



STATE OF THE ENVIRONMENT REPORT – SLOVAK REPUBLIC

2018

25th anniversary of annual reports

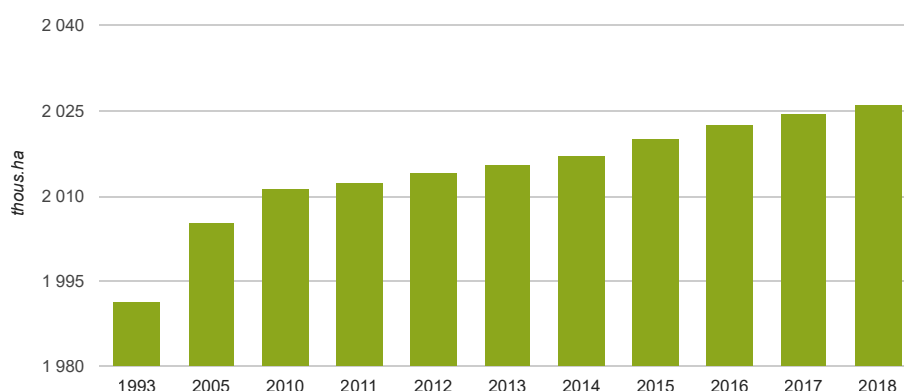
FORESTRY

AREA, COMPOSITION AND FUNCTION OF FORESTS

The area of the SR covered with forest has been stable over the long term (approx. 41%), respectively the area of forest land (FL) is slightly increasing (pursuant to data from the forest care programmes, respectively the land register). Satellite images of land cover (in the context of CORINE projects) however indicate a decrease in forested land. There are 2 different methodologies and approaches to assessing the area of forested land. **The area of forest land** (pursuant to

the land register) reached 2 026 027 ha (with a year-on-year increase of 1 653 ha), or **41.3%** of Slovak territory. In addition to FL, forests also appear on agricultural and other land (so-called **white areas**). The results of the second cycle of the National Forest Inventory and Monitoring in the SR 2015-2016 (NFIM 2) indicate that such area is **288 ± 39 000 ha**, or a significant share of forests in FL, and after this is taken into account the actual area of forests in Slovakia is 45.1 ± 0.9%.

Chart 076 I Trend in the area of forest land

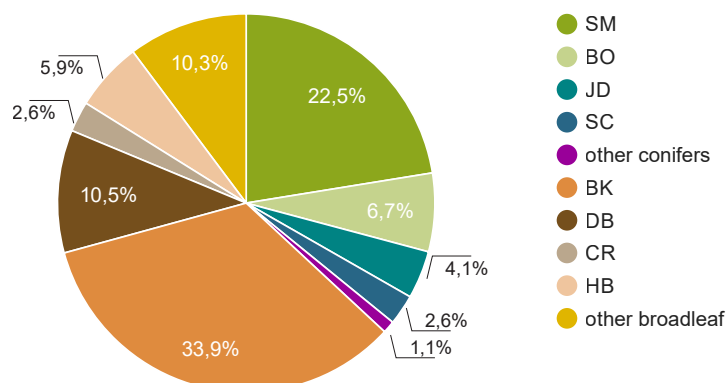


Source: GCCA SR

In 2018 the increase in the favourable share of **broad-leaved trees (63.1%)** compared to **coniferous trees (36.9%)** continued. Compared to 2017 the share of broad-leaved trees increased by another 0.3%, while a decrease in the share of

coniferous trees was recorded especially for spruce, as a result of harmful pests. **The most common** tree species are beech (33.9%), spruce (22.5%), common oak and sessile oak (10.5%) and pine (6.7%).

Chart 077 I Shares of tree species in forests of the SR (2018)



Source: NFC

Note: SM-spruce, BO-pine, JD-silver fir, SC-larch, BK-beech, DB-oaks, CR-Austrian oak, HB-hornbeam

TRANSITION TO A GREEN AND CIRCULAR ECONOMY

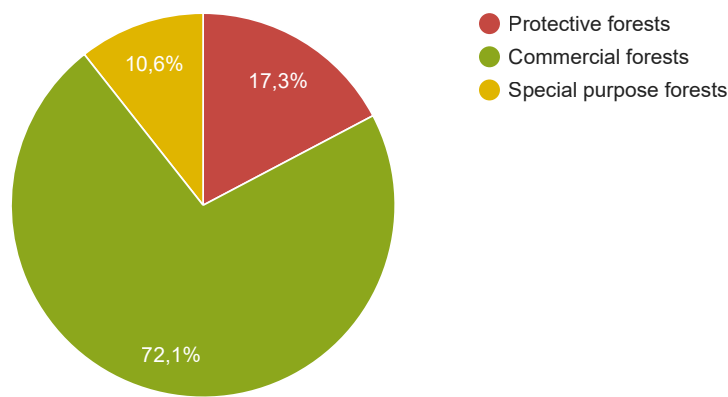
The current trend in the **age structure** of forests differs significantly from the normal (ideal) structure. Forests over 70 years old, where regeneration should commence, predominate while on the other hand the share of young forests aged from 20 to 70 is under the normal level. This status demonstrates the aging of forests in Slovakia, with the average age of all the main trees increasing with the exception of spruce (due to frequent calamities).

State-run forest management organisations own a total of **40.3%** of forested land (784 684 ha), however they manage up to **52.4%** forested land (1 005 208 ha). The remainder of

forested land is managed by non-state forest management entities that own and manage private, community, church, municipal and agricultural cooperative forests. As part of the reprivatisation process Forests of the Slovak Republic, state enterprise has handed over a total of 3 103 ha of forest land.

The most common category are **commercial** forests, followed by **protective** forests, while the smallest category is special-purpose forests. The majority of commercial forests are multifunctional forests that perform other associated environmental and social functions in addition to production functions.

Chart 078 I Shares of forest categories in forested land (2018)



Source: NFC

FOREST REGENERATION AND STANDING VOLUME

The total scope of **forest regeneration** compared to the preceding year increased by 689 ha to its current **17 387.7 ha**, and this has been a relatively balanced trend over recent years. **Natural regeneration** slightly increased compared to 2017, while its share in total forest regeneration from a long-term (since 1993) and medium-term (since 2005) perspective showed a significant increase, reaching **40.6% as of 2018**.

Standing volume in forests has been increasing over the long term and in 2018 reached **481.8 million m³** of barkless wood matter, 1.55 million m³ more than in the preceding year. At present, as a consequence of the age composition of its forests, the SR has its historically largest standing volume, however their volume is already culminating. The standing volume of **coniferous** wood has been falling since 2010 (due to frequent damage, especially to spruce forests), on the other hand the trend in the increase of standing volume of broad-leaved wood continued. In addition to this there is standing volume of 46 ± 7 million m³ in forests **on non-forest land** (white areas) pursuant to findings from NFIM 2. **The average stock** per hectare was **248 m³/ha**.

Deadwood is also an important component of forest ecosystems and should be kept in forests to the extent necessary to promote biodiversity. Pursuant to NFIM 2 results there is 87.0 ± 5.7 million m³ of dead wood (standing dry trees, stumps, lying rough and thin wood) in forests, an average of 45.2 ± 2.8 m³ per ha; on non-forest land there is another 6.8 ± 1.8 million m³. The volume of dead wood in Slovakia is significantly higher than the average for European Member States.

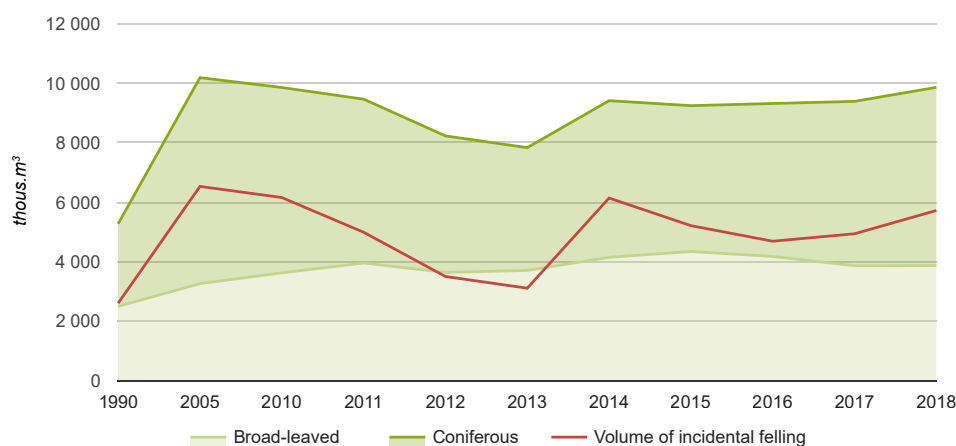
Of the natural ecosystems, **forest ecosystems** are among the most important links in the **carbon cycle**. Forests are able to accumulate large volumes of carbon thanks to their large amounts of wood biomass over the long term, and hence reduce CO₂ levels in the atmosphere. **The carbon stock** in forest ecosystems, and above-ground and underground biomass, is related to the stock of wood in forests and the area of forest soil, while it was **504.9 million tonnes in 2018**.

TIMBER FELLING AND FOREST RESOURCES UTILISATION

In 2018 timber felling increased by 5% compared to the previous year, reaching **9 864 727 m³**. The share of **incidental felling** in total felling increased by 5.4% to 58% compared to the previous year. The **intensity of forest resources utilisation** (share of felling volumes and increment) was 82.15% (increase of 4% compared to 2017). The **main factor**

in increased felling possibilities and actual timber felling was the current age structure of forests with normal to above-normal area representation of 8th and higher age groups (71 years and over), mostly mature forests, yet its increase is approaching culmination.

Chart 079 I Trend of total and incidental felling



Source: NFC

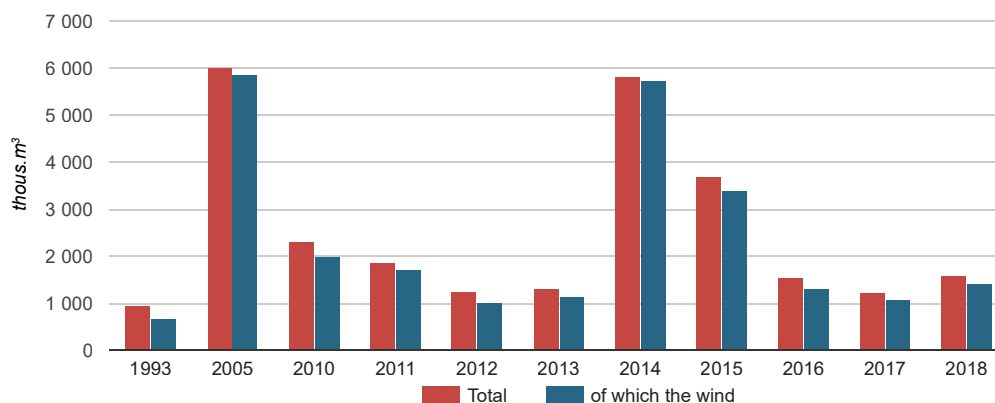
HARMFUL FACTORS AND FOREST CONDITION

Abiotic harmful agents

As a result of the harmful effects of wind, snow, ice, drought and other abiotic agents **1 602 382 m³** of wood was damaged as of 2018, of which 146 883 m³ was the unprocessed volume of the previous year. The **share of wind** in abiotic harmful

agents was up to **87.6%**. A total of **93.8% of wood mass was processed**. The most damaged coniferous trees were the spruce and the most damaged broad-leaved trees the beech.

Chart 080 I Trend in forest damage by abiotic agents



Source: NFC

Biotic harmful agents

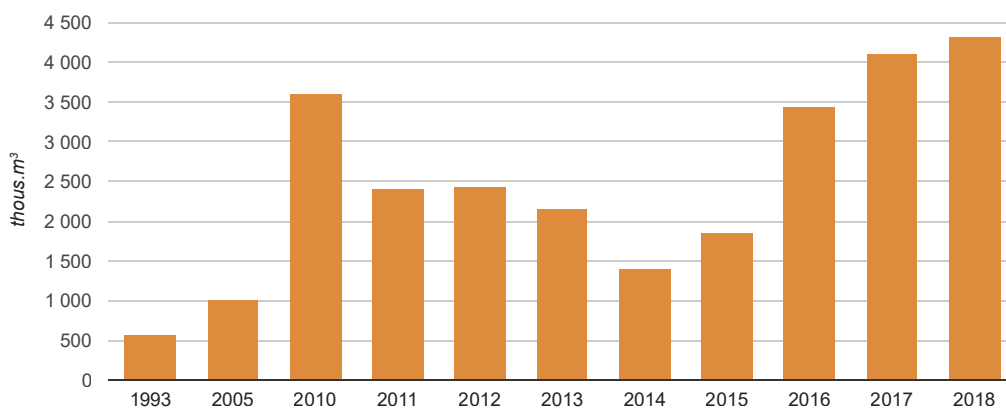
The increase in calamity caused by **biotic harmful agents** was **4 066 572 m³** in 2018 (together with the remainder from the previous year a total of 4 591 698 m³ was damaged). Of this, bark-beetles and woodworms continue to have the highest influence on incidental felling, posing a danger to forest ecosystems containing spruce. Other harmful agents are phytopathogenic microorganisms, fungal diseases, insectivorous and sucking insects and game hunting. The volume of damage was approx. 100 000 m³ higher compared to 2017, thus creating a new maximum of matter attacked by

biotic agents at least since 1960.

Bark-beetles and woodworms damaged **4 339 340 m³** of wood matter. Compared to the preceding year this was an increase of 229 200 m³. 91.6% of this was processed. The most important harmful agent was again the **spruce bark-beetle**.

Phytopathogenic organisms damaged a total of **252 358 m³** of wood mass (a year-on-year increase of 21.1%), while the most important pathogen was **honey fungus** (67.1%).

Chart 081 | Trend in forest damage by bark-beetles and woodworms



Source: NFC

Anthropogenic harmful agents

Anthropogenic harmful agents damaged **31 930 m³** of wood mass, of which 2 707 m³ was the unprocessed volume from the preceding year (this was a year-on-year **decrease** of 33.8%). **Emissions** had the highest share (up to 65.1%) and wood theft also had a high share (24.4%).

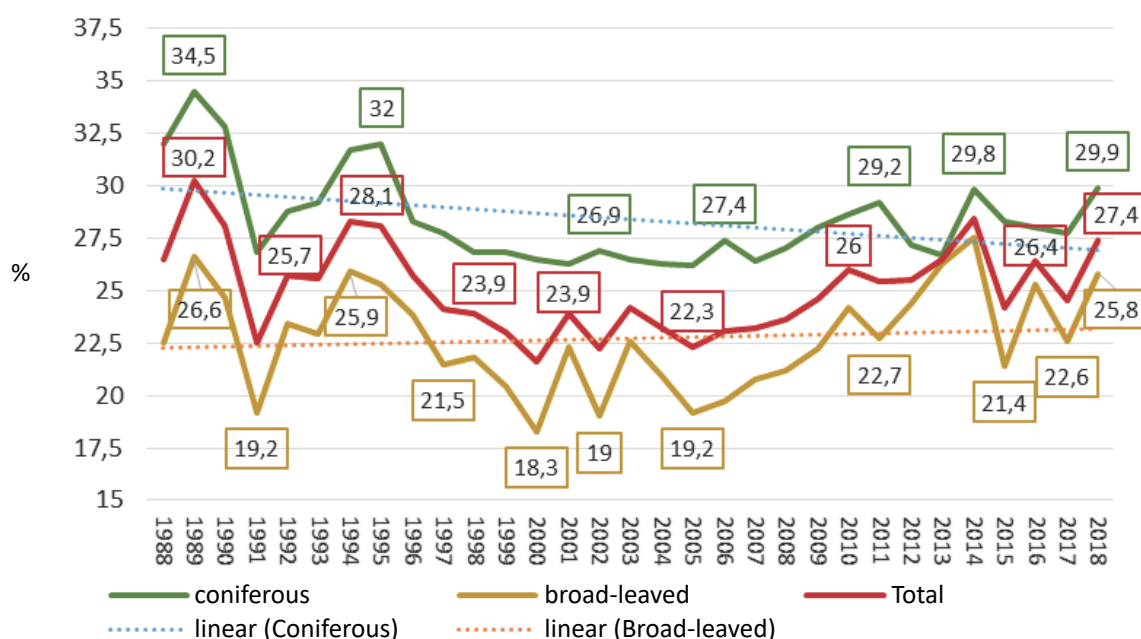
There were a record **262 forest fires** over an area of 243.38 ha (compared to 297.66 ha in 2017), with direct quantified damage of EUR 436 140.

Forest condition

The basic element of the assessment of forest trees condition is a visual assessment of the crowns and specific losses of assimilation organs (**defoliation**). The decisive factor is the share of trees in degrees 2 to 4, meaning with defoliation exceeding 25% (medium to heavily defoliated

and dead trees; trees with lower defoliation are considered healthy). Such an assessment is carried out every year at 107 permanent level I monitoring sites throughout the Slovak Republic by PMS Forests.

Chart 082 | Trend in average defoliation - coniferous, broad-leaved and total



Source: NFC

After an improvement in forest condition in 2017 there was another **significant increase in defoliation** of coniferous and broad-leaved trees in 2018. The share of coniferous trees in defoliation degrees 2 to 4 was 49.7% (a year-on-year deterioration of 8.1%), the share of broad-leaved trees in the indicated degrees was 38.2% (a year-on-year deterioration of

12.2%). There was total defoliation of **42.6%** (a year-on-year decrease of 10.7%). In terms of individual **species of trees**, the long-term defoliation trend shows a **slight improvement for firs**, is **stabilized for spruce and oak** and is **deteriorating for pine, hornbeam and beech**.

FOREST CERTIFICATION

The goal of forest certification is to promote sustainable forest management, the consumption of wood as a renewable resource, products from wood, nature conservation and sustainable development of society. In the SR two certification schemes are used for forest certification:

- Certification pursuant to the Programme for the Endorsement of Forest Certification PEFC (PEFC Slovakia Association)
- Certification pursuant to FSC (FSC Slovakia Association).

As of 2018 **1.364.7 million ha** of forest was certified, meaning **70.1%** of the total forested area. Pursuant to **PEFC** this was 1 216 500 ha, while 263 certificates of participation in forest certification were issued. Pursuant to **FSC** this was 148 300 ha, and 10 certificates were issued. **Compared to 2017** the area of certified forests **decreased** by 15 000 ha due to the termination of PEFC certification for two entities and changes in the use of the forest land.