

Market Statement of the Slovak Republic 2024

**the UNECE Committee on Forests and the Forest Industry (COFFI), held from 13-15
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**Ministry of Agriculture and Rural Development of the Slovak Republic
National Forest Centre – Forest Research Institute Zvolen**

October 2024

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

The Slovak economy grew by 1.6% in 2023 due to the growth of industry. A higher recovery was mainly hindered by the drop of final consumption in households. The partial revival of the Slovak economy was also reflected in an increase in the number of jobs. Total employment in the national economy (NE) of the Slovak Republic increased by 0.3% year-on-year. The average monthly nominal salary of an employee in NE Slovak Republic increased by 9.7% year-on-year. Investment growth was mainly influenced by the revival and growth of the Slovak economy. Year-on-year investment growth was 20.7%.

Table 1-2
Spring 2023 Economic Forecast (2024)

Indicator	2020	2021	2022	2023	2024
GDP growth (%)	-4,4	3,0	1,7	1,7	2,1
Inflation (%)	2,0	2,8	12,1	10,9	3,0

Slovak GDP is expected to grow by 2.1% in 2024, supported by a household consumption, which rely on strong growth in real wages above 3%. The peak of drawing EU funds from 2023 will be partially replaced in 2024 by the strengthening implementation of the Recovery and Resilience Plan projects, as well as the purchase of military equipment. Foreign trade will bounce back from the bottom and the mood in the world economy will slowly improve during the year, which will support Slovak exports, according to Institute of Financial Policy (IFP) of the Slovak republic.

IFP announced that in 2025 the performance of the economy will culminate with growth at the level of 3.1 percent. Half of the growth is to be ensured by the already underway use of the Recovery and Resilience Plan. In the years 2026 to 2028, the institute then expects a lower economic growth of around two percent. The effects of drawing resources from the recovery plan will gradually fade away, the Slovak economy will be pushed forward by higher export capacities of the automotive industry. Consolidation of public finances will dampen government consumption, but household consumption will remain stable, according to the IFP.

Inflation should fall significantly this year to three percent. Slow price growth since April of last year led to a gradual decrease in year-on-year inflation, which continued in 2024. Low price growth was also helped by the continuation of subsidizing energy prices for households, which did not grow this year. Food prices, which were one of the main causes of high price growth in the recent past, have stabilized, as have the prices of tradable goods and services," IFP said. According to the institute, price growth in Slovakia may slightly accelerate in 2025 if energy prices were to reach market levels.

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

On March 13, 2024, the Government of the Slovak Republic approved the National Forest Program of the Slovak Republic (NFP) for the years 2025 to 2030 Forests for Society. The action plan for this program is to be submitted to the government by the end of 2024. The vision of NFP until 2030 Forests for society is the management of forests and forestry based on timely and accurate information, an interdisciplinary approach and the participation of interested parties at all levels, which will ensure preservation of biodiversity, sustainable development and the quality of life of the population." The new NFP has three main goals:

1. Forestry as the basis of a modern bioeconomy: This goal focuses on the use of forests and forestry as a key element for the development of a bioeconomy that supports the sustainable use of natural resources.

2. Diversified forests prepared to better withstand climate change and mitigate its effects: The goal is to increase the resistance of forests to climate change and at the same time contribute to mitigating its negative impacts.

3. A prosperous society using all functions of forests without conflict: This goal focuses on the harmonious use of forests that promotes social and economic prosperity without conflicts between different interest groups.

The stated goals are supported by 17 strategic and 31 specific objectives, which focus on various aspects of forestry, incorporated into economic, environmental and social principles.

3. MARKET DRIVERS

a. Trends in production indicators

Forest area

The area of forest land in the Slovak Republic has been long-term increasing (Figure 3a.1). According to the data of the NFC's Compendium of Slovak Forestry Statistics (CSFS), in 2023 it was 2,028,172 ha. Since 1990, it has increased by 51.7 thousand ha, i.e. by 2.6%, which is, on average, 1.57 thousand ha per year.

Similarly to the forest land area, the area of forest stands is also increasing steadily, reaching 1,955,522 ha in 2023 according to CSFS data (Figure 3a.1). Since 1990, the area of forest stands has increased (mainly by land use change) by 33.8 thousand ha, which 1.76% gain, with an average annual increase of 1.024 thousand ha. According to the Act no. 326/2005 Coll. on forests, as amended (the Act on Forests), forest area also includes areas temporarily without trees due to forest regeneration as part of a rotation cycle or due to salvage logging after natural disaster. Forest cover, as a percentage of the forest land area of the total area of the Slovak Republic (4.903 million ha, including water bodies), reached 41.4% in 2023. It has increased by 1.1% since 1990, 2.2% since 1970.

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 Slovak Republic 2015-2016. So, forest cover in Slovakia including forests on non-forest land would be about $45.7 \pm 0.9\%$.

Growing stock in forests

In 2023, according to the NFI data, the total volume of growing stock on forest land in Slovakia was 487.1 million m³ (as of the timber to the top of 7 cm under bark). Compared to 2022, it increased by 4.3 million m³, i.e. by 0.9%. In particular, the supply of hardwood increased to the level of 295.1 million m³, i.e. by 3.7 million m³ compared to last year. The supply of coniferous wood reached 192.0 million. m³ Figure 3a.2). The ratio of softwood and hardwood stocks was 39.4% to 60.6%. The growing stock per hectare was 250 m³. For conifers, it was 280 m³, and for broadleaves 234 m³.

The current culmination in the volume of growing stock is a natural consequence of the gradual change in the uneven age structure of forest stands in Slovakia, associated with the actual shift in the age classes, that are overrepresented as for the area and volume, into the age at which their gradual regeneration is ongoing. Such an uneven age structure resulted mainly from the high level of logging in the first half of the 20th century, i.e. in the period of war conflicts and socio-economic crises, bringing along large areas of clearings. The clearings were subsequently reforested and the resulting forest stands are, at the moment, 80 to 130 years old (age classes 8 to 12) and, inter alia, they are also the source of the actual increased timber-felling possibilities. The in-time development of such an uneven age structure is associated with cyclical changes in the production-environmental indicators, including growing stock. The yearly stand inventory confirmed this trend based on the figures of annual changes of the growing stock in forest stands in the Slovak Republic (Figure 3a.4).

In the previous five-year periods the trend of the gradual annual change in growing stock in forest stands of the Slovak Republic, which was as follows: 1991-1995: + 5.9 million m³ annually, 1996-2000: + 6.4 mil. m³, 2001-2005: + 5.8 million m³, 2006-2010: + 4.6 million m³, 2011-2015: + 3.2 million m³; 2016-2020: + 1.28 million m³, and in 2021-2023 the annual increase in growing stock was only +0.87 million m³. Similar trend as in the total growing stock was observed also in the growing stock per hectare.

The current peak in the volume of growing stocks should gradually continue into a phase of decline that should last for the several next decades. The actual age structure of our forests with an overnormal area of older forest stands in the age classes 8 – 15+, in which high growing stock is accumulated (Figure 3a.3), will gradually shift, especially in production forests, in favour of younger age classes with lower growing stocks.

Figure 3a.5 shows the volumes and proportions of growing stocks in forests of the Slovak Republic by age classes and tree species. In younger forest stands (age classes 3 to 6), most of growing stock was formed by spruce followed by beech. In the higher age classes, the stock of beech was larger than those of spruce, oak and other conifers. In all age classes except the last one (15+), the highest growing stocks were in production forests. In age class 15+, the highest stock was in protective forests, a large part of which is located in protected areas.

50.4% of the total wood stock is located in the forests managed by state organisations (hereinafter: "state forests"), the rest (49.6%) is located in the forests managed by non-state forest managers (hereinafter: "non-state forests"). In state forests, there is currently a lower proportion of softwood stock (47.7%), while the proportion of hardwood stock is higher (52.3%). Compared to state forests, in non-state forests the growing stock located in mature stands available for wood supply (usually age classes 8 to 14) was 9.77 million m³ higher, of which 9.31 million m³ was softwood and 0.45 million m³ hardwood. From the above figures, it is obvious that there is a higher actual potential for softwood logging in non-state forests.

Deadwood stock in forests

Deadwood is also an important component of forest ecosystems. It should be retained in forests to the extent appropriate to their required functions. According to the second cycle of NFI, there was 87.0 ± 5.7 mil. m³ of deadwood (standing snags, stumps, lying thick and thin deadwood), which averages 45.2 ± 2.8 m³ per ha. According to the State of Europe's Forests 2020 report, the stock of standing and lying deadwood thicker than 10 cm (without stumps and thin wood up to 10 cm) in the forests of the was 28.0 m³ per ha, which is the highest volume among the countries that reported on this indicator.

Carbon stock in forests

Healthy and resilient forests are important also from the point of view of their significant role in the carbon sequestration in their biomass, deadwood and litter (necromass), and in the soil. In 2023, carbon stocks in forests in living biomass, necromass and forest soil reached the value of 511.0 million tonnes (4.0 million tonnes more than in 2022). The largest amount of carbon is stored in soil (270.5 million tonnes) and in aboveground tree biomass (167.0 million tonnes) (Figure 3a.6). Considering the current trend in the development of the age composition of forests, the current value of the stock of carbon bound in the above-ground biomass can be considered close to the maximum value. Simultaneously with the expected decrease in the stock of wood in the forests, there will also be a decrease in the stock of carbon bound in its individual balance categories.

Wood increment in forests

In 2023, the total current increment (TCI) of wood on forest land in Slovakia reached a volume of 11.88 million. m³, i.e. 6.16 m³ per ha. Annual TCI means the volume of wood that accrue in the forests during one year. Since 2015, a trend of an annual decrease of TCI (in total and per hectare) has been observed.

Harmful agents in forests

The effects of the drought occurring in 2022 were also reflected in the deterioration of the forest health during 2023. This was mainly reflected in the increase in damage to spruce forests by secondary harmful agents, especially by the European spruce bark beetle.

Abiotic harmful agents in forests

Wind, snow, rime, drought, high water table and other abiotic agents in 2023 damaged trees in forest stands with the timber volume of 1.2 million m³, of which 753 thousand m³ was softwood. Of the conifers, spruce was the most damaged (563 thousand m³) and of the broadleaves, it was beech (292 thousand m³). Wind was the most significant harmful agent (770 thousand m³). During 2023, 1.1 million m³ of timber of trees damaged by abiotic agents was salvaged (including part of the remnants from previous years). The incidence of abiotic harmful agents is shown in Figure 3b.1.

Biotic harmful agents in forests

In 2023, the trees of the volume of 2.55 million m³ of timber were damaged by biotic harmful agents, of which bark beetles and other animal pests accounted 2.41. Of this, almost 2.4 million m³ were processed. The listed volume of damaged trees was 540 thousand m³ higher compared to the year 2022. The most significant biotic harmful agent was the European spruce bark beetle, which damaged over 2.27 million m³ of wood. The most damaged tree was spruce (2.33 million m³). The most important phytopathogenic organism was the root rot, which damaged 79 thousand m³ of wood. The incidence of biotic harmful agents is shown in Figure 3b.2.

Game is also an important biotic harmful agent contributing to damage of forest stands. In 2023, the damage to forest stands was estimated at €2.062 million that is €0.425 million more than in 2022. Game damage mainly results from excessive populations of deer, fallow deer and wild boar. Protective measures against game damage are mainly aimed at controlling their populations.

Measures taken against harmful agents

The main measures to protect forests against harmful agents were timely and thorough salvaging of wood of trees damaged by harmful agents, its removal from the forests, chipping, burning of woody debris and targeted application of certified pesticides and auxiliary preparations. As part of the measures aimed at investigation and recording biotic harmful agents, 9.0 thousand trap trees were installed and operated in 2023 (9.3 thousand in 2022) as well as 41.0 thousand pheromone traps (28.3 in 2022). 3.4 thousand m³ of dead trunks were debarked. On the area of 366 ha, coarse woody debris and slash were burned. As part of chemical protection, fungicides were applied on an area of 133 ha and 7.7 thousand m³ of timber. Weed control with herbicides was carried out on an area of 206 ha.

The drought in the growing season in 2022 directly affected and damaged tree species such as beech and other broadleaves and significantly weakened spruce and other conifers. In particular, spruce in unsuitable habitats was exposed to an increased risk of attack by bark beetles. Already in 2023, it became clear that damage to forest stands by bark beetles will increase again in the coming years and significantly affect forestry and the ability of forests to provide all the required ecosystem services of forests. The volume of accidental felling, which in 2022 was the lowest in the last 20 years (2.76 million m³), increased to 3.5 million m³, and its share in the total felling also increased from 35.8% to 48.6%.

Protective measures against game damage include mainly regulating its populations. The trend of hunting the main game species is increasing; compared to 2010, the number of red deer shots increased three times, fallow deer more than seven times, and wild boar by 54%.

Forest fire protection

According to the records of the Fire Institute of the Ministry of the Interior (MI) of the Slovak Republic, 55 forest fires were registered in 2023, with a total damaged (burnt) area of 29,5 ha

and financial loss reaches €89 thousand. All indicators for the year 2023 are the lowest for the monitored period since 2000; one of the reasons may be the significantly above-normal annual rainfall in 2023. No people were killed in forest fires in 2023, 1 person was injured. The most common causes of forest fires were unknown causes (17 cases) and waste burning (10 cases).

b. Limiting conditions of nature conservation

The European NATURA 2000 network consists of two partially overlapping sub-networks: special protection areas (SPAs) and sites of Community importance (SCIs), in which there are 955 thousand ha of forest stands. In the protected areas of the national network, approximately 794 thousand ha of forest stands are located. Within other internationally protected areas, i.e. in the UNESCO natural heritage sites, 37 thousand ha of forest stands is protected. There are 1,164 thousand ha of forest stands in national and European networks and other internationally protected areas.

The European and national networks overlap on approximately 783 thousand ha of forest stands. As of December 31, 2023, 23 SPA's management programs were in force, the remaining 18 still awaiting approval. The area of forest stands by levels of protection and PA categories is presented in table 3.1.

According to Ministry of the Interior of the Slovak Republic, in 2023, based on 186 applications, compensations for not allowing the standard forest management were paid in the total amount of €7.485 million. The NPs were not eligible to be compensated.

Table 3.1 Protected forest stand area by category and level of protection

Protected area category		Level of protection (1,000 ha)					Total
		1	2	3	4	5	
Protected Landscape Areas (PLAs)		0	318,3	0,1	0	0	318,4
National Parks (NPs)		0	0	168,7	0,3	0,1	169,0
Buffer zones of NPs		0	127,0	0	0	0	127,0
Zones of PLAs and NPs	A	0	0	0	0	13,6	13,6
	B	0	0	0	7,7	0	7,7
	C	0	0	29,8	0	0	29,8
	D	0	17,4	0	0	0	17,4
Small-scale Protected Areas (SSPAs)	(National) Nature Reserves ((N)NRs)	0	0	0	9,7	73,3	82,9
	(National) Nature Monuments ((N)NMs)	0	0	0	0,4	0,4	0,8
	Protected Landscape Elements (PLEs)	0	0	0	0	0	0
	Protected Sites (PSs)	0	2,0	4,0	1,2	0,2	7,4
	Buffer zones of SSPAs	0	1,0	16,5	1,4	0	19,0
Sites of Community Importance (SCIs) – outside national PA network		0	78,5	0,5	0,3	0,3	79,6
Special protection Areas (SPAs) – outside SCIs and national PA network		291,7	0	0	0	0	291,7
Total		291,7	544,2	219,6	21,0	87,9	1 164,4

Source: ME Slovak Republic at 31 December 2023, edited by NLC-LVÚ Zvolen 2024.

Explanations: ¹⁾ the area after deducting the SSPAs and the zoned PLAs and NPs, ²⁾ the Horná Orava PLA is currently zoned,

³⁾ PIENAP, Slovenský raj NP and Muránska planina NP are currently zoned.

Note: The areas determined from the GIS layers should be considered as indicative, not completely identical to the official areas of individual protected areas. ZBGIS data were used as a basis for the forest boundaries.

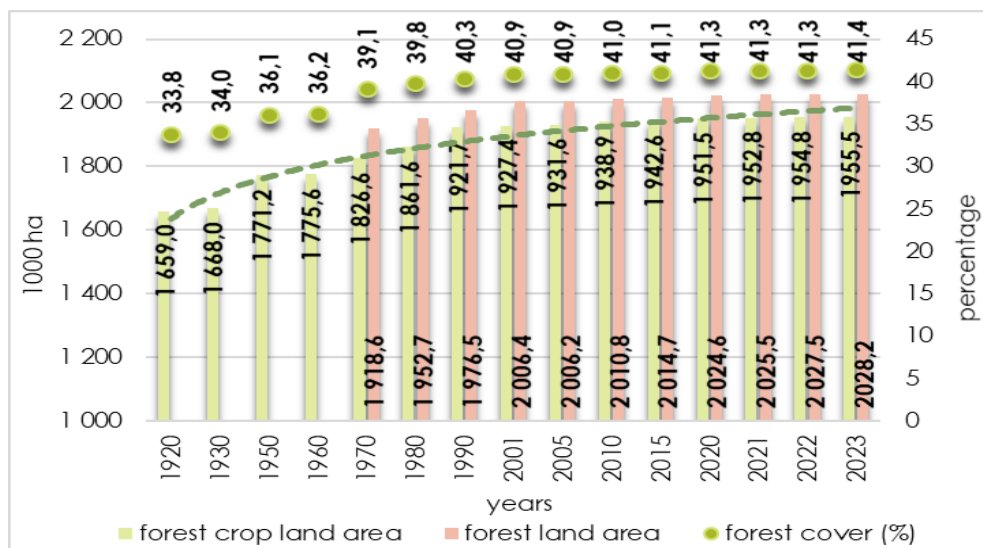


Figure 3a.1
Development of forest area and forest cover

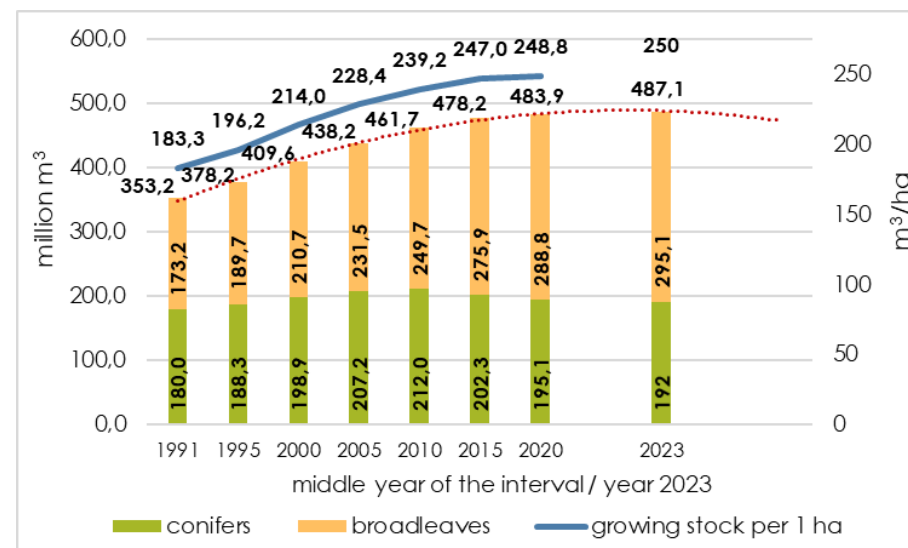


Figure 3a.2
Development of timber growing stock

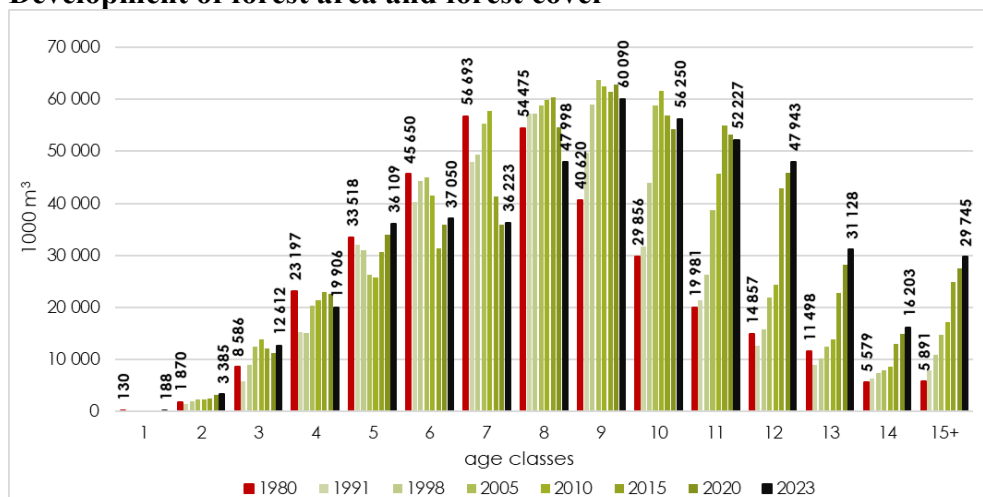


Figure 3a.3
Development of timber growing stock by age classes

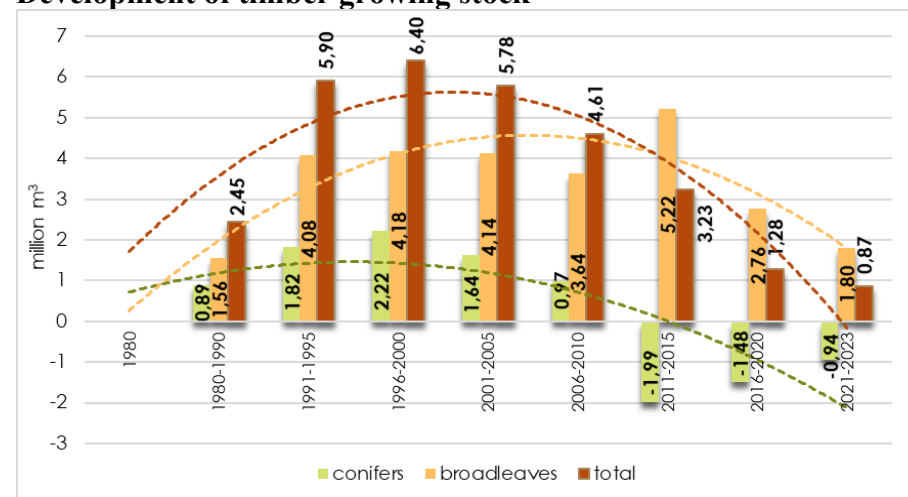


Figure 3a.4 Development of the average annual change in growing stock by the indicated periods and tree species groups

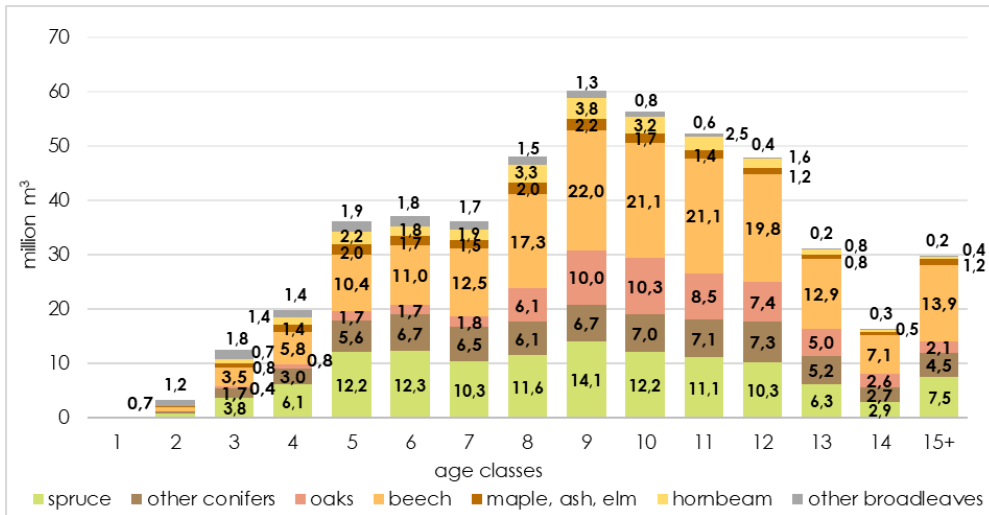


Figure 3a.5
Growing stock by age classes and tree species

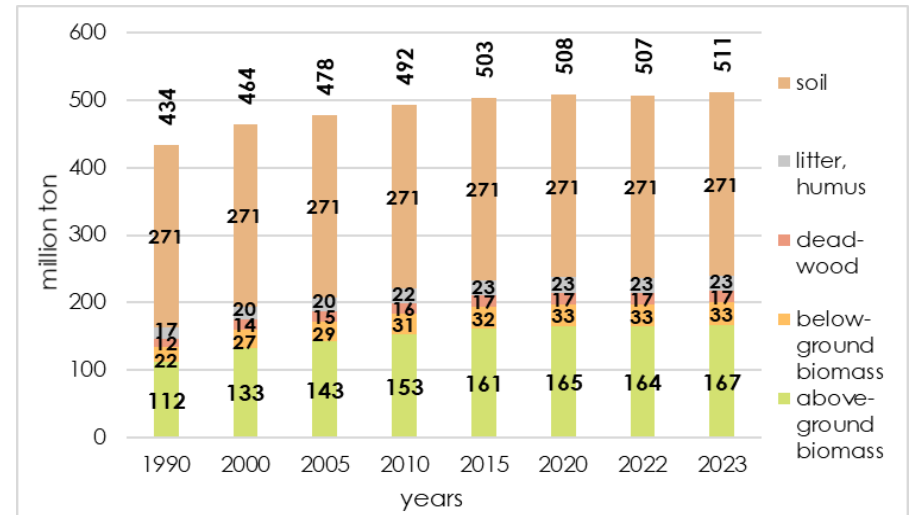


Figure 3a.6
Development of carbon stock in forests

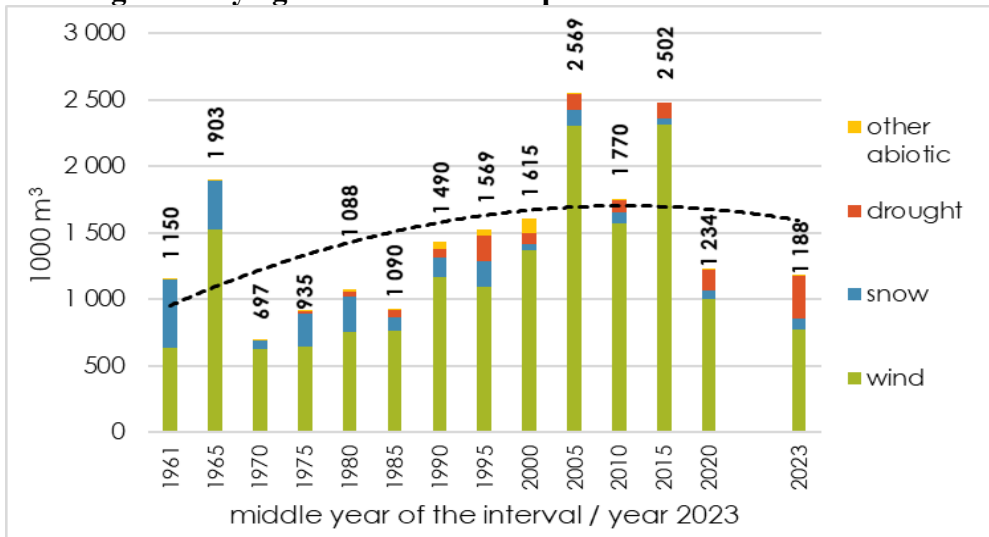


Figure 3b.1
Volume of trees damaged by abiotic agents

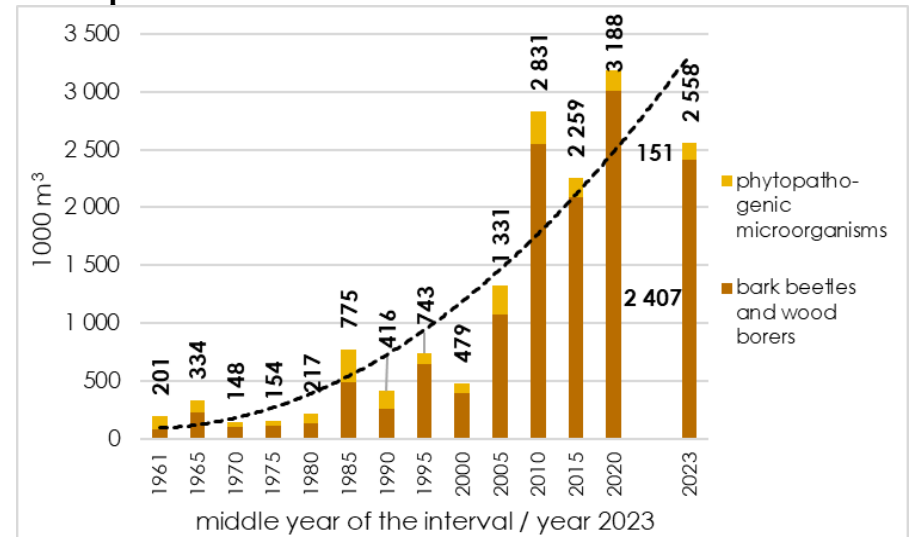
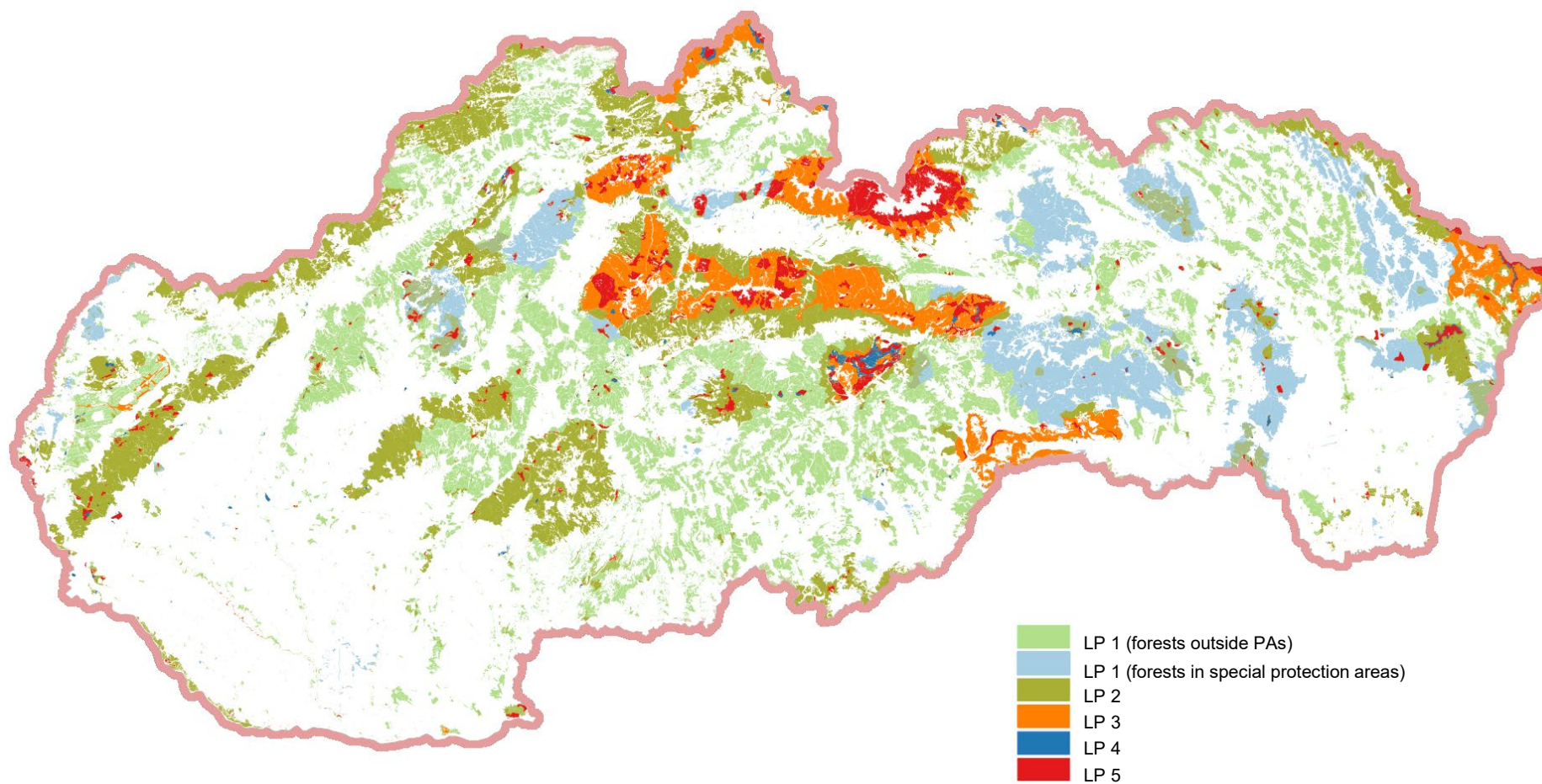


Figure 3b.2
Volume of trees damaged by biotic agents



Forest by a level of protection (LP)

Source: ME Slovak Republic, 2023, NFI Zvolen 2023

d. Trends in timber felling

Timber is an important resource, an environmentally friendly, renewable, recyclable and strategic material of the future. Its sound use and processing supports economy and increases employment. In addition, by storing carbon in forests, in harvested wood products and using wood as a substitute for non-renewable materials and energy sources, the forestry and timber sector contributes significantly to mitigating climate change. Revenues from the sale of harvested timber are used to ensure the proper care of forests, their regeneration, silviculture and protection, as well as for the development, maintenance and reconstruction of the forest-road network, investments into machinery and technologies, and more.

In 2023, 7.223 million m³ of wood was felled in the Slovak Republic. (Figure 3d.1), which was 0.464 million m³ more than last year. This total volume consisted of 53.3% of softwood and 46.7% of hardwood. State forest organisations logged 54.2%, and non-state entities the remaining 45.8%. 3.507 million m³ (48.6% of the mentioned volume) was felled as an aftermath of forest disturbances by harmful agents, of which 85% was coniferous and 15% hardwood.

Logging was carried out either according to the FMP's prescriptions as so-called intentional felling (both intermediate and regeneration) or as incidental (salvage) felling resulting from unplanned events such as disturbances. The term extraordinary felling was used when forest land was converted to other land use or deforested for the purpose of building forestry buildings and facilities. Figure 3d.3 shows the distribution of actual felling volumes within felling categories, forest types (coniferous, broadleaved) and type of use (state, non-state).

From the data presented in Figure 3d.2, the gradual reduction of logging after 2010 can be seen, as well as decreasing share of logging on net annual increment (NAI), which was 16.7 percentage points lower compared to 2010.

Since 1990 (during 34 years), an average of 7.383 million m³ of timber, which represents 101.4% of the volume planned, has been felled annually. The total annual logging exceeded the volume planned in FMPs especially in the period 1994 – 2011. Felling was lower than planned at the beginning of the monitored period in 1991 – 1993 and from 2012 to the present. During the entire presented period, the annual timber felling did not exceed the volume of NAI in the respective year and, on average, it reached 62.4% of its volume. The proportion of felling to NAI was the lowest (55%) in 2000-2003 and the highest (over 80%) in 2005, 2010 and 2018.

The current uneven age structure of forests in the Slovak Republic causes cyclical changes in the development of basic production indicators, including timber felling possibilities. According to the results of the NFC forecast from 2023 (Moravčík, M., Kovalčík, M., Barka, I., Hladký, R.: Analysis of the sustainability of business entities in the primary processing of broadleaves and coniferous wood in connection with the potential of wood stocks after the new zoning of national parks of the Slovak Republic with a view to 2050), it is expected that the total felling of wood in the forests available for wood supply (FAWS) will gradually decrease. It is expected to decrease from approximately 8.3 million m³ in 2025 to 7.4 million m³ in 2050, which represents a decrease of 10.6%. The potential of softwood felling is also expected to decrease, from less than 4.2 million m³ in 2025 to 3.0 million m³ in 2050, i.e. by 27.1%. Hardwood harvesting potential is expected to increase from 4.1 million m³ to more than 4.4 million m³ around 2040-2045; subsequently, it will start to decrease to less than 4.4 million m³ in 2050 (Figure 3d.4). In 2025, the ratio of softwood and hardwood harvesting is expected to be 50.2:49.8, and by 2050, the ratio is expected to change to 41:59. The decline in conifer felling (Figure 3d.5) is mainly due to decline in spruce felling by 32% by 2050; it is caused by the long-term effect of harmful agents (wind, insects) on this tree species. The felling of other conifers will decrease by only 5%. In the case of broadleaved tree species (Figure 3d.6) beech and oak, their felling volume will be maintained roughly at the present level until 2050. For other broadleaved trees, felling will increase by 23% until 2050, especially for maple (by 70%), ash (by 40%).

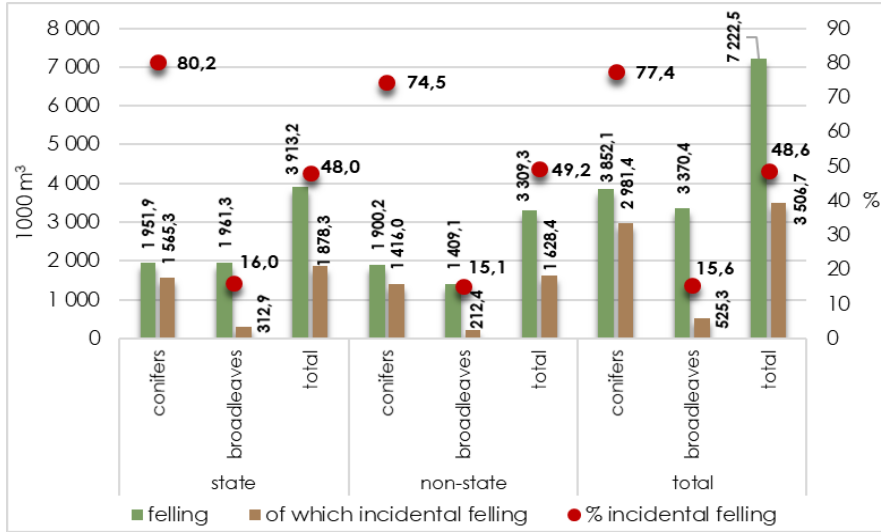


Figure 3d.1
Timber felling and of which incidental felling

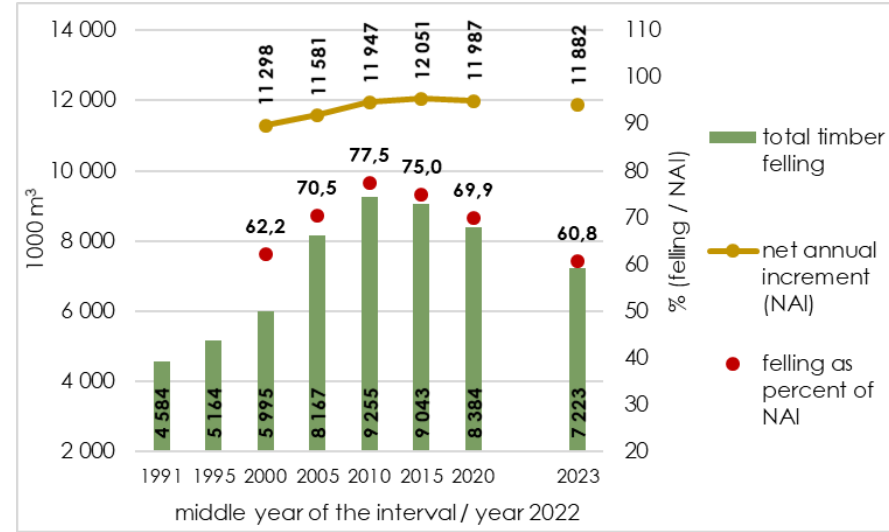


Figure 3d.2
Timber felling and its comparison with net annual increment

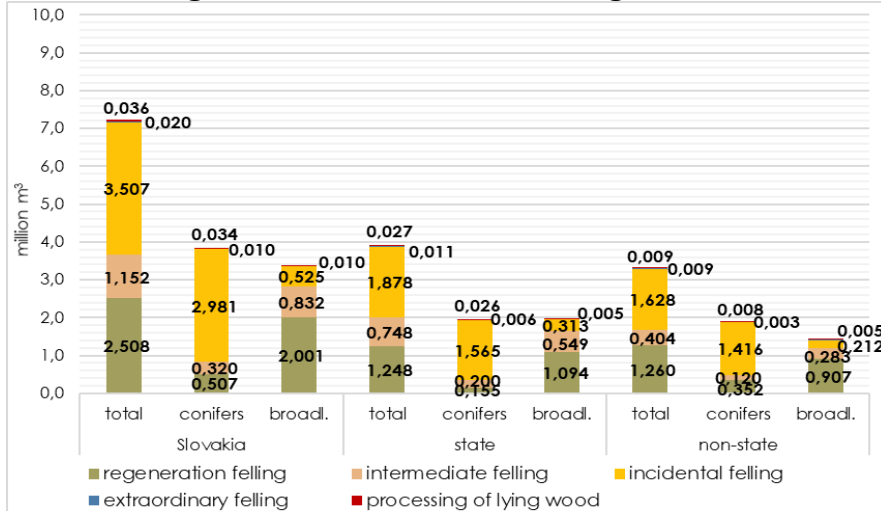


Figure 3d.3 Timber felling by its type, broken down into state and non-state forests and total

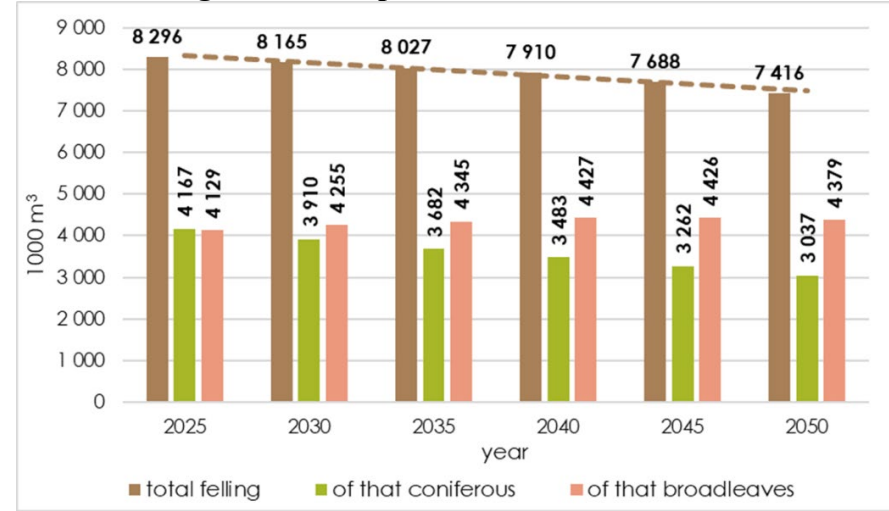


Figure 3d.4
Forecast of wood felling in FAWS in Slovak Republic until 2050

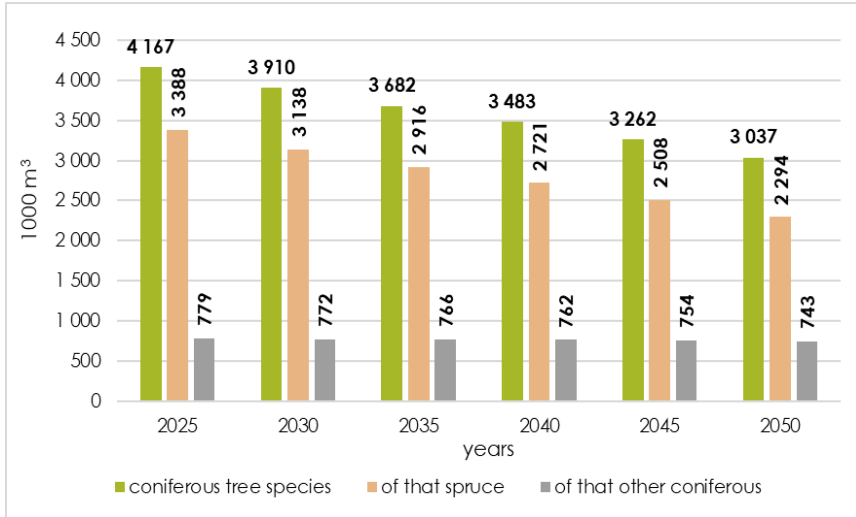


Figure 3d.5
Forecast of coniferous tree species felling

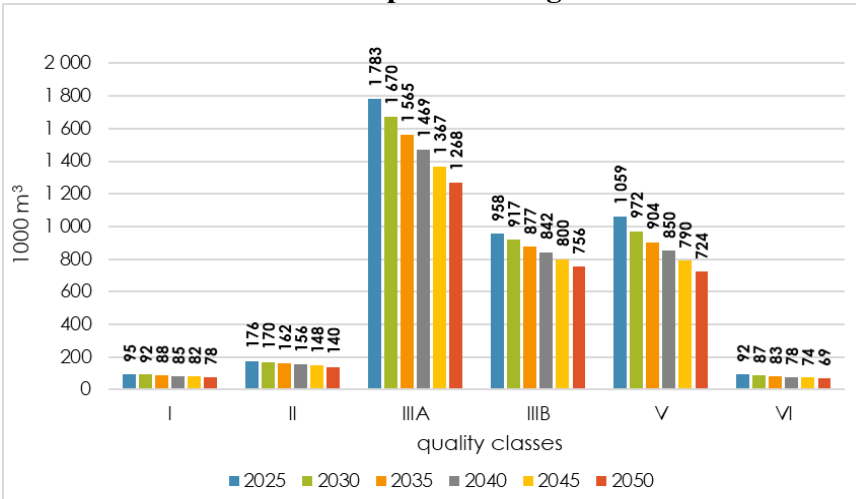


Figure 3d.7
Forecast of volumes of softwood assortments

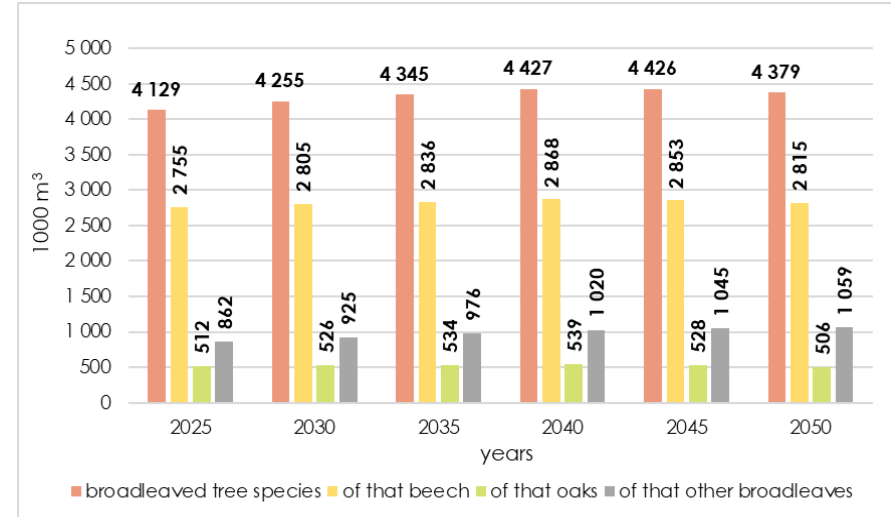


Figure 3d.6
Forecast of broadleaved tree species felling



Figure 3d.8
Forecast of volumes of hardwood assortments

With regard to the decreasing felling, the total volumes of conifers in individual quality classes (QCs) will decrease (Figure 3d.7). In their qualitative structure assortments of the third QC (sawnwood) will continue to prevail with a share of around 66%. The share of the most valuable assortments the I. and II. QCs should be about 6.5%. VI. QC (firewood) should be around 2 – 2.5%. In hardwood (Figure 3d.8), their total volumes in the QCs should be increasing; around 2040 there should be a slight decrease. Their quality structure will be dominated by the assortment of the V. QC (pulpwood) with a share more than 40%. The share of the most valuable assortments I. and II. QCs will be around 8.5%. The proportion of firewood should be around 5%.

Planned expansion of the areas with a non-intervention regime in the national parks of Slovakia in accordance of the 2022 amendment to the Act on Nature and Landscape Protection established the aim: "to preserve or gradual restore the natural ecosystems, including ensuring the undisturbed course of natural processes in national parks". The implementation of this measure is to be carried out in two stages by declaring 50% of the territory with a non-intervention regime by 2030 and 75% by 2050.

Currently, the share of forests with non-intervention management in national parks (NPs) is approximately 20%. Also in the present NPs, the total wood felling should gradually decrease by 25% (from 620 thousand m³ in 2025 to 460 thousand m³ in 2050). In particular, the potential of softwood felling will decrease by 37%. The potential for hardwood felling will increase slightly from 145 thousand m³ to 160 thousand m³.

Forecasts of the volume of timber felling in total, coniferous and broadleaves tree species in 1000 m³ and in 5-year intervals are shown in the following table, taking into account the current situation with the share of "non-intervention" areas of 20% and the expansion of "non-intervention" areas in the NPs to 50% and 75 %.

Year	Felling in national parks			of that coniferous			of that broadleaves		
	percentage of non-intervention areas								
	20 %	50 %	75 %	20 %	50 %	75 %	20 %	50 %	75 %
	1000 m ³								
2025	619,12	493,44	233,34	473,88	368,95	175,40	145,24	124,49	57,94
2030	577,80	460,58	213,27	429,30	333,42	154,22	148,51	127,16	59,05
2035	541,83	434,05	192,54	390,29	303,85	134,41	151,54	130,20	58,13
2040	512,69	414,08	172,85	357,58	280,03	116,74	155,11	134,05	56,12
2045	485,23	395,74	154,28	326,94	257,65	100,30	158,29	138,09	53,98
2050	460,97	380,25	137,47	299,71	237,97	85,68	161,26	142,28	51,79

The following table shows the predicted reduction of wood felling in NPs when the area of forests with non-intervention management is increased to 50% and 75% compared to the current state with 20% without intervention. The given data correspond to the situation if the expansion of non-intervention areas were to be implemented from 2025.

Year	Decrease of felling in 50% expansion			Decrease of felling in 75% expansion		
	total	of that conifers	of that broadleaves	total	of that conifers	of that broadleaves
	1000 m ³					
2025	-125,68	-104,93	-20,75	-385,78	-298,47	-87,30
2030	-117,22	-95,88	-21,34	-364,53	-275,08	-89,45
2035	-107,78	-86,44	-21,34	-349,29	-255,88	-93,42
2040	-98,61	-77,56	-21,06	-339,84	-240,85	-98,99
2045	-89,49	-69,29	-20,20	-330,95	-226,64	-104,31
2050	-80,72	-61,75	-18,98	-323,51	-214,04	-109,47

Analysis and calculation of socio-economic impacts when increasing the share of forests with non-intervention management in NPs to 50% and 75%

Limiting the use of a large part of forests in the extensive system of protected areas, including national parks, for wood production, as well as limiting the implementation of effective protective measures, has an impact on the financial side of forest managers, forestry and overall economy of the Slovak Republic.

Socio-economic impacts can be quantified on the basis of achieved revenues, added value, wage costs and net income of self-employed persons, social and health contributions, paid income taxes and value added tax (VAT), employment and achieved profit. These indicators were evaluated for forestry and timber processing sectors for the period 2010 to 2022 and were converted to 1 m³ of processed raw wood. Based on the achieved results of this study, it can be concluded that 1 m³ of processed raw wood represents the following economic values:

- gross/net added value €195 / €153;
- sales and revenues of wood processors €551;
- profit from management €24;
- tax income of the state, cities and municipalities €63;
- contributions to social and health insurance €39;

converted to jobs, this represents 7.1 workers per 1,000 m³ of processed raw wood.

The following tables show the socio-economic impacts of reducing timber felling per €1,000 in the NPs at 50% and 75% without intervention.

Indicators	2025	2030	2035	2040	2045	2050
	Socio-economic impacts at 50% non-intervention management in €1000					
Sales and revenues	-69 274,97	-64 611,81	-59 408,47	-54 353,95	-49 327,00	-44 492,96
Gross added value	-24 552,98	-22 900,22	-21 056,01	-19 264,55	-17 482,86	-15 769,54
Net added value	-19 255,28	-17 959,14	-16 512,85	-15 107,92	-13 710,66	-12 367,02
Personal costs	-12 333,08	-11 502,89	-10 576,54	-9 676,68	-8 781,73	-7 921,12
Economic result	-3 002,81	-2 800,68	-2 575,13	-2 356,04	-2 138,14	-1 928,60
Taxes paid	-7 891,15	-7 359,97	-6 767,25	-6 191,49	-5 618,87	-5 068,22
Social and health insurance	-4 871,08	-4 543,19	-4 177,31	-3 821,90	-3 468,43	-3 128,53
Number of workers	-896	-836	-769	-703	-638	-576

Note: All values have been discounted to 2022 price levels.

Indicators	2025	2030	2035	2040	2045	2050
	Socio-economic impacts at 75% non-intervention management in €1000					
Sales and revenues	-212 642,41	-200 929,39	-192 529,08	-187 320,23	-182 420,05	-178 319,11
Gross added value	-75 366,39	-71 214,97	-68 237,66	-66 391,50	-64 654,74	-63 201,26
Net added value	-59 104,90	-55 849,21	-53 514,31	-52 066,48	-50 704,46	-49 564,58
Personal costs	-37 856,90	-35 771,62	-34 276,11	-33 348,77	-32 476,39	-31 746,30
Economic result	-9 217,24	-8 709,52	-8 345,40	-8 119,62	-7 907,21	-7 729,45
Taxes paid	-24 222,22	-22 887,98	-21 931,10	-21 337,75	-20 779,57	-20 312,43
Social and health insurance	-14 951,97	-14 128,37	-13 537,70	-13 171,44	-12 826,88	-12 538,53
Number of workers	-2 751	-2 599	-2 491	-2 423	-2 360	-2 307

Note: All values have been discounted to 2022 price levels.

Conclusions:

- The range of PAs in Slovakia (60%) is very high, even from an international point of view. We are of the opinion that there is a violation of the basic principles of sustainable forest management, which is the balanced provision and support of all three pillars of the forestry: ecological, social and economic.
- Moreover, further expansion and tightening of protection levels is being prepared, especially the extension of non-interventional management in national parks to 75% of their forested area.
- But this is not justified by the state of forest stands in NPs because they are predominantly semi-natural forest stands, with little differentiated age and spatial structure, without preserved self-regulating processes.
- Therefore these large partially changed forest stands will be without man's care threatened by the action of abiotic harmful agents (especially by wind) and subsequently by bark beetles.
- The aforementioned restrictions due to nature protection will also have negative socio-economic impacts that results mainly in considerable reduction of socio-economic benefits like: employment, income of local inhabitants, sales and revenues of wood processors, profit from management, tax income of the state, cities and municipalities etc.

4. DEVELOPMENTS IN FOREST PRODUCTS MARKETS SECTORS

a. Wood raw materials

Supply of raw wood

Timber is the most important source of income in forestry, necessary to maintain their functions, including the supplies of timber to the wood-processing industry (WTP) as well as employment, sales and income in the entire forest-timber sector. In 2023, the total supply of raw wood reached a volume of 7,101 thousand m³, of which 6,760.2 thousand m³ to the domestic market (of which domestic sales 6,724.6 thousand m³ and in-house consumption 35.6 thousand m³).

Compared to 2022, timber supply to the domestic market (including in-house consumption) decreased by 326 thousand m³. Softwood deliveries increased by 68.7 thousand m³, while deliveries of hardwood decreased by 394.9 thousand m³. Within the softwood supply to the domestic market without in-house consumption, III grade logs (Figure 4a.1) had long-term predominance with a share of 58.4% in 2023. In the supply of hardwood, pulpwood predominated (Figure 4a.2) the share of which increased significantly to 69.3% in 2023, mainly at the expense of III-grade, whose share fell to 19.6%. The share of the highest quality logs of I and II grades was 0.6% in the supply of hardwood and 0.3% in the supply of softwood in 2023.

Table 4a.1

Log grade structure of SOFTWOOD raw wood supply in 2023

Grade	Slovakia	Export	Own consumption	Total	Percentage of grades (%)
	Thousand m ³				
I grade logs	4,92	0,02	0,00	4,94	0,13
II grade logs	5,92	0,18	0,00	6,10	0,16
III grade logs	2 093,87	22,82	22,51	2 139,20	57,54
Paper-pulp & abrasive timber	0,00	0,00	0,00	0,00	0,00
Mining timber	2,58	0,00	0,00	2,58	0,07
Thin poles	14,85	0,27	0,43	15,55	0,42

Pulpwood	764,29	45,26	1,09	810,63	21,81
Energy wood	38,30	0,00	0,00	38,30	1,03
Fuelwood	197,89	0,00	5,27	203,16	5,46
Stumpage	54,67	8,31	0,04	63,01	1,69
Raw trunks	409,12	24,86	0,19	434,16	11,68
Total	3 586,40	101,72	29,52	3 717,64	100,00
Percentage (%)	96,47	2,74	0,79	100,00	-
State sector					
I and II grade logs	0,77	0,02	0,00	0,79	0,04
III grade logs	1 282,94	17,65	0,66	1 301,25	68,04
Pulpwood	444,56	31,09	0,45	476,10	24,89
Energy wood and fuelwood	98,02	0,00	1,08	99,10	5,18
Stumpage	8,69	0,00	0,04	8,73	0,46
Raw trunks	4,99	3,92	0,17	9,07	0,47
Other grades	17,14	0,27	0,01	17,42	0,91
Total of state sector	1 857,11	52,95	2,40	1 912,46	100,00
Percentage (%)	97,10	2,80	0,10	100,00	-
Non-state sector					
I and II grade logs	10,07	0,18	0,00	10,25	0,57
III grade logs	810,93	5,17	21,85	837,95	46,42
Pulpwood	319,73	14,17	0,64	334,54	18,53
Energy wood and fuelwood	138,17	0,00	4,19	142,36	7,89
Stumpage	45,97	8,31	0,00	54,28	3,01
Raw trunks	404,13	20,94	0,03	425,09	23,55
Other grades	0,29	0,00	0,42	0,70	0,04
Total of non-state sector	1 729,29	48,76	27,12	1 805,18	100,00
Percentage (%)	95,80	2,70	1,50	100,00	-

Source: Quarterly timber supply statistics Les D (MARD Slovak Republic) 2-04, 2024

Table 4a.2
Log grade structure of HARDWOOD raw wood supply in 2023

Grade	Slovakia	Export	Own consumption	Total	Percentage of grades (%)
	Thousand m ³				
I grade logs	3,04	0,84	0,00	3,88	0,11
II grade logs	15,78	4,01	0,00	19,79	0,58
III grade logs	615,54	61,76	1,23	678,53	20,05
Mining timber	6,16	0,00	0,00	6,16	0,18
Thin poles	0,60	0,00	0,52	1,12	0,03
Pulpwood	2 175,71	169,35	2,58	2 347,64	69,39
Energy wood	48,93	0,00	0,34	49,27	1,46
Fuelwood	237,56	0,16	1,27	238,99	7,06
Stumpage	19,22	3,04	0,00	22,25	0,66
Raw trunks	15,68	0,00	0,11	15,78	0,47
Total	3 138,22	239,16	6,04	3 383,42	100,00
Percentage (%)	92,75	7,07	0,18	100,00	-

State sector					
I and II grade logs	6,87	1,91	0,00	8,78	0,43
III grade logs	409,51	20,00	0,99	430,50	21,05
Pulpwood	1 397,73	48,61	0,94	1 447,28	70,78
Energy wood and fuelwood	149,42	0,04	1,18	150,64	7,37
Stumpage	0,24	0,00	0,00	0,24	0,01
Raw trunks	0,00	0,00	0,09	0,09	0,00
Other grades	6,76	0,00	0,52	7,28	0,36
Total of state sector	1 970,52	70,56	3,72	2 044,80	100,00
Percentage (%)	96,40	3,50	0,20	100,00	
Non-state sector					
I and II grade logs	11,95	2,94	0,00	14,89	1,11
III grade logs	206,04	41,76	0,24	248,04	18,53
Pulpwood	777,98	120,74	1,63	900,36	67,26
Energy wood and fuelwood	137,08	0,12	0,43	137,63	10,28
Stumpage	18,97	3,04	0,00	22,01	1,64
Raw trunks	15,68	0,00	0,02	15,70	1,17
Other grades	0,00	0,00	0,00	0,00	0,00
Total of non-state sector	1 167,70	168,60	2,32	1 338,62	100,00
Percentage (%)	87,20	12,60	0,20	100,00	

Source: *Quarterly timber supply statistics Les D (MARD Slovak Republic) 2-04, 2024*

Table 4a.3

Structure of SOFTWOOD and HARDWOOD assortments supply and total in 2023 (thousand m³)

Supply	Slovakia	Export	Own consumption	Total
	Thousand m ³			
Softwood	3 586,40	101,72	29,52	3 717,64
Hardwood	3 138,22	239,16	6,04	3 383,42
Total	6 724,62	340,88	35,56	7 101,06

Source: *Quarterly timber supply statistics Les D (MARD Slovak Republic) 2-04, 2024*

Foreign trade in raw wood assortments

According to the preliminary data of the foreign trade statistics (customs statistics), 1.839 million m³ of raw wood was exported in 2023. Of the above-mentioned volume, forest managers and owners exported only 349 thousand m³ (36,8 thousand m³ of softwood and 312,2 thousand m³ of hardwood), i.e. 18.5% of the total volume of exports. The remaining 81.5% was exported by various non-forestry entities, mainly trading companies.

The export of raw wood (Figure 4a.3) decreased by 49 thousand m³ compared to 2022. In exports, heading mainly to EU countries (Romania, the Czech Republic, Poland and Austria) and to China, the logs of I and III quality grades in softwood (33.8% of total exports) prevailed. In hardwood it was 24.5% of the logs of I to III quality grades. In 2023, the volume of timber exports was 179 thousand m³ lower than the average annual export in the period 2018-2022.

In 2023, 1.336 million m³ of raw wood were imported to the territory of the Slovak Republic (Figure 4a.4), which was 1.505 million m³ less than last year, or by 0.726 million m³ less compared to the five-year average of imports in the period of 2018-2022. In a year-on-year

comparison, a very significant decrease in the import of raw wood was caused by the unfavourable situation on the market for wood products and lower demand. In the import of raw wood, hardwood logs of I to III grade prevailed (43.3%).

Domestic consumption of raw wood assortments

The total volume of domestic consumption and processing of raw wood (supplies + import - export) in 2023 reached 6.598 million m³ and, compared to 2022, it significantly decreased by 1.790 million m³, i.e. by 21.3% (Table 4a.4).

Table 4a.4 Raw timber consumption in 2023 (thousand m³)

Grade	Domestic production	Import	Export	Domestic consumption
Softwood logs (quality class I to III)	2 647,42	373	621	2 399,42
Softwood logs (quality class IV and V)	828,76	256	571	513,76
Hardwood logs (quality class I to III)	740,24	579	451	868,24
Hardwood logs (quality class IV and V)	2 354,91	54	108	2 300,91
Fuelwood	529,73	74	88	515,73
Total	7 101,06	1 336	1 839	6 598,06

Source: *Quarterly timber supply statistics Les D (MARD Slovak Republic) 2-04, Statistical Office of the Slovak Republic 2023; Joint Forest Sector Questionnaire (JFSQ 2022), tentative values for 2023.*

Prices of raw wood assortments

In 2023, in the year-on-year comparison, there was a slight increase in the average monetization of raw wood assortments to €74.57/m³, i.e. by €0.34/m³. The significant increase in the price of hardwood continued, increasing by €13.4/m³ year-on-year, or 20.7% to €78.0/m³. The average price of softwood decreased from €85.8/m³ in 2022 to €72.1/m³ in 2023, i.e. by 16.0%. (Figure 4a.5).

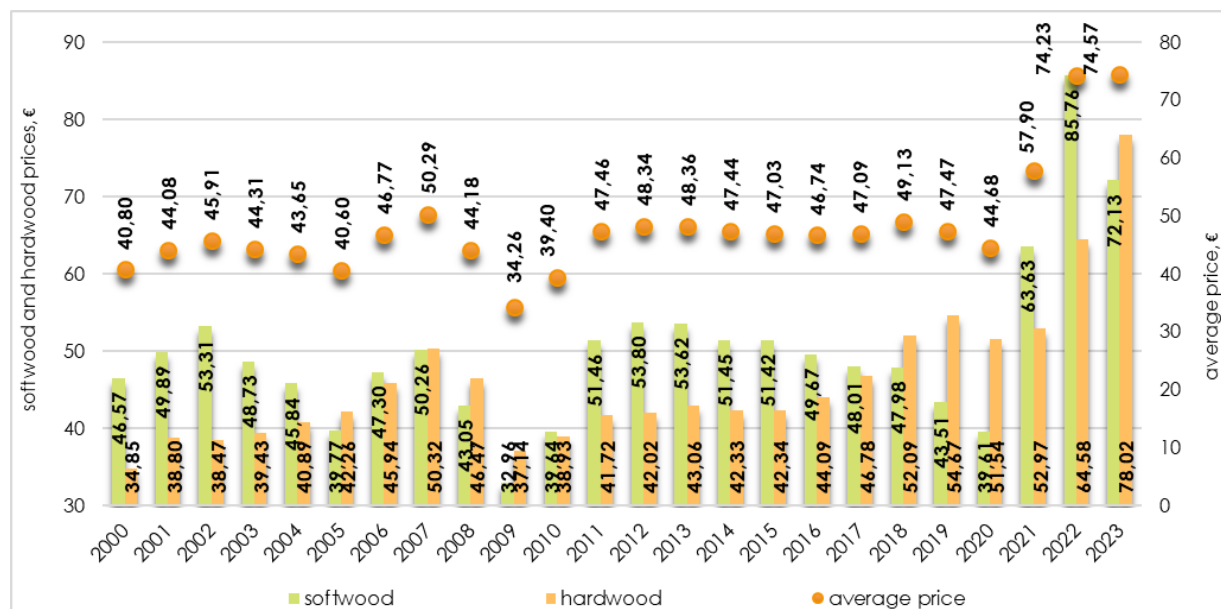


Figure 4a.6 Development of softwood, hardwood and average prices

Source: *Quarterly timber supply statistics Les D (MARD S 2-04) 2023; Forestry studies 69/2019.*

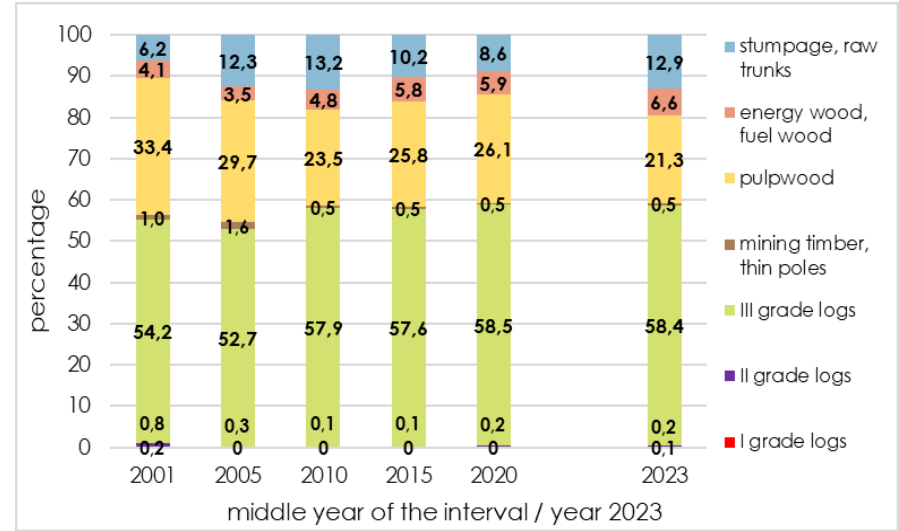
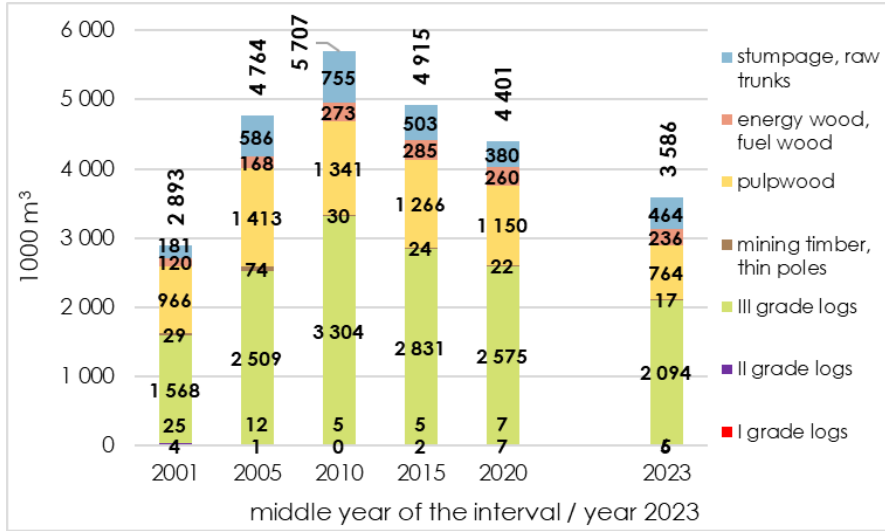


Figure 4a.1
Development of domestic supplies of SOFTWOOD by the grade of assortment without own consumption (1000 m³ and %)

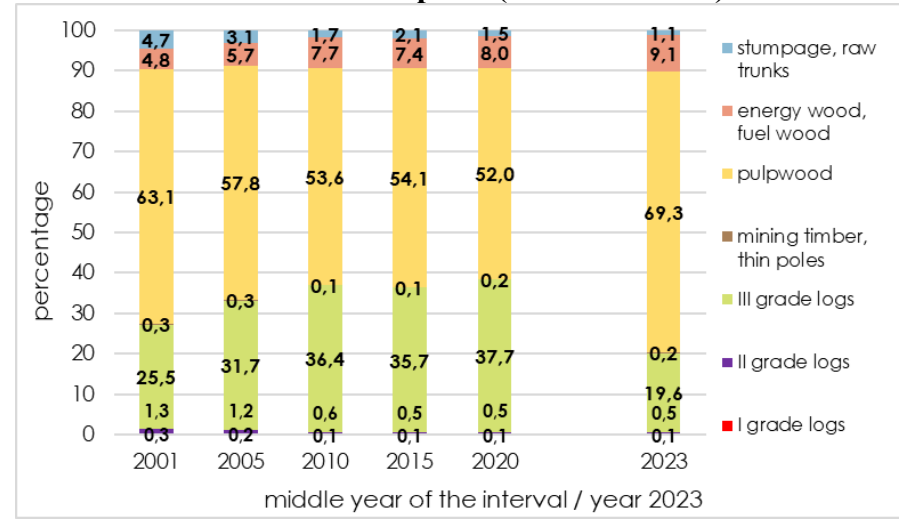
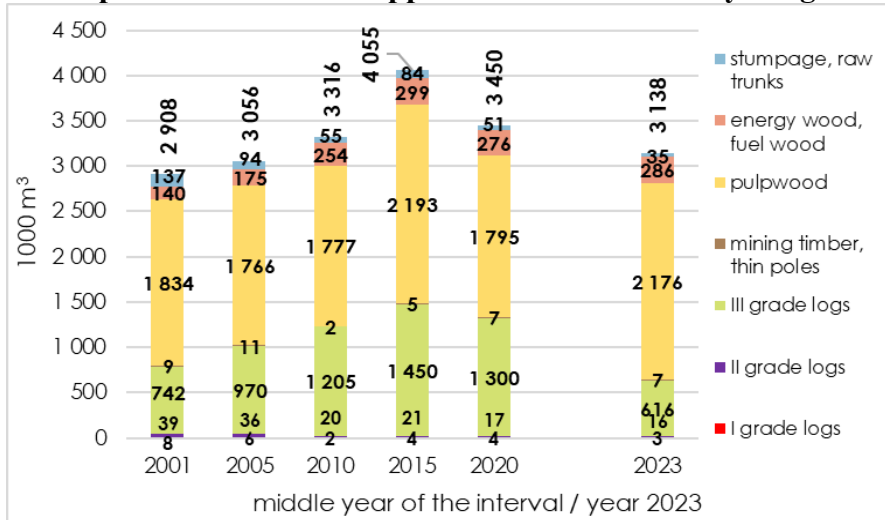


Figure 4a.2
Development of domestic supplies of HARDWOOD by the grade of assortment without own consumption (1000 m³ and %)

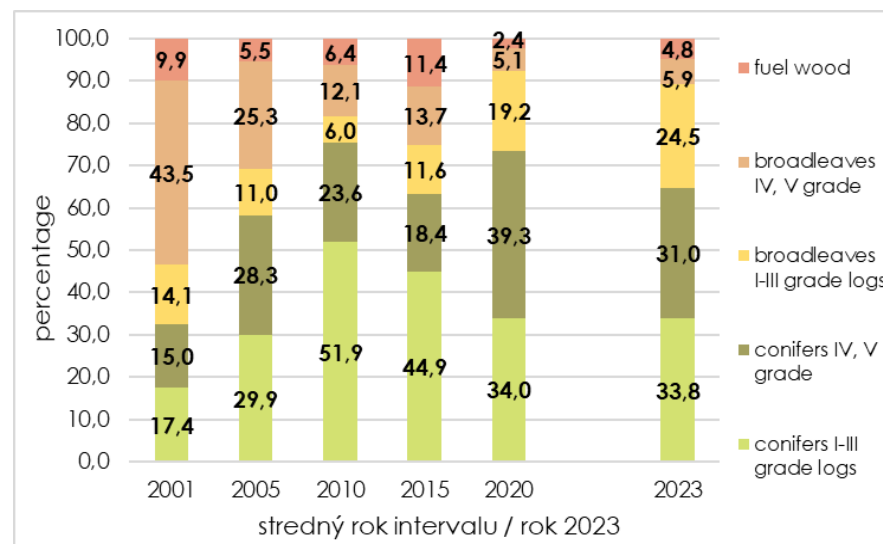
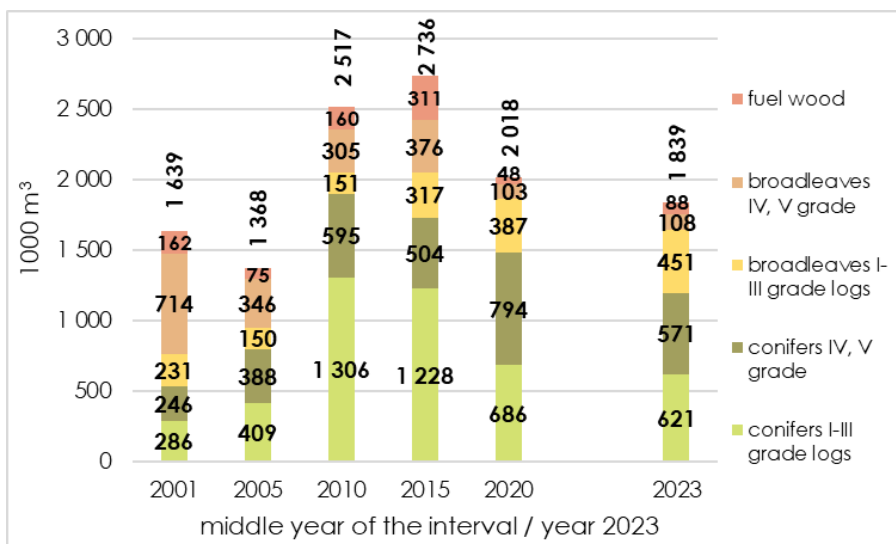


Figure 4a.3
Development of raw wood export

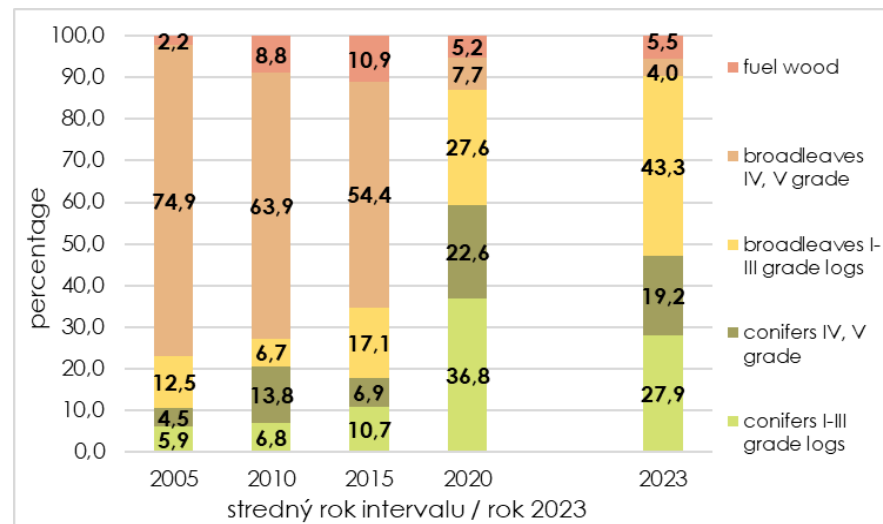
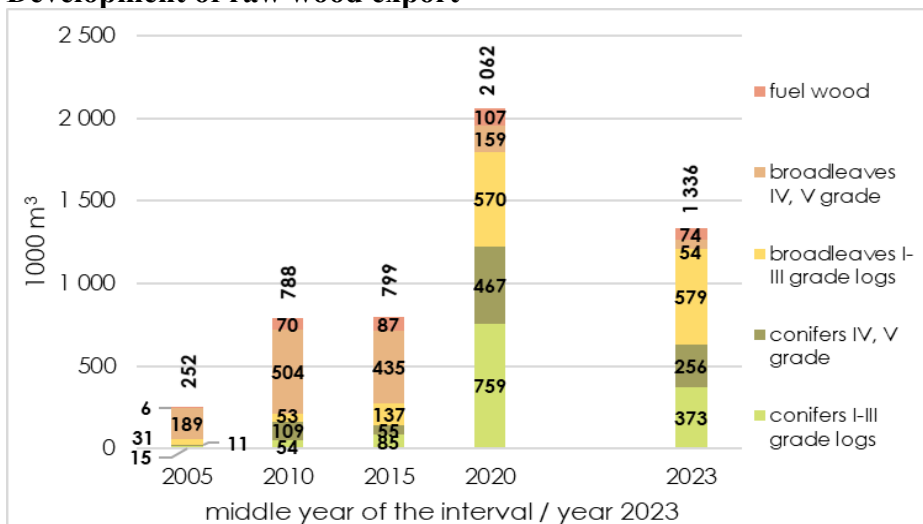


Figure 4a.4
Development of raw wood import

b. Wood processing industry

In 2023, the total volume of domestic processing of raw wood (supplies + import - export) reached 6.598 million m³, which was 1.790 million m³ less than previous year. The aforementioned decrease was reflected in the economic indicators of the timber processing industry. Revenues decreased by 15.2%, costs by 11.1% and the economic result before taxes by 81.2% to the actual €48 million. It means there was no significant growth in the competitiveness of majority of mechanical-timber-processing enterprises. Due to the lack of processing capacities, the highest quality I and II log grades are processed very little, as well as hardwood logs of the grade III. This does not correspond to the considerable potential production of these grades in the Slovak forests. 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 performant sectors of the Slovak economy. The current trade balance of the forestry and timber sector reaches a surplus of €798.8 million. The trade surplus in lumber exports of €56.9 million can be perceived negatively. Contrary, the trade surplus in products with high added value such as paper production of €367.0 million and secondary wood products €223.2 million, including furniture and joinery products, is positive. Therefore, further development of industries with higher added value having a negative trade balance, especially the production of veneers, fiberboard and OSB boards, secondary paper products and processing of waste paper is the main priority.

Figure 9.1 Selected economic parameters of timber-processing industry

Indicator	Industry	2010	2015	2017	2019 ^{*)}	2020 ^{*)}	2021 ^{*)}	2022	2023
Revenues (million €)	TI	456	590	673	1 225	1 141	1 534	1 159	910
	FI	621	817	923	966	864	951	1 054	897
	PPI	1 458	1 379	1 388	1 493	1 341	1 626	2 161	1 904
	∑ TPI	2 535	2 786	2 984	3 684	3 346	4 111	4 374	3 711
Costs (million €)	TI	469	573	655	1 183	1 085	1 403	1 080	887
	FI	607	835	894	963	864	944	1 025	909
	PPI	1 328	1 242	1 253	1 390	1 288	1 579	2 014	1 867
	∑ TPI	2 404	2 650	2 802	3 536	3 237	3 927	4 120	3 663
Economic result before taxes (million €)	TI	- 13	17	18	42	56	131	78	23
	FI	14	-18	29	3	0	7	29	-12
	PPI	130	137	135	103	53	47	146	37
	∑ TPI	131	136	182	149	109	185	254	48
Average number of employees in natural persons	TI	5 667	4 423	5 400	13 457	12 135	12 334	5 787	5 386
	FI	10 236	11 238	11 426	11 655	10 339	9 651	7 918	7 408
	PPI	6 591	6 157	6 581	7 073	6 830	7 057	6 863	6 770
	∑ TPI	22 494	22 818	23 407	32 184	29 304	29 042	20 568	19 564

Source: Ministry of Economy of the Slovak Republic 2010, Statistical Office of the Slovak Republic 2015-2023 (Report Prod. 3-04 and Prod. 13-04). ^{*)} Data for 2019-2021 include the results of statistic survey Prod 13-04 on small industries. From 2022, data for small entities is not collected, statistical survey Prod 13-04 has been cancelled.

Notes: TI - Timber industry, FI - Furniture-making industry, PPI - Pulp and paper industry, TPI - Timber processing industry.

Increasing the amount of carbon stored in wood products is an internationally recognised measure to mitigate climate change. Therefore, the sound use wood should be supported, especially long-lasting wood products. Carbon stored in wood returns back into the atmosphere only after products become are burned or their decomposition begins. In 2022, the balance of the CO₂ stored in wood products, i.e. the difference between the CO₂ “removals” and “emissions”, was almost 22 thousand tonnes.

c. Energy use of timber

In 2023, the total supplies of wood-fuel biomass from forestry were 1.3 million tonnes and, compared to 2022, they increased by 5 thousand tonnes. The trend of their reduction that begun approximately in 2015, when the volume of supply of fuel wood biomass was the highest (1.45 million tons), has ended.

d. Evaluation of the use of raw wood resources in the wood processing industry (WPI) in Slovakia – Cascade Approach (Study: National Forest Centre, Technical University Zvolen, 2021-2022)

In 2022, the process of approving the new National Forest Programme (NFP) Slovak Republic 2022-2030 "Forests for society" continued. The issue of forests and forest-based industry in the circular economy is dealt with in the second thematic part "Forests and wood", specifically Strategic Goal IV: "Increase the competitiveness of the forest and timber sector through more efficient use of wood and the production of products with higher added value based on the principles of the circular bioeconomy". One of the measures is also an increase in the cascading and circular use of timber.

The world's leading forums to combat climate change support the production of wood and wood products (Harvested Wood Products – HWP) produced in a sustainable and ecological way. Therefore, carbon storage in HWP is an important measure to mitigate global warming. In doing so, it is necessary to apply the concept of cascade processing and utilization of wood in the following order of preferences: 1) mechanical processing; 2) chemical processing; 3) recycling of products after their useful life 4) energy utilization of wood. This practice extends the life cycle of the wood and consequently carbon sequestration in the HWP.

One of the conditions of the cascade approach is the preferential use of by-products of wood processing (off-cuts, sawdust, shavings, chips, etc.), especially for the production of wood-based agglomerated materials (AM) and cellulose products. Therefore the current (non-ecological) practice of predominantly using wood by-products for energy production in the Slovak Republic should be changed.

To find out the state of production of wood semi-finished products and by-products of mechanical wood processing, a questionnaire survey was in 2021-2022 conducted for two main product groups:

- sawmill products (sawnwood, by-products) and
- large-area materials (veneers, plywood and agglomerated materials).

Assessment of the use of raw wood resources in the wood processing industry (WPI) in Slovakia was aimed at quantifying production:

- basic semi-finished products (sawnwood, veneers, plywood, agglomerated materials);
- by-products (off-cuts, boards, edge boards, sawdust, shavings, bark, chips, peeling residues, wood cores, wood dust);
- processed energy wood (pellets, briquettes, split firewood).

The number of subjects addressed was 177 (approximately half of those registered in Slovakia). The number of answering respondents was 57, which represents the return rate of the questionnaire: 32.2%. The number of responding subjects producing large-sized materials represented almost 100% coverage of the mentioned products in Slovakia. The number of respondents took into account, among other things, size categories of companies and coverage of Slovakia according to regions and their forest cover.

This empirical survey was evaluated through an expert analysis of the collected data for 2020 including approximation of the achieved results for the whole of Slovakia and calculation of the value of the cascade coefficient. The findings are intended to serve as background material for taking measures to optimize the use of wood and by-products from wood in accordance with

the principles of circular bioeconomy and cascading use of wood. These concrete results for 2020 were obtained by evaluating the survey:

- quantification of production inputs by volume and types;
- quantification of production, including by-products, by volume and types;
- subsequent use of production (own consumption or sale; for industrial or energy use);
- calculation of the cascade coefficient to indicate the possible prolongation of carbon storage in HWP depending on the use of wood.

As for the volume of by-products (Figure 2.1) produced in 2020, it was 1.25 million m³. The largest volumes were produced in wood chips (477 ths. m³) and sawdust (255 ths. m³). Of this, 61.2% was used for energy production and 38.8% for other industrial use. Directly for production of energy was used 37.7% and 23.5% through processed energy wood (pellets, briquettes, split firewood).

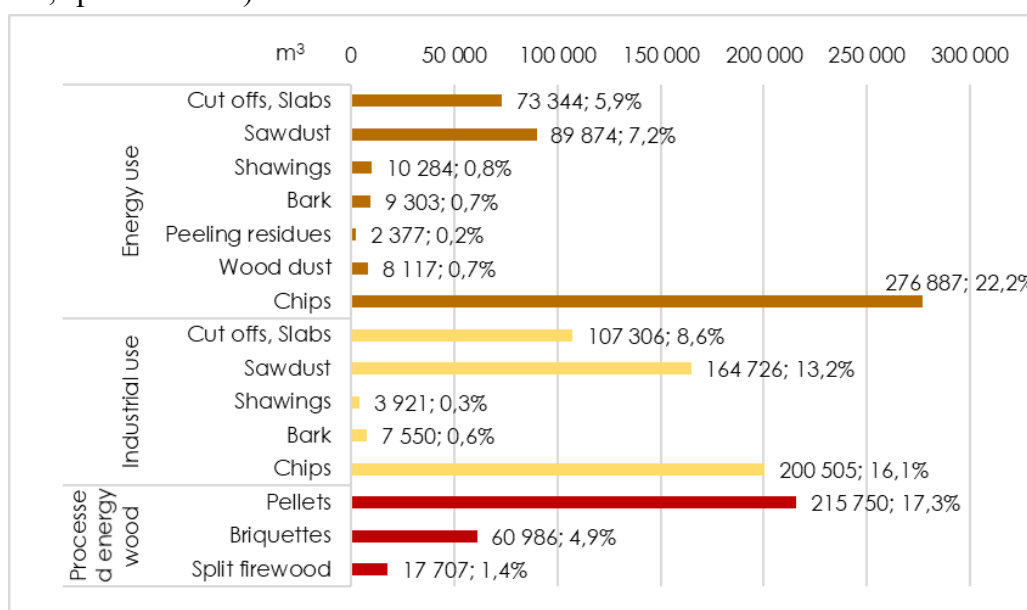


Figure 2.1 Production and use of by-products

Indirect wood flows can best be expressed by a cascade coefficient that takes into account the repeated use of wood originating on the use side and returning to the source side. We can calculate it as a share of total timber sources and the volume of domestic consumption of raw wood in given year. Total timber sources in 2020 was 9.536 million. m³. It was formed by wood biomass from the forest, recycled material, by-products and processed energy wood. Recycled wood material and black liquor have been added to the resources; black liquor is produced as an energy-rich by-product in the pulp and paper industry and it is used as biofuel. The volume of domestic consumption of raw wood in 2020 was 7.158 mil. m³. The value of the cascade coefficient calculated by this procedure was 1.332.

The value of the cascade coefficient we can calculate also without taking into account sources and products for energy use. This method of calculation enables to better express the desired increase in the use of wood and by-products for further industrial processing, especially for products with a longer lifespan. This will increase the carbon sequestration time in the HWP and delay the end of the wood's life cycle. Wood for energy use stores carbon a very short time and when it was excluded from the calculation, the value of the cascade coefficient was lower 1.094

e. Certified forest products

In the Slovak Republic, forest managers and wood processors can apply for certificates of two certification schemes: PEFC (Programme for the Endorsement of Forest Certification) and FSC

(Forest Stewardship Council). Both these certificates confirms that forest management meets the certification conditions and criteria defined by the given scheme, and that the wood from which the wooden product was made originates in a certified forest managed sustainably.

In Slovakia, 1,131.7 thousand ha of forest stands had the PEFC certificate. According to the FSC scheme, 603.0 thousand ha was certified. As 520.5 thousand ha had both certificates (PEFC and FSC) in 2023, the total area of certified forests in the Slovak Republic reached 1,214.5 thousand ha, i.e. 62,1% of the total area of forest stands.

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

Forest certification scheme	Area and share of certified forests ha / %				Number of certificates issued	
	Certificate of one scheme	Double certification (PEFC and FSC)	Total	Share of the forest stand area	TUOL ¹⁾	COC ²⁾
PEFC	611 203	520 456	1 131 659	57,87	242	111
FSC	82 573		603 029	30,84	21	211
Total	693 776	520 456	1 214 232	62,09	263	322

Source: documents provided by PEFC Slovakia for the year 2023. Explanations: 1) sustainable forest management certificate (SFM) issued to the forest manager; 2) certificate of COC – chain of custody, issued to the processor involved in the production of the product; another 12 PEFC certified companies operating in the Slovak Republic are registered at their headquarters abroad.

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	989 281	928 489	93,85	82,05	118
Private	142 426	39 815	27,95	3,52	45
Community	641 027	61 907	9,66	5,47	46
Church	34 567	0	0	0	0
Agri-cooperative	4 003	0	0	0	0
Municipal	144 219	101 448	70,34	8,96	33
Total PEFC	1 955 522	1 131 659	57,87	100	242

Actual domestic consumption, its estimate and forecast in 2024 and 2025 for sawnwood, wood-based panels, pulp and paper are listed in the next tables e) – h):

e) Sawn softwood (1000 m³)

	Sawnwood – coniferous	2022	2023	2024 estimate	2025 forecast
5.C	Production	1 430	1 115	1 400	1 350
	Imports	480	286	275	325
	Exports	1 063	688	800	750
	Apparent consumption	847	714	875	925

f) Sawn hardwood (1000 m³)

	Sawnwood – non-coniferous	2022	2023	2024 estimate	2025 forecast
5.C	Production	385	253	260	300
	Imports	55	32	50	50
	Exports	205	179	190	200
	Apparent consumption	235	106	120	150

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

- Veneer sheets (1000 m³)

	Veneer sheets	2022	2023	2024 estimate	2025 forecast
7	Production	21	21	20	20
	Imports	27	19	20	20
	Exports	31	30	30	30
	Apparent consumption	17	10	10	10

- Plywood (1000 m³)

	Plywood	2022	2023	2024 estimate	2025 forecast
8.1	Production	153	100	100	110
	Imports	10	8	10	15
	Exports	5	5	10	15
	Apparent consumption	158	103	100	110

- Particle board (1000 m³)

	Particle board	2022	2023	2024 estimate	2025 forecast
8.2	Production	676	741	770	770
	Imports	197	204	210	215
	Exports	474	538	560	550
	Apparent consumption	399	408	420	435

- Fibreboard

	Fibreboard	2022	2023	2024 estimate	2025 forecast
8.3	Production	0	0	0	0
	Imports	248	145	150	160
	Exports	15	15	20	30
	Apparent consumption	233	129	130	130

h) Pulp and paper

	Wood pulp	2022	2023	2024 estimate	2025 forecast
9	Production	692	594	600	650
	Imports	173	155	160	150
	Exports	166	118	130	125
	Apparent consumption	700	631	630	675
	Paper & Paperboard	2022	2023	2024 estimate	2025 forecast
12	Production	967	884	900	950
	Imports	457	386	400	425
	Exports	859	791	800	800
	Apparent consumption	565	479	500	575

**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: 10.9.2024
Name of Official responsible for reply: Martin Moravčík	
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Note:
Complete only if data
for 2023 have been
revised.

Product Code	Product	Unit	Historical data		Revised 2023	Estimate 2024	Forecast 2025
			2022	2023			
1.2.1.C	SAWLOGS AND VENEER LOGS, CONIFEROUS						
	Removals	1000 m ³ ub	2 559	2 647		3 000	2 900
	Imports	1000 m ³ ub	900 #	950 #	373	330	350
	Exports	1000 m ³ ub	400 #	350 #	621	750	650
	Apparent consumption	1000 m ³ ub	3 059	3 247	2 399	2 580	2 600
1.2.1.NC	SAWLOGS AND VENEER LOGS, NON-CONIFEROUS						
	Removals	1000 m ³ ub	1 570	740		900	1 000
	Imports	1000 m ³ ub	500 #	450 #	579	500	450
	Exports	1000 m ³ ub	400 #	400 #	451	400	400
	Apparent consumption	1000 m ³ ub	1 670	790	868	1 000	1 050
1.2.1.NC.T	of which, tropical logs						
	Imports	1000 m ³ ub	0 #	0 #		0	0
	Exports	1000 m ³ ub	0 #	0 #		0	0
	Net Trade	1000 m ³ ub	0	0		0	0
1.2.2.C	PULPWOOD (ROUND AND SPLIT), CONIFEROUS						
	Removals	1000 m ³ ub	748	811		1 125	1 000
	Imports	1000 m ³ ub	600 #	630 #	256	200	300
	Exports	1000 m ³ ub	750 #	740 #	571	600	500
	Apparent consumption	1000 m ³ ub	598	701	496	725	800
1.2.2.NC	PULPWOOD (ROUND AND SPLIT), NON-CONIFEROUS						
	Removals	1000 m ³ ub	1 924	2 348		2 250	2 350
	Imports	1000 m ³ ub	100 #	100 #	54	50	100
	Exports	1000 m ³ ub	150 #	150 #	108	150	150
	Apparent consumption	1000 m ³ ub	1 874	2 298	2 294	2 150	2 300
3	WOOD CHIPS, PARTICLES AND RESIDUES						
	Domestic supply	1000 m ³	1 149 C	1 139 C		1 150	1 200
	Imports	1000 m ³	323 C	143 C		200	200
	Exports	1000 m ³	310 C	250 C		275	300
	Apparent consumption	1000 m ³	1 162	1 032		1 075	1 100
1.2.3.C	OTHER INDUSTRIAL ROUNDWOOD, CONIFEROUS						
	Removals	1000 m ³ ub	18	18		15	18
1.2.3.NC	OTHER INDUSTRIAL ROUNDWOOD, NON-CONIFEROUS						
	Removals	1000 m ³ ub	8	7		5	7
1.1.C	WOOD FUEL, CONIFEROUS						
	Removals	1000 m ³ ub	259	241		275	250
1.1.NC	WOOD FUEL, NON-CONIFEROUS						
	Removals	1000 m ³ ub	350	288		250	300

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

Country:	Slovakia	Date:	11.9.2024
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Note:
Complete only if data
for 2023 have been
revised.

Product Code	Product	Unit	Historical data		Revised 2023	Estimate 2024	Forecast 2025
			2022	2023			
6.C	SAWNWOOD, CONIFEROUS						
	Production	1000 m ³	1 430	1 115		1 400	1 350
	Imports	1000 m ³	480	286		275	325
	Exports	1000 m ³	1 063	688		800	750
	Apparent consumption	1000 m ³	847	714		875	925
6.NC	SAWNWOOD, NON-CONIFEROUS						
	Production	1000 m ³	385	253		260	300
	Imports	1000 m ³	55	32		50	50
	Exports	1000 m ³	205	179		190	200
	Apparent consumption	1000 m ³	235	106		120	150
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	1		0	0
7	VENEER SHEETS						
	Production	1000 m ³	21 C	21 C		20	20
	Imports	1000 m ³	27 C	19 C		20	20
	Exports	1000 m ³	31 C	30 C		30	30
	Apparent consumption	1000 m ³	17	10		10	10
7.NC.T	of which, tropical veneer sheets						
	Production	1000 m ³	0	4		2	3
	Imports	1000 m ³	5	3		4	4
	Exports	1000 m ³	4	7		5	5
	Apparent consumption	1000 m ³	0	0		1	2
8.1	PLYWOOD						
	Production	1000 m ³	153 C	100 C		100	110
	Imports	1000 m ³	59 C	8 C		10	15
	Exports	1000 m ³	146 C	5 C		10	15
	Apparent consumption	1000 m ³	67	103		100	110
8.1.NC.T	of which, tropical plywood						
	Production	1000 m ³	0	0		0	0
	Imports	1000 m ³	1	0		0	0
	Exports	1000 m ³	0	0		0	0
	Apparent consumption	1000 m ³	1	0		0	0
8.2	PARTICLE BOARD (including OSB)						
	Production	1000 m ³	676	741		770	770
	Imports	1000 m ³	197	204		210	215
	Exports	1000 m ³	474	538		560	550
	Apparent consumption	1000 m ³	399	408		420	435
8.2.1	of which, OSB						
	Production	1000 m ³	0	0		0	0
	Imports	1000 m ³	48	49		50	50
	Exports	1000 m ³	1	2		1	1
	Apparent consumption	1000 m ³	48	46		49	49
8.3	FIBREBOARD						
	Production	1000 m ³	0 C	0 C		0	0
	Imports	1000 m ³	248 C	145 C		150	160
	Exports	1000 m ³	39 C	15 C		20	30
	Apparent consumption	1000 m ³	210	129		130	130
8.3.1	Hardboard						
	Production	1000 m ³	0	0		0	0
	Imports	1000 m ³	21	10		10	10
	Exports	1000 m ³	1	1		1	1
	Apparent consumption	1000 m ³	21	9		9	9
8.3.2	MDF/HDF (Medium density/high density)						
	Production	1000 m ³	0	0		0	0
	Imports	1000 m ³	170	61		60	60
	Exports	1000 m ³	35 E	11		10	10
	Apparent consumption	1000 m ³	135	50		50	50
8.3.3	Other fibreboard						
	Production	1000 m ³	0	0		0	0
	Imports	1000 m ³	57	74		70	75
	Exports	1000 m ³	3	4		5	5
	Apparent consumption	1000 m ³	54	70		65	70
9	WOOD PULP						
	Production	1000 m.t.	692 C	594 C		600	650
	Imports	1000 m.t.	173 C	155 C		160	150
	Exports	1000 m.t.	166 C	118 C		130	125
	Apparent consumption	1000 m.t.	700	631		630	675
12	PAPER & PAPERBOARD						
	Production	1000 m.t.	967 C	884 C		900	950
	Imports	1000 m.t.	457 C	386 C		400	425
	Exports	1000 m.t.	859 C	791 C		800	800
	Apparent consumption	1000 m.t.	565	479		500	575
5.1	WOOD PELLETS						
	Production	1000 m.t.	390	290		300	300
	Imports	1000 m.t.	47	35		40	40
	Exports	1000 m.t.	415	244		250	250
	Apparent consumption	1000 m.t.	22	81		90	90

