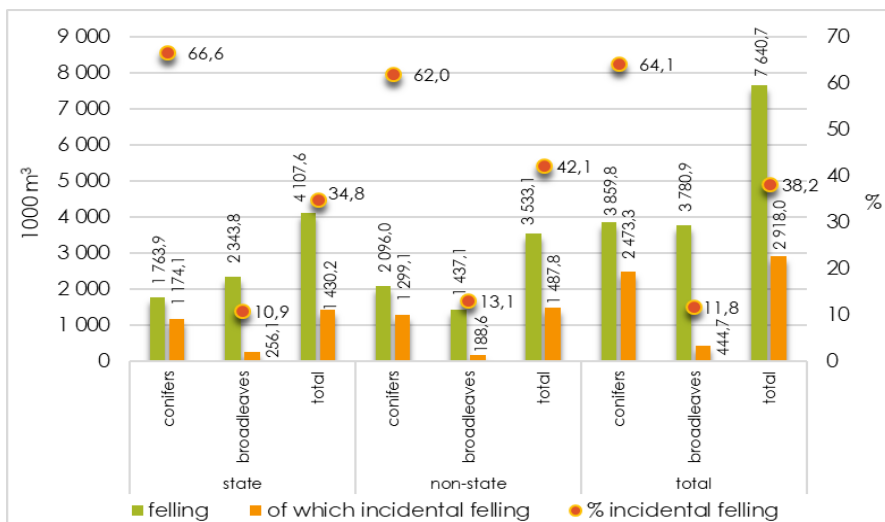


Figure 3d.1
Timber felling and of which incidental felling

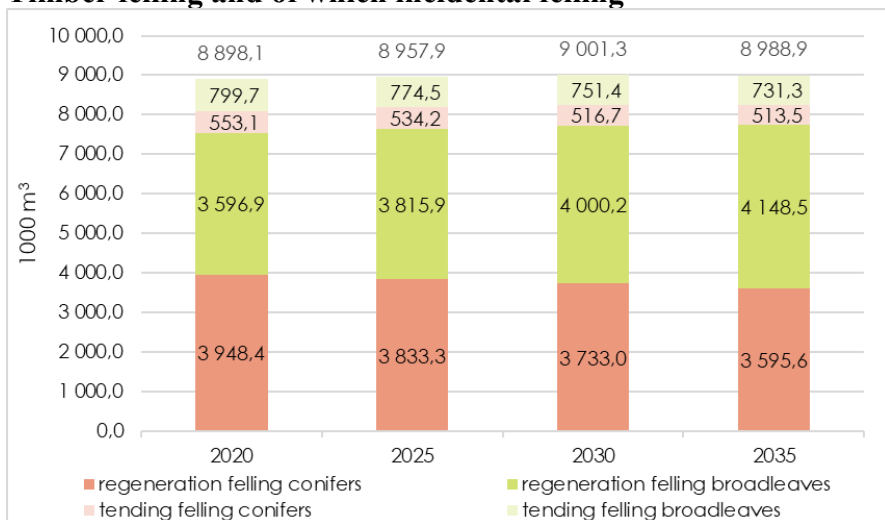


Figure 3d.3
Forecast of the timber felling development

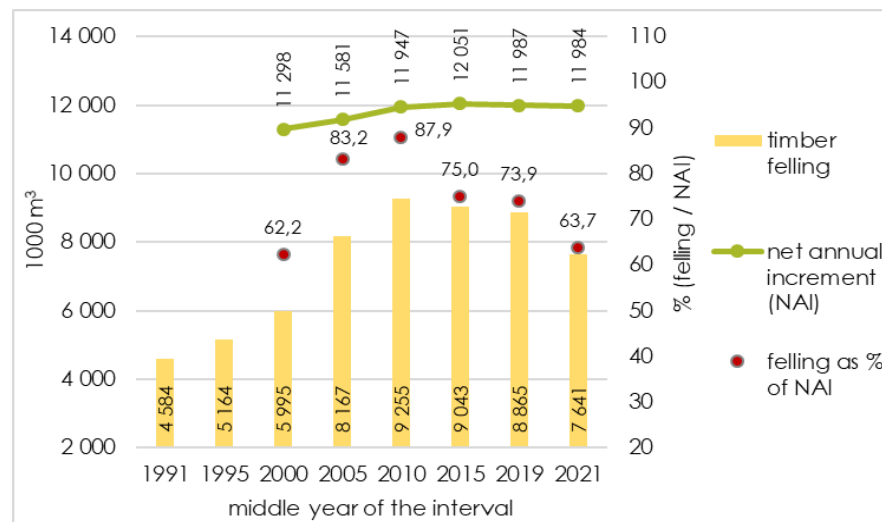


Figure 3d.2
Timber felling and its comparison with net annual increment

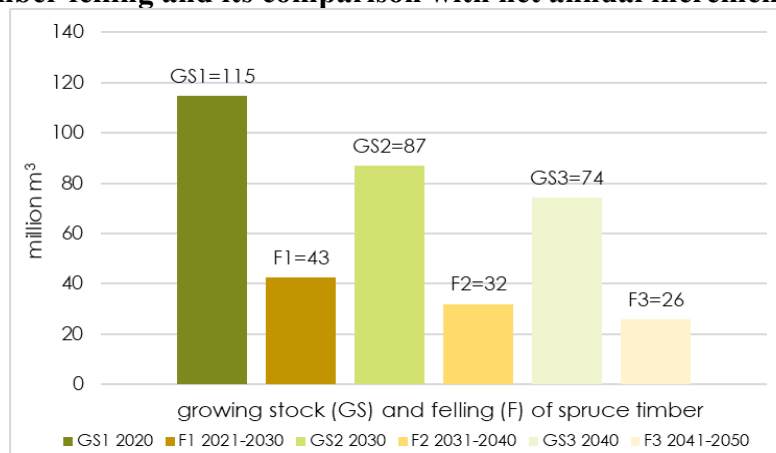


Figure 3d.4 Forecast (till 2050 in 10-year intervals) of the development of growing stock and felling of spruce in the case of continuation of the current extent of incidental (calamitous) felling in forests with predominant representation of spruce

4. DEVELOPMENTS IN FOREST PRODUCTS MARKETS SECTORS

a. Wood raw materials

Supply of raw wood

Wood, as one of the few domestic renewable raw materials, is the most important source of income (about 80%) for maintaining the functions of forests, as well as for ensuring employment and income in the forestry and timber sector.

In 2021, the total supply of raw wood reached a volume of 7,665 thousand m³ (Table 4a.1). Compared to the previous year 2020, the total supply of raw wood increased by 217 thousand m³, that is by 2.8%. In the supply of hardwood, the range of pulpwood predominates with a share of 52.2%. The share of the highest quality grade logs I and II was only 0.6% in 2021. In softwood deliveries predominated grade logs III with a share of 61.7%. The share of grade logs I and II reached up to 1.1% (33 thousand m³), which was the highest since the beginning of monitoring of this indicator. The development of supplies of coniferous and deciduous assortments of raw wood since 2000 is shown in Tables 4a.1 - 4a.3 and in Figure 4a.1.

The values for the indicated middle years in Figure 4a.1 were calculated as an arithmetic average from the data of individual years in the 5-year, respectively, 3-year periods: 2000-2002, 2003-2007, 2008-2012, 2013-2017, 2018-2020. The data for 2021 correspond to the data found in that year.

Table 4a.1**Structure of SOFTWOOD and HARDWOOD assortments supply and total in 2021 (thousand m³)**

Supply	Slovakia	Export	Own consumption	Total
	Thousand m ³			
Softwood	3 789,53	73,86	37,25	3 900,63
Hardwood	3 459,99	277,52	26,61	3 764,12
Total	7 249,52	351,38	63,86	7 664,75

Table 4a.2**Log grade structure of SOFTWOOD raw wood supply in 2021**

Grade	Slovakia	Export	Own consumption	Total	Percentage of grades (%)
	Thousand m ³				
I grade logs	33,42	0	0	33,42	0,86
II grade logs	7,68	0,06	0	7,74	0,20
III grade logs	2 339,87	21,76	28,46	2 390,08	61,27
Paper-pulp & abrasive timber	1,82	0	0	1,82	0,05
Mining timber	5,19	0,46	0	5,65	0,14
Thin poles	18,20	0	0,03	18,23	0,47
Pulpwood	905,98	19,07	3,11	928,15	23,79
Energy wood	33,35	0	1,95	35,31	0,91
Fuelwood	184,50	0	2,83	187,33	4,80
Stumpage	148,67	31,46	0,01	180,14	4,62
Raw trunks	110,84	1,06	0,86	112,77	2,89
Total	3 789,53	73,86	37,25	3 900,63	100,00
Percentage (%)	97,2	1,9	0,9	100	-
State sector					
I and II grade logs	1,83	0,03	0	1,86	0,10
III grade logs	1 230,57	8,00	1,15	1 239,72	64,93
Pulpwood	501,63	6,20	1,67	509,49	26,68
Energy wood and fuelwood	87,90	0	2,98	90,88	4,76
Stumpage	32,01	0	0	32,01	1,68
Raw trunks	12,83	1,06	0,56	14,45	0,76
Other grades	20,55	0,46	0,03	21,04	1,10
Total of state sector	1 887,31	15,75	6,40	1 909,46	100
Percentage (%)	98,9	0,8	0,3	100	
Non-state sector					
I and II grade logs	39,27	0,03	0	39,30	1,97
III grade logs	1 109,30	13,76	27,30	1 150,37	57,77
Pulpwood	404,36	12,86	1,44	418,66	21,03
Energy wood and fuelwood	129,96	0	1,80	131,76	6,62
Stumpage	116,66	31,46	0,01	148,13	7,44
Raw trunks	98,01	0	0,30	98,31	4,94
Other grades	4,66	0	0	4,66	0,23
Total of non-state sector	1 902,21	58,11	30,85	1 991,18	100
Percentage (%)	95,6	2,9	1,5	100	

Table 4a.3
Log grade structure of HARDWOOD raw wood supply in 2021

Grade	Slovakia	Export	Own consumption	Total	Percentage of grades (%)
	Thousand m ³				
I grade logs	4,20	0,91	0,00	5,10	0,14
II grade logs	18,48	2,87	0,00	21,36	0,57
III grade logs	1 335,55	99,85	7,54	1 442,94	38,33
Mining timber	4,73	0,03	0,35	5,11	0,14
Thin poles	2,20	0,00	0,25	2,44	0,06
Pulpwood	1 789,00	170,64	5,08	1 964,72	52,20
Energy wood	46,44	0,00	6,72	53,16	1,41
Fuelwood	215,86	0,97	2,43	219,26	5,82
Stumpage	34,60	2,26	0,00	36,87	0,98
Raw trunks	8,92	0,00	4,24	13,17	0,35
Total	3 459,99	277,52	26,61	3 764,12	100,00
Percentage (%)	91,9	7,4	0,7	100	-
State sector					
I and II grade logs	7,23	2,04	0,00	9,27	0,39
III grade logs	1 042,36	61,93	7,54	1 111,83	46,35
Pulpwood	1 033,91	64,15	4,54	1 102,60	45,96
Energy wood and fuelwood	153,22	0,37	8,76	162,35	6,77
Stumpage	2,64	0,00	0,00	2,64	0,11
Raw trunks	0,00	0,00	4,24	4,24	0,18
Other grades	5,31	0,03	0,60	5,94	0,25
Total of state sector	2 244,66	128,52	25,68	2 398,86	100
Percentage (%)	0,09	0,01	0,00	0,10	-
Non-state sector					
I and II grade logs	15,45	1,74	0,00	17,19	1,26
III grade logs	293,20	37,91	0,00	331,11	24,25
Pulpwood	755,09	106,48	0,54	862,11	63,15
Energy wood and fuelwood	109,08	0,60	0,39	110,07	8,06
Stumpage	31,97	2,27	0,00	34,23	2,51
Raw trunks	8,92	0,00	0,00	8,92	0,65
Other grades	1,62	0,00	0,00	1,62	0,12
Total of non-state sector	1 215,33	149,00	0,93	1 365,26	100
Percentage (%)	89,0	10,9	0,1	100	-

Foreign trade in raw wood assortments

According to the data of foreign trade statistics (customs statistics), it follows that in 2021, 2,063 thousand m³ of raw wood was exported (Figure 4a.3). Forest managers exported only 351.3 thousand m³, 17% of the total export volume and of that 73.8 thousand m³ coniferous and 277.5 thousand m³ hardwood (Table 4a.1). The remaining 83% was exported by various non-forestry entities, mainly trading companies. Wood was exported mainly to EU countries (Austria, Czech Republic, Hungary, Romania, Poland) and China.

In the export, coniferous assortments of grade logs IV and V (35.4%) prevailed and in broadleaved assortments prevailed I - III grade logs (20.5%). Compared to the three-year export average in 2018-2020, the volume of wood exports is maintained at approximately the same level (only 18 thousand m³ more). Compared to the five-year average of 2013-2017, the annual volume of wood exports decreased by 672 thousand. m³ (Figure 4a.3).

In 2021, 2,454 thousand m³ of raw wood were imported into the SR, which was 782 thousand m³, respectively by 46.8% more compared to the three-year average of imports in 2018-2020 (Figure 4a.4). In a year-on-year comparison, imports increased due to the unfavorable situation on the wood market in the SR and the low price of coniferous raw wood assortments abroad due to the high volume of calamity wood on the market, and finally also due to reduction of wood felling in the SR.

The positive trend of increasing the import of wood continues, associated with the increase in the import of more valuable assortments of coniferous and deciduous grade logs I - III, of which a total of 1,611 thousand m³ were imported, respectively 65.6% of the total volume of raw wood imports. In coniferous raw wood, the import of spruce saw logs from the Czech Republic prevailed. Hardwood raw wood was imported mainly from Poland.

Prices of raw wood assortments

In 2021, in a year-on-year comparison, an increase in the average monetization of raw wood assortments was recorded to €57.90/m³, i.e. by €13.22/m³ (29.6%). This was mainly caused by a significant increase in the prices of coniferous assortments and the demand for raw wood and wood products. The average price of coniferous wood increased from €39.61/m³ in 2020 to €63.63/m³ in 2021, i.e. by €24.02/m³ (60.6%).

Domestic consumption of raw wood assortments

The total volume of domestic wood consumption, i.e. of domestic processing of raw wood (supplies + import - export) reached 8,055.7 thousand m³ in 2021 (Figure 4a.6). The increase in domestic consumption occurred despite lower wood felling in 2020 and 2021, mainly due to the continuation of the positive trend of increasing imports of raw wood, which was higher than exports for the first time in 2021. However, the continuation of the trend of reducing the wood felling with a similar production of the wood processing industry will cause a shortage of raw wood and an increase in its average monetization in the coming years.

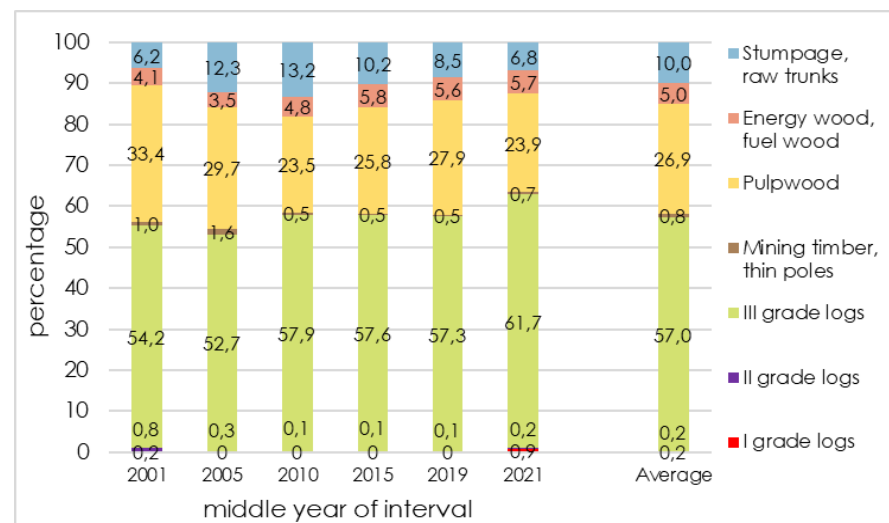
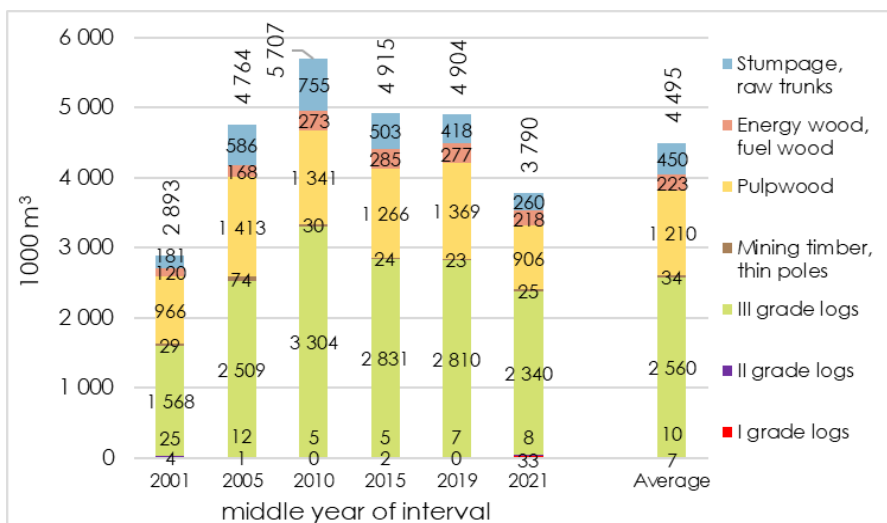


Figure 4a.1
Development of domestic supplies of SOFTWOOD by the grade of assortment without own consumption (1000 m³ and %)

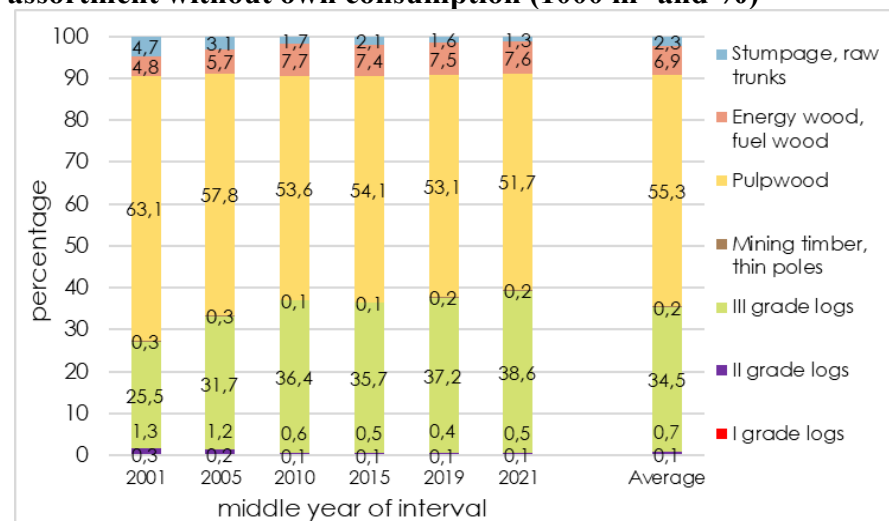
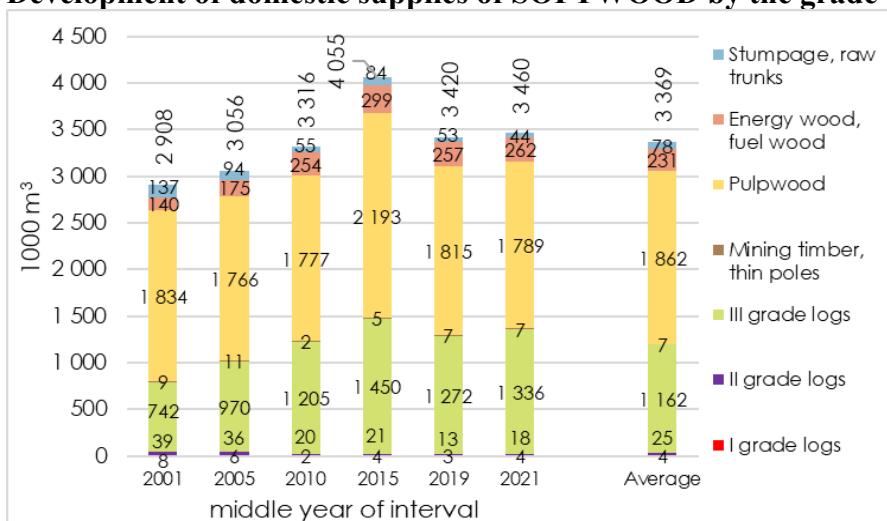


Figure 4a.2
Development of domestic supplies of HARDWOOD by the grade of assortment without own consumption (1000 m³ and %)

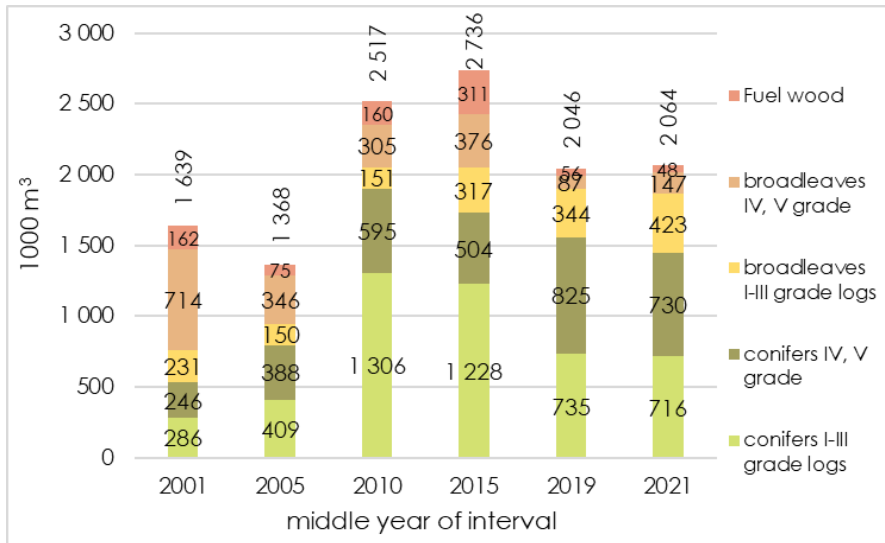


Figure 4a.3
Development of raw wood export

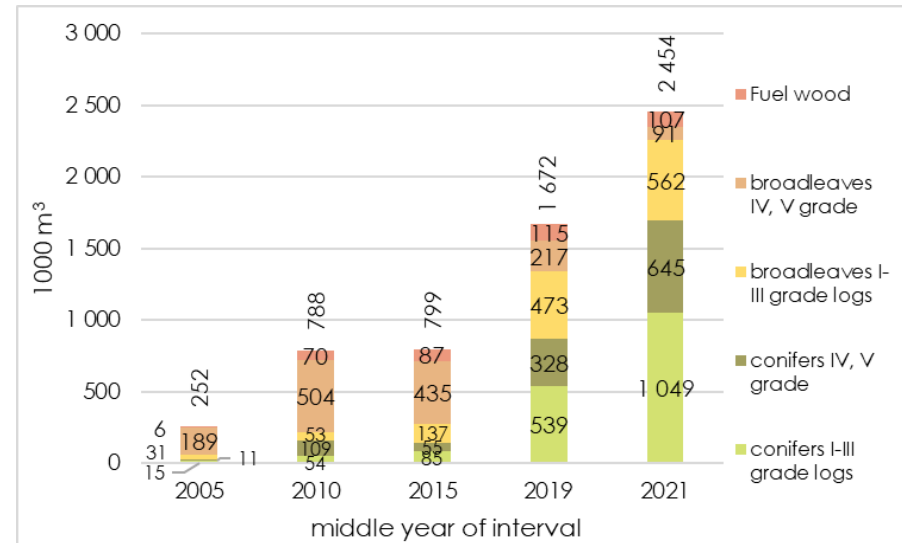


Figure 4a.4
Development of raw wood import

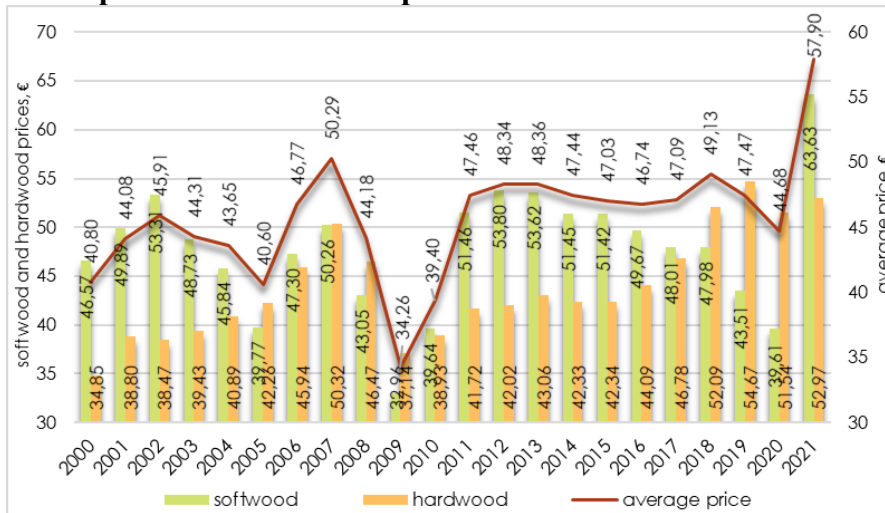


Figure 4a.5
Development of softwood, hardwood and average prices

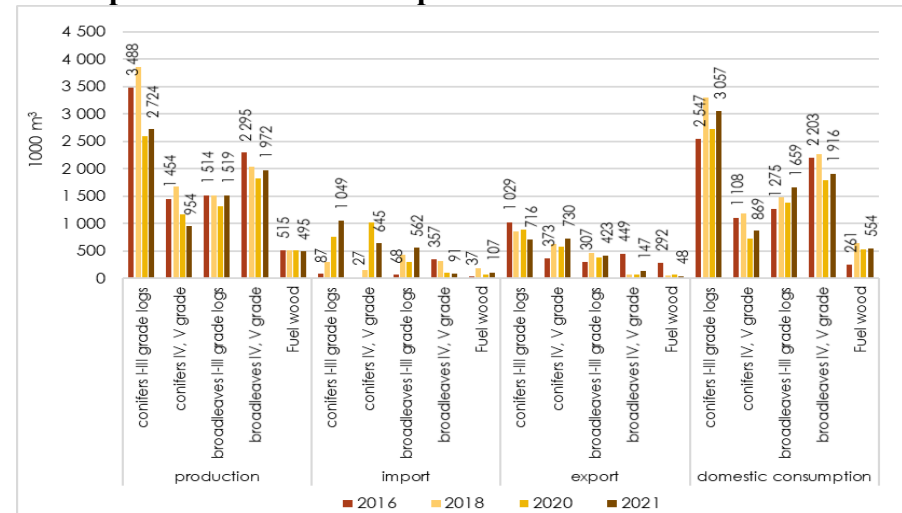


Figure 4a.6
Domestic consumption of raw wood by quality grade

b. Wood processing industry

The total volume of domestic processing of raw wood (supplies + import - export) in 2021 reached 8.055 million. m³, which was 0.898 m³ million compared to last year more (Figure 4a.6). The aforementioned growth was reflected in the improvement of the economic indicators of the WPI industry. Revenues increased by 22.9%, costs by 21.3% and economic result before tax by 69.7% to 185 million. €. However, employment decreased by 0.9% to 29 thousand jobs (Figure .1). It can still be stated that there was no significant growth in the competitiveness of most mechanical wood processing enterprises. Due to the lack of processing capacities, the highest quality assortments (I. and II. grade logs) and broadleaved III grade logs are processed very little, despite their considerable production potential in the forests of the SR. There is still an increased demand for softwood logs and hardwood pulpwood. On the other hand, the pulp and paper industry is one of the most powerful sectors of the Slovak economy.

The actual trade balance of the forest and timber sector reached a surplus of €845.08 million. The trade surplus of €1.25 million in raw timber export and €225.68 million in sawn timber export can be considered negative. On the other hand, the trade surplus in products with high added value, such as in panels (€51.26 million), paper (€259.41 million) and secondary wood products including furniture and carpentry products (€283.16 million) is a positive aspect. The support to the development of industries higher value-added with a negative trade balance, in particular the production of veneers, fibreboard and oriented strand board (OSB), secondary paper products and the processing of waste paper is considered the main priority.

An important environmental aspect of timber production and its use is the fact that timber and wood products, especially those with a long lifespan, are able to sequester CO₂ for decades. Increasing the amount of carbon stored in timber and wood products is an internationally widely recognised measure to mitigate climate change. Therefore, it is important and desirable to use timber and wood for the widest possible range of purposes and for as long as possible in a variety of products. Carbon from wood is released back into the atmosphere only when products become waste or fuel. In 2020, 2.104 million tonnes of CO₂ was stored in timber and wood products. At the same time, 2.072 million tonnes of CO₂ was released into the atmosphere from obsolete timber and wood products no longer in use. The overall balance is thus positive as the volume of CO₂ bound in timber and wood products has increased by 0.032 million tonnes.

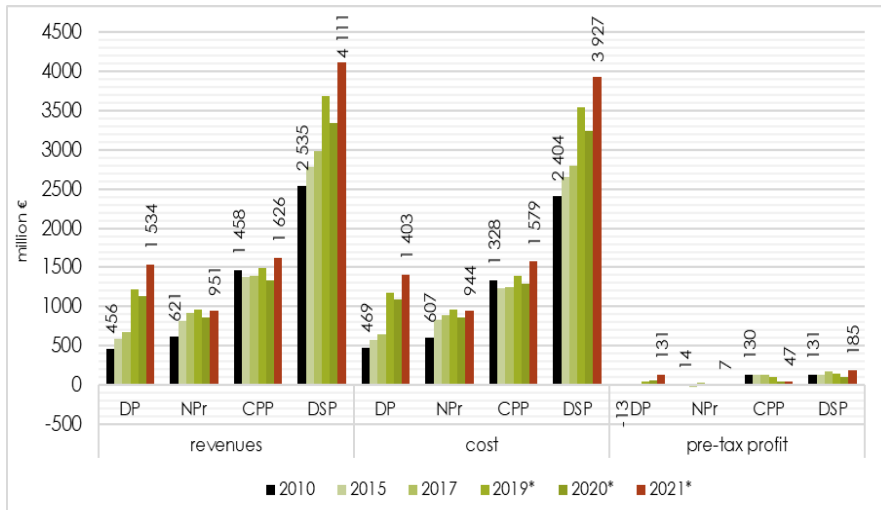
Table 4b.1 Balance of mass of „capture“ and „emissions“ of CO₂ (in 1000 tons) in main categories of harvested wood products in 2020

Balance of CO ₂	Total	Coniferous sawnwood	Non-coniferous sawnwood	Wood-based panels	Paper and paperboards
Captures	-2 103,93	-558,70	-299,60	-710,75	-534,88
Emissions	2 072,05	570,31	327,53	457,42	716,80
Difference	-31,88	11,60	27,93	-253,33	181,92

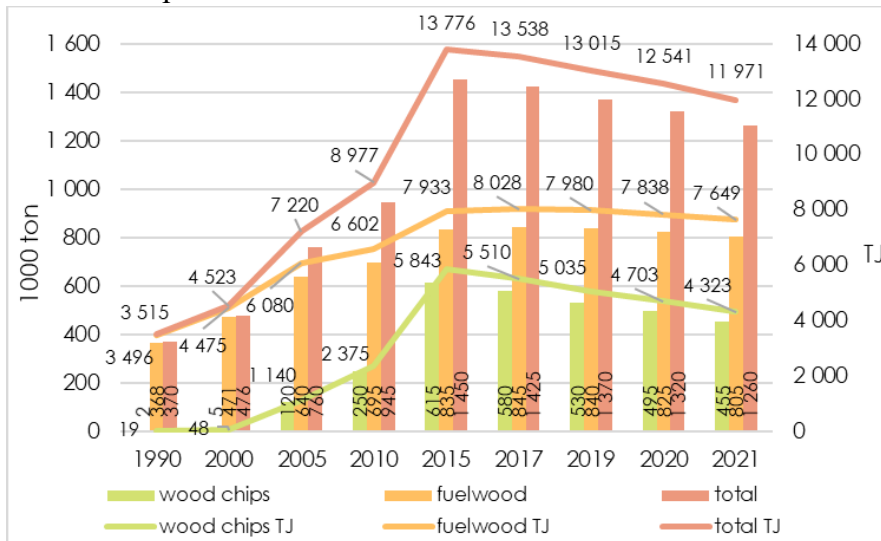
c. Wood energy, with a focus on government policies promoting wood energy

In 2021, the total supply of fuelwood biomass from forestry was 1.26 million tons, and compared to 2020, it decreased by 60 thousand tons. The trend of their reduction continued, which started around 2015, when the volume of supply of fuelwood biomass was the highest (1.45 million tons). Since then, their volume has decreased by 13.1%. Deliveries of forest fuel chips and firewood have decreased since 2015 by 160 thousand ton, or by 30 thousand tons respectively.

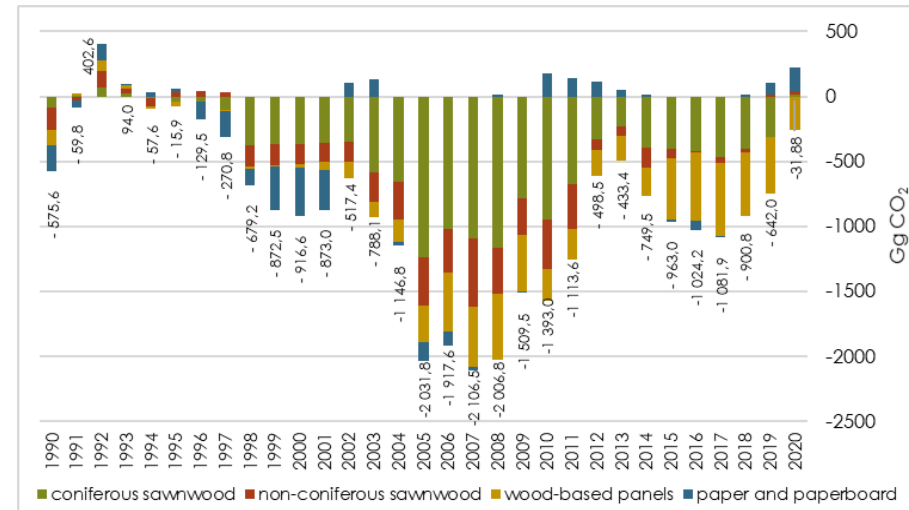
The mentioned decrease in supplies occurred mainly due to the stagnation of domestic consumption and the lower competitiveness of forest chips compared to chips produced in WPI and on non-forest land due to higher production costs, as well as due to the change in the structure of wood fuel consumption in favor of WPI that use their own wood residues.



4b.1 Development of chosen indicators of the WPI



4b.3 Development of woody biomass for energy production



4b.2 Carbon balance in main categories of harvested wood products

The decline in consumption was also influenced by wider contexts related to rationalization measures in heat consumption, stagnation in the construction of new heat sources and global warming. The supply of fuel chips from forestry is provided by private companies that have the technological equipment for their production and transportation or by trading companies. As a result of the decrease in the production and consumption of forest fuel and wood biomass, the economic situation of forest owners and managers worsened, despite the fact that the prices of wood for energy use are slightly increasing.

Currently, approximately 48% of the usable potential of fuelwood biomass on forest land is not being used. This is wood unsuitable for mechanical and chemical processing, the occurrence of which is related to the high extent and frequency of disaster situations and subsequent incidental logging, mainly in coniferous (spruce) stands. This increases the potential of broadleaved wood (because of lower felling of broadleaves), the assortment structure of which includes a higher proportion of fuel dendromass.

This situation is not in accordance with the Integrated National Energy and Climate Plan for 2021-2030, which set the goal of increasing the share of renewable energy sources (RES) to 19.2% in 2030 compared to 16.9% in 2019.

d. Certified forest products

In 2021, 1,295 thousand ha of forest, or 66.2% of the total forest land area has been certified in Slovakia, of which the PEFC certified forests represented 1,226 thousand ha and the FSC certified forests 323,0 thousand ha. Forests on the area of 253.7 thousand ha were both PEFC and FSC certified.

Table 4d.1 Area and share of certified forests by PEFC and FSC

Forest certification schemes	Area and share of certified forests (ha / %)				Number of issued certificates
	Certification by one scheme	Doubled certification (both PEFC and FSC)	Total	Share of the forest area	
PEFC	972 660	253 748	1 226 408	62,8	257
FSC	69 215		322 963	15,7	17
Total	1 041 875	253 748	1 295 623	66,2	274

Source: PEFC Slovensko, 2021; FSC: <https://fsc.org/en/facts-figures> (17. 03. 2022)

Table 4d.2 Area and share of forest certified by PEFC according to forest users/managers

Kind of forest users / managers	Forest area (ha)		Share of PEFC certified forests (%)		Number of certificates
	Forest area used/managed	Of that certified by PEFC	Within the user	According to the users	
State	999 191	999 171	100,0	81,5	136
Private	181 288	43 799	24,2	3,6	44
Community	595 266	70 120	11,8	5,7	46
Church	10 400	0	0	0	0
Agri-cooperative	6 527	0	0	0	0
Municipal	160 092	113 318	70,8	9,2	31
Total PEFC	1 952 765	1 226 408	62,8	100,0	257

Actual domestic consumption, its estimate and forecast in 2022 and 2023 for sawnwood, wood-based panels, pulp and paper are listed in the next tables e) – h):

e) Sawn softwood (1000 m³)

	Sawnwood – coniferous	2020	2021	2022 estimate	2023 forecast
5.C	Production	1 182	1 302	1 300	1 325
	Imports	352	324	350	350
	Exports	959	1 063	1 000	1 000
	Apparent consumption	576	563	650	675

f) Sawn hardwood (1000 m³)

	Sawnwood – non-coniferous	2020	2021	2022 estimate	2023 forecast
5.C	Production	340	350	375	400
	Imports	165	52	100	100
	Exports	116	177	150	150
	Apparent consumption	389	225	325	350

g) Wood-based panels (particle board, fibreboard and MDF, OSB, plywood)

• Veneer sheets (1000 m³)

	Veneer sheets	2020	2021	2022 estimate	2023 forecast
7	Production	21	29	30	30
	Imports	19	21	20	20
	Exports	17	34	25	25
	Apparent consumption	22	16	25	25

• Plywood (1000 m³)

	Plywood	2020	2021	2022 estimate	2023 forecast
8.1	Production	417	307	375	400
	Imports	67	65	70	70
	Exports	120	140	125	125
	Apparent consumption	364	232	320	345

• Particle board (1000 m³)

	Particle board	2020	2021	2022 estimate	2023 forecast
8.2	Production	598	608	625	625
	Imports	237	237	235	235
	Exports	507	571	550	550
	Apparent consumption	329	274	310	310


• Fibreboard

	Fibreboard	2020	2021	2022 estimate	2023 forecast
8.3	Production	0	0	0	0
	Imports	224	275	275	290
	Exports	23	27	25	25
	Apparent consumption	200	248	250	265

h) Pulp and paper

	Wood pulp	2020	2021	2022 estimate	2023 forecast
9	Production	687	769	775	800
	Imports	162	160	160	170
	Exports	312	248	250	275
	Apparent consumption	537	680	685	695
		Paper & Paperboard	2020	2021	2022 estimate
12	Production	758	1 019	975	1 000
	Imports	427	474	450	475
	Exports	709	939	825	875
	Apparent consumption	476	588	600	600

Report elaborated by: **Martin Moravčík and Miroslav Kovalčík**
National Forest Centre – Forest Research Institute, Zvolen, Slovakia

 UNECE TF1 TIMBER FORECAST QUESTIONNAIRE Roundwood		Country: Slovakia		Date: 08.09.2022				
		Name of Official responsible for reply: Martin Moravčík		Official Address (in full): National Forest Centre, T. G. Masaryka 22, 96001 Zvolen, Slova				
Product Code		Product	Unit	Historical data		Revised	Estimate	Forecast
				2020	2021	2021	2022	2023
1.2.1.C	SAWLOGS AND VENEER LOGS, CONIFEROUS							
	Removals	1000 m ³ ub	2,598	2,724	2,724	2,735	2,750	
	Imports	1000 m ³ ub	898 #	500 #	1,049	900	900	
	Exports	1000 m ³ ub	769 #	475 #	716	400	400	
	Apparent consumption	1000 m ³ ub	2,727	2,749	3,057	3,235	3,250	
1.2.1.NC	SAWLOGS AND VENEER LOGS, NON-CONIFEROUS							
	Removals	1000 m ³ ub	1,316	1,519	1,519	1,600	1,650	
	Imports	1000 m ³ ub	381 #	450 #	562	500	500	
	Exports	1000 m ³ ub	310 #	400 #	423	400	400	
	Apparent consumption	1000 m ³ ub	1,387	1,569	1,658	1,700	1,750	
1.2.1.NC.T	of which, tropical logs							
	Imports	1000 m ³ ub	0 #	0 #	0	0	0	
	Exports	1000 m ³ ub	0 #	0 #	0	0	0	
	Net Trade	1000 m ³ ub	0	0	0	0	0	
1.2.2.C	PULPWOOD (ROUND AND SPLIT), CONIFEROUS							
	Removals	1000 m ³ ub	1,157	928	928	1,050	1,050	
	Imports	1000 m ³ ub	575 #	250 #	645	600	600	
	Exports	1000 m ³ ub	1,030 #	700 #	730	750	750	
	Apparent consumption	1000 m ³ ub	702	478	843	900	900	
1.2.2.NC	PULPWOOD (ROUND AND SPLIT), NON-CONIFEROUS							
	Removals	1000 m ³ ub	1,828	1,965	1,965	2,050	2,100	
	Imports	1000 m ³ ub	70 #	300 #	91	100	100	
	Exports	1000 m ³ ub	110 #	100 #	147	150	150	
	Apparent consumption	1000 m ³ ub	1,788	2,165	1,909	2,000	2,050	
3	WOOD CHIPS, PARTICLES AND RESIDUES							
	Domestic supply	1000 m ³	1,135 C	1,150 C	1,150	1,150	1,200	
	Imports	1000 m ³	361 C	307 C	307	300	300	
	Exports	1000 m ³	514 C	360 C	360	350	350	
	Apparent consumption	1000 m ³	982	1,096	1,097	1,100	1,150	
1.2.3.C	OTHER INDUSTRIAL ROUNDWOOD, CONIFEROUS							
	Removals	1000 m ³ ub	21	26	26	30	30	
1.2.3.NC	OTHER INDUSTRIAL ROUNDWOOD, NON-CONIFEROUS							
	Removals	1000 m ³ ub	5	8	8	10	10	
1.1.C	WOOD FUEL, CONIFEROUS							
	Removals	1000 m ³ ub	259	223	223	250	285	
1.1.NC	WOOD FUEL, NON-CONIFEROUS							
	Removals	1000 m ³ ub	265	272	272	300	325	

The historical data are from the most recent Joint Forest Sector Questionnaire (blank) or the Timber Forecast Questionnaire (#). For explanations please see cover. These data are flagged with E, R, N or C for secretariat estimate, repeat, national estimate or calculated totals (from subitems). If there is no flag, this indicates officially supplied data.

**UNECE****TF2****TIMBER FORECAST QUESTIONNAIRE**
Forest products

Country: Slovakia	Date: 08.09.2022
Name of Official responsible for reply: Martin Moravčík	
Official Address (in full): National Forest Centre, T. G. Masaryka 22, 96001 Zvolen, Slovakia	
Telephone: 00421 45 5314180	Fax:
E-mail: m.moravcik@nbsk.com	

Product Code	Product	Unit	Historical data		Revised	Estimate	Forecast
			2020	2021	2021	2022	2023
6.C	SAWNWOOD, CONIFEROUS						
	Production	1000 m ³	1,182	1,302		1,300	1,325
	Imports	1000 m ³	352	324		350	350
	Exports	1000 m ³	959	1,063		1,000	1,000
	Apparent consumption	1000 m ³	576	563		650	675
6.NC	SAWNWOOD, NON-CONIFEROUS						
	Production	1000 m ³	340	350		375	400
	Imports	1000 m ³	165 E	52		100	100
	Exports	1000 m ³	116	177		150	150
	Apparent consumption	1000 m ³	389	225		325	350
6.NC.T	of which, tropical sawnwood						
	Production	1000 m ³	0	0		0	0
	Imports	1000 m ³	0	0		0	0
	Exports	1000 m ³	0	0		0	0
	Apparent consumption	1000 m ³	0	0		0	0
7	VENEER SHEETS						
	Production	1000 m ³	21 C	29 C		30	30
	Imports	1000 m ³	19 C	21 C		20	20
	Exports	1000 m ³	17 C	34 C		25	25
	Apparent consumption	1000 m ³	22	16		25	25
7.NC.T	of which, tropical veneer sheets						
	Production	1000 m ³	0	0		0	0
	Imports	1000 m ³	4	5		4	4
	Exports	1000 m ³	1	2		2	2
	Apparent consumption	1000 m ³	3	2		2	2
8.1	PLYWOOD						
	Production	1000 m ³	417 C	307 C		375	400
	Imports	1000 m ³	67 C	65 C		70	70
	Exports	1000 m ³	120 C	140 C		125	125
	Apparent consumption	1000 m ³	364	232		320	345
8.1.NC.T	of which, tropical plywood						
	Production	1000 m ³	0	0		0	0
	Imports	1000 m ³	1	2		2	2
	Exports	1000 m ³	0	0		0	0
	Apparent consumption	1000 m ³	1	2		1	2
8.2	PARTICLE BOARD (including OSB)						
	Production	1000 m ³	598	608		625	625
	Imports	1000 m ³	237	237		235	235
	Exports	1000 m ³	507	571		550	550
	Apparent consumption	1000 m ³	329	274		310	310
8.2.1	of which, OSB						
	Production	1000 m ³	0	0		0	0
	Imports	1000 m ³	91	94		95	100
	Exports	1000 m ³	1	3		5	5
	Apparent consumption	1000 m ³	91	91		90	95
8.3	FIBREBOARD						
	Production	1000 m ³	0 C	0 C		0	0
	Imports	1000 m ³	224 C	275 C		275	290
	Exports	1000 m ³	23 C	27 C		25	25
	Apparent consumption	1000 m ³	200	248		250	265
8.3.1	Hardboard						
	Production	1000 m ³	0	0		0	0
	Imports	1000 m ³	23	22		25	25
	Exports	1000 m ³	1	5		5	5
	Apparent consumption	1000 m ³	22	17		20	20
8.3.2	MDF/HDF (Medium density/high density)						
	Production	1000 m ³	0	0		0	0
	Imports	1000 m ³	140	183		170	170
	Exports	1000 m ³	21	22		20	20
	Apparent consumption	1000 m ³	119	162		150	150
8.3.3	Other fibreboard						
	Production	1000 m ³	0	0		0	0
	Imports	1000 m ³	60	70		70	70
	Exports	1000 m ³	1	0		1	1
	Apparent consumption	1000 m ³	59	70		69	69
9	WOOD PULP						
	Production	1000 m.t.	687 C	769 C		775	800
	Imports	1000 m.t.	162 C	160 C		160	170
	Exports	1000 m.t.	312 C	248 C		250	275
	Apparent consumption	1000 m.t.	537	680		685	695
12	PAPER & PAPERBOARD						
	Production	1000 m.t.	758 C	1,019 C		975	1,000
	Imports	1000 m.t.	427 C	474 C		450	475
	Exports	1000 m.t.	709 C	905 C	939	825	875
	Apparent consumption	1000 m.t.	476	588		600	600
5.1	WOOD PELLETS						
	Production	1000 m.t.	206	310		325	350
	Imports	1000 m.t.	43	46		45	45
	Exports	1000 m.t.	229	337		225	200
	Apparent consumption	1000 m.t.	20	19		145	195

The historical data are from the most recent Joint Forest Sector Questionnaire (blank) or the Timber Forecast Questionnaire (#). For explanations please see cov. These data are flagged with E, R, N or C for secretariat estimate, repeat, national estimate or calculated totals (from subitems). If there is no flag, this indicates officially supplied data.