The forest as a resource and wood-product market

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The volume and the structure of timber removal in Slovenian forests

The structure of timber removal in Slovenian forests shows that from 1999 to 2013 rejuvenation felling prevailed (in average 38 % of total felling). The volume of salvage logging was on average 27%, while selective thinning represented an average of 26 % of the total felling in that period. A record level of felling (6.36 million m^3), which for the first time exceeded the allowable cut, was achieved in 2014 due to restoration of damage caused to forests by an ice storm, which affected 9.32 million m^3. The volume of felling in all other years from 1999 to 2014 has otherwise lagged the allowable cut determined by the forest management plans, reaching only 65% of its value. The allowable cut in 2014 amounted to 87% of the annual growth assessed for the whole country. The large volume of felling in Slovenian forests also continued in 2015 due to noticeable increase in sanitary felling of Norway spruce caused by bark beetle outbreaks, the consequence of the ice damage in 2014. A very high volume of felling (6.1 million m^3) was then carried out in 2016 due to damage restoration caused by bark beetles. According to the Slovenia Forest Service, a total of 2.2 million m^3 of conifer trees were felled during 2016 due to damage caused by bark beetles. Another natural disturbance affected Slovenian forests in the middle of December 2017, where 20% of forests were damaged by strong winds. The estimated damaged exceed 2.2 million m^3 of timber, which was also the most extensive recorded windthrow damage in Slovenian forests in the last 20 years. Due to the frequent occurrences of natural disasters in Slovenian forests in the years from 2014 to 2017, the amount of felling increased significantly. Of the total volume of felling in these years, salvage logging represents the major type, accounting for an average 63% of the total felling in Slovenian forests.

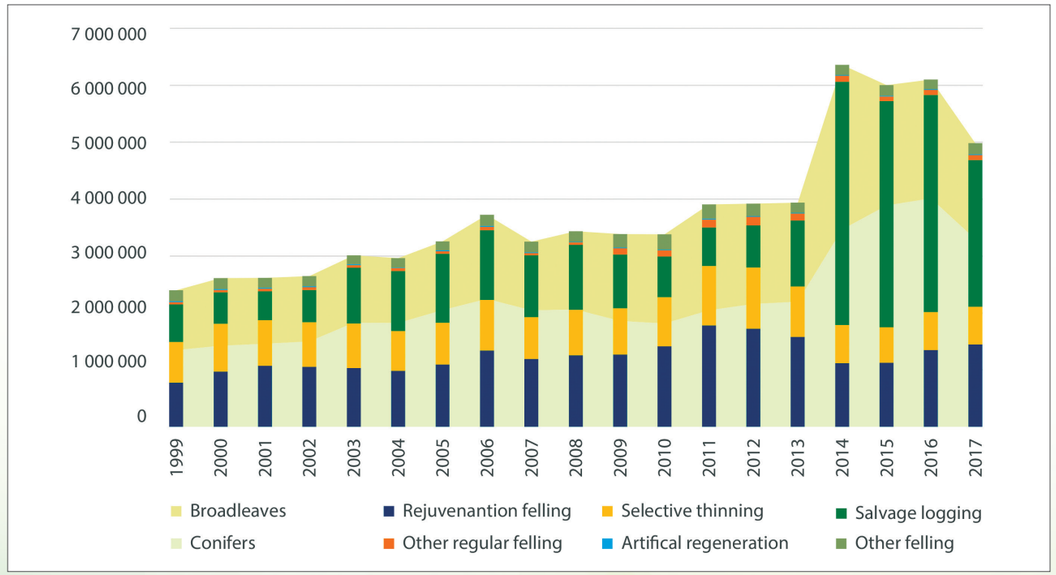

Figure 27: The structure of timber removal for the period 1999 – 2017 in gross m^3 (source: Slovenia Forest Service, calculated by the Slovenian Forestry Institute).

Roundwood production in Slovenia

In 2017, the production of forest wood assortments amounted to 4.6 million m^3 (without bark), with 2.9 million m^3 being coniferous species and 1.7 million m^3 broadleaves. In terms of the structure of forest wood assortment production, sawlogs and veneer logs (54%) prevail, followed by wood fuel (24%), pulpwood (20%) and other industrial roundwood (2%). The purchase of forest wood assortments from private forests in 2017 amounted to 1 million m^3, of which 80% were coniferous. Total roundwood exports in 2017 amounted to 2.6 million m^3.

In 2018, the scope of forest wood assortments was influenced by the restoration of damage caused by strong winds. In the middle of December 2017, one fifth of Slovenian forests were damaged by strong winds, and 2.7 million m^3 of trees, mainly conifers (spruces and firs), were affected. This priority restoration was reflected in the lower number of felled deciduous trees, which in turn resulted in a deficit of beech logs in Slovenian sawmills. Additionally, the demand for deciduous wood of lower quality expressed by fibreboard manufacturers in Slovenia and neighbouring countries remains high.

The damage caused by bark beetles was lower in 2018. In the first eight months, the amount of conifer trees felled due to damage caused by bark beetles compared to the same period in the previous year was down by 68%. This indicates a reduction in bark beetle gradation, which was a consequence of the ice damage in 2014.

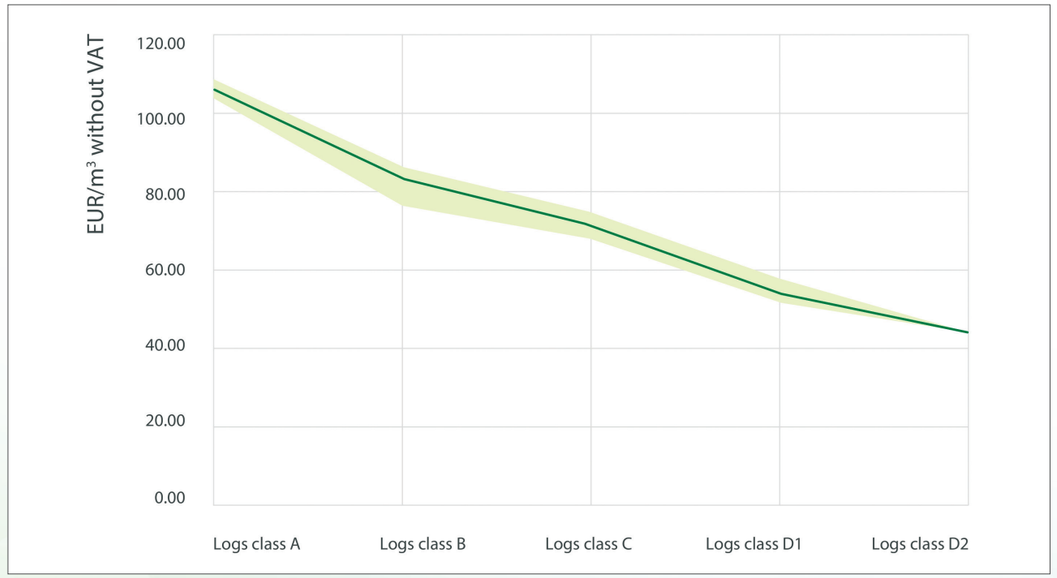

Figure 28: The average market price of spruce logs in EUR/m^3 without VAT from 2017 – 2019 (the black line shows the average market price and grey area shows the range between min and max market price in the period of data collection (source: Slovenian Forestry Institute).

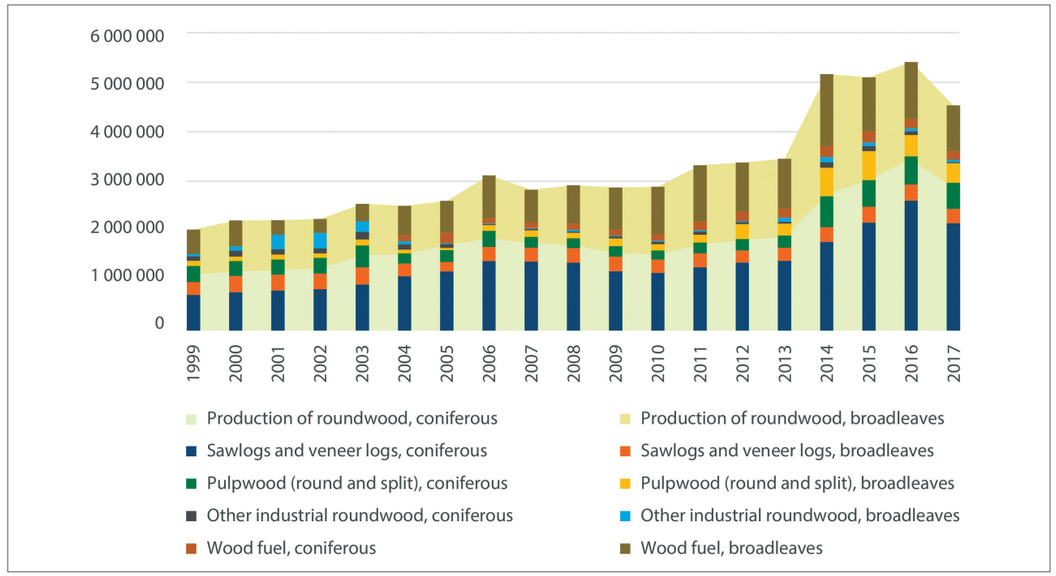

Figure 29: Production of roundwood in Slovenia for the period 1999 – 2017 in net m^3 (source: Statistical Office of the Republic of Slovenia).

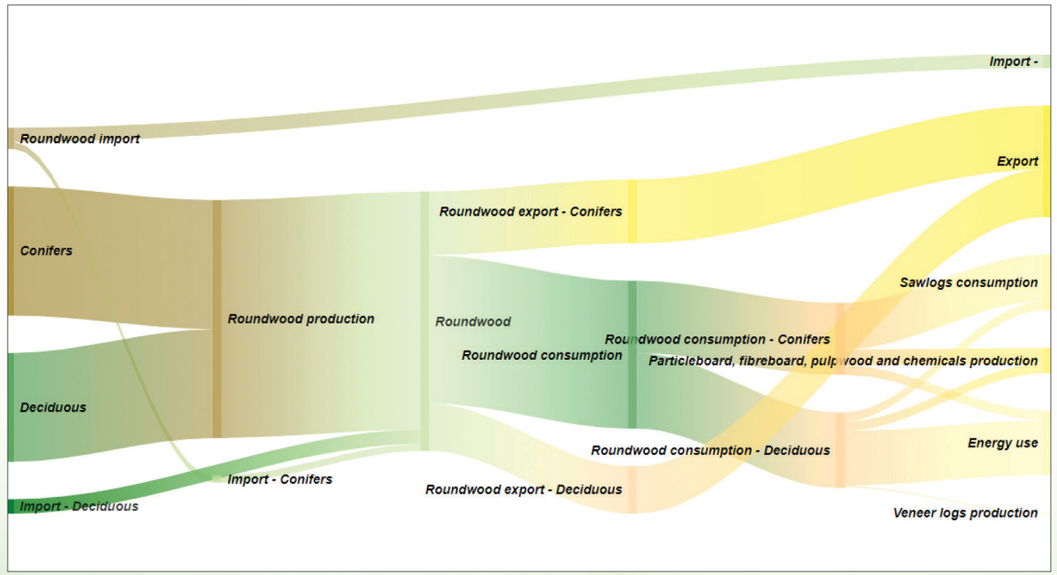

Figure 30: Roundwood flows (coniferous and deciduous) in Slovenia (data for 2014 – published at: http://wcm.gozdis.si/en/wood-flows-and-prices).

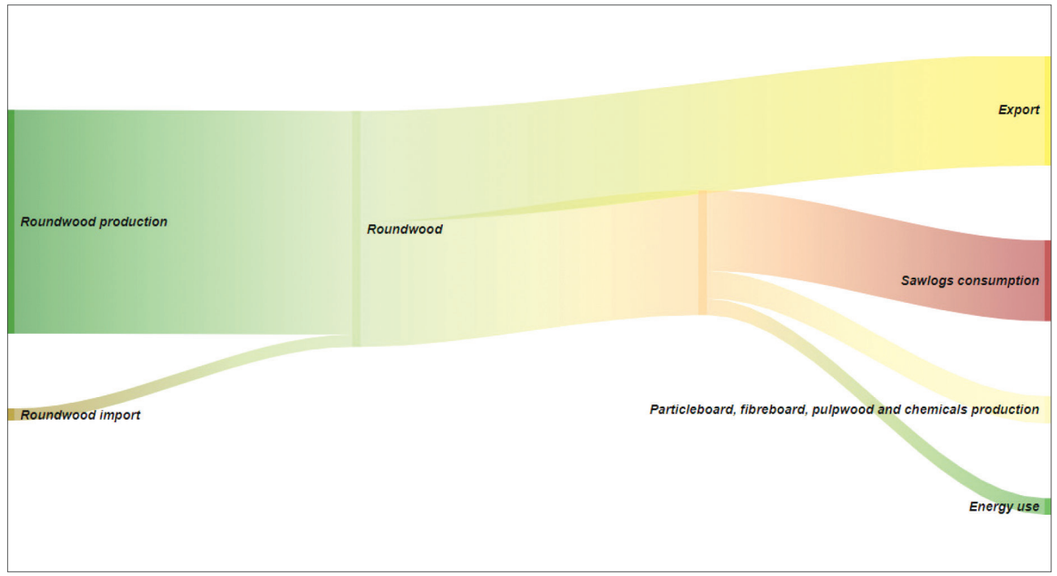

Figure 31: Roundwood flows for coniferous only in Slovenia (data for 2014).

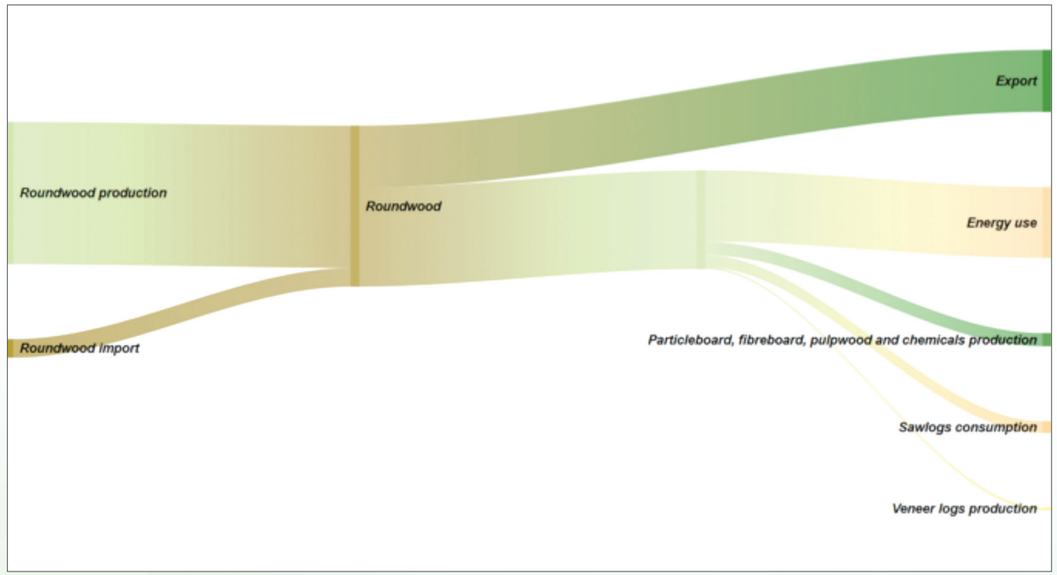

Figure 32: Roundwood flows for deciduous only in Slovenia (data for 2014).

Figure 33: Large storage of wood after restoration felling in Kočevje. (Photo: SFI archive)

Wood biomass market in Slovenia

The largest consumers of wood fuels are households, using some 1.6 million tons, predominantly firewood acquired from their own forests or the market. The largest single consumer of wood for energy purposes remains the district heating system in Ljubljana, with an installed capacity of 152 MW, which utilizes the co-incineration of coal and wood. The thermal power plant and the district heating plant use more than 100 000 tons of wood chips per year.

The price of firewood with humidity levels of approx. 20% and lengths between 25 and 33 cm was EUR 158 per ton at the beginning of the heating season 2018/2019 (October 2018), which is on average 5% more compared to the end of the last heating season (May 2018). The price of firewood has been increasing since May 2017. The Slovenian Forestry Institute monitors wood fuel prices and regularly publishes them online at http://wcm.gozdis.si/cene-lesnih-goriv.

The wood pellets market has changed dramatically since 2016, with exports now exceeding imports, and Slovenia becoming a net exporter of wood pellets in 2017. The main consumers of wood pellets are households, followed by larger public buildings and other users. The most recent collection of data on pellet production in Slovenia (concluded by the Slovenian Forestry Institute in June 2018) shows that there are currently 20 producers of pellets in the country. Only one of these has a yearly production of above 50 000 tons, and only one of a yearly production between 15 000 and 50 000 tons. The total production of pellets in Slovenia amounted to 115 000 tons in 2017. The level of production in the last three years has been relatively constant, and dependent mostly on the raw materials available.

Pellets produced by small producers are mainly sold on the local market. The biggest wood pellet producers in Slovenia have an EnPlus certificate and can export their products. The pellet market is dynamic, since some of the imports from Balkan countries are then exported to other EU markets. Pellets are predominantly exported to Italy (97% in 2017 and 92% in 2018). Compared to 2016, the export of wood pellets increased by almost 50 000 tons (36%) in 2017 and reached over 190 000 tons. In contrast, the import of wood pellets decreased by almost 20 000 tons (almost 10%) over the same period. Most pellets are imported from Romania (40%), Austria (15%) and Bosnia and Herzegovina (14%).

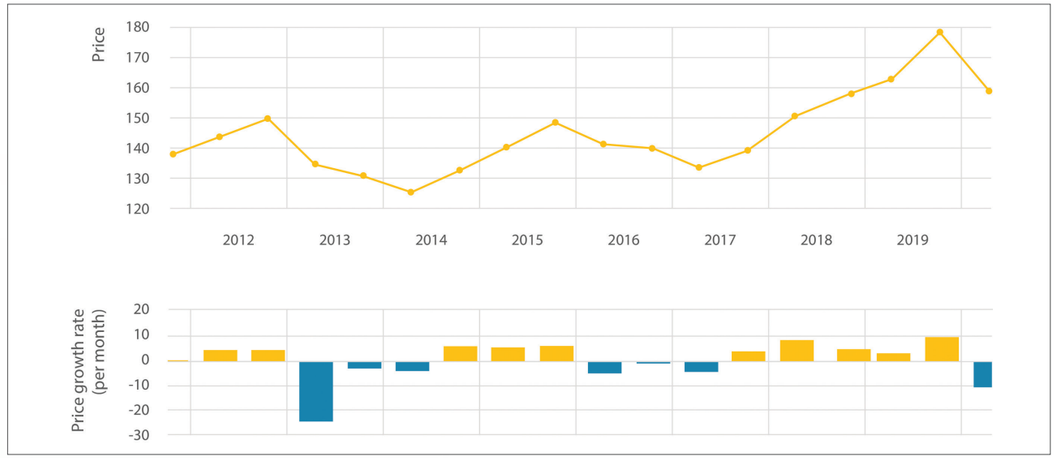

Figure 34: Price of firewood (in €/t with VAT) during 2011 and 2017

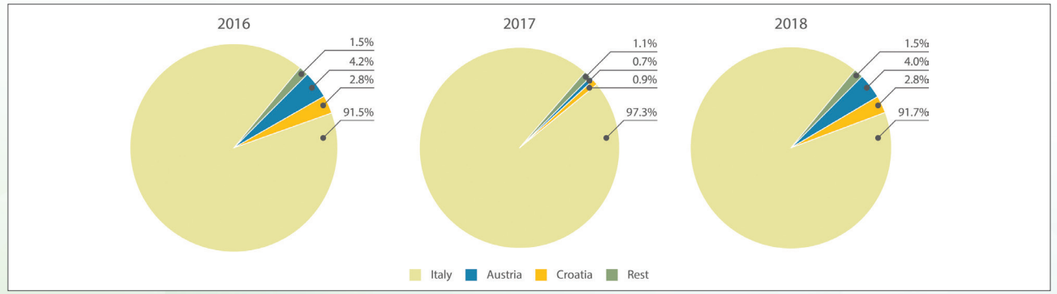

Figure 35: Comparison of exports of wood pellets by countries in the period 2016 – 2018 (source: Statistical Office of the Republic of Slovenia, calculated by the Slovenian Forestry Institute)

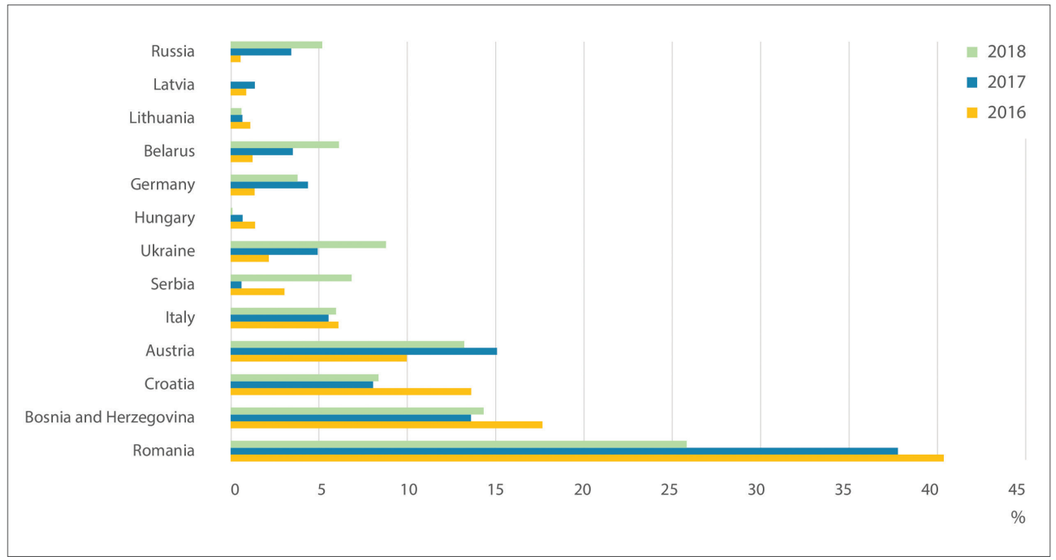

Figure 36: Comparison of imports of wood pellets to Slovenia by country in the period 2016 - 2018 (source: Statistical Office of the Republic of Slovenia, calculated by the Slovenian Forestry Institute).

Pellets, although the most expensive form of wood biomass, are 35% cheaper (EUR 60/MWh) than heating oil, whose price fluctuated around EUR 103/MWh in the second half of 2018. The difference between the prices of heating oil and pellets increased by 9% in comparison with the previous year. A ton of pellets, packed in 15 kg bags, cost EUR 283 on average after the beginning of the heating season 2018/2019. In comparison with the same period in the previous year, prices increased by 5%.

The quality of the wood pellets available on the Slovenian market improved in 2018 in comparison with 2017. This is evident from an independent analysis of pellet quality on the Slovenian market, as the share of pellets classified as A1 (68%) increased in 2018. Three years before this, in 2015, the pellet samples belonging to the A1 quality class only accounted for 27% of the total, while in 2017 this percentage had risen to 60%.

Wood chips are predominantly used for energy purposes, and the Thermal Power Plant Ljubljana is by far the largest consumer, with an annual consumption of over 100 000 tons. The consumption of wood chips in the production of wood products (fibreboards, pulp, chemicals) amounts to less than 10% of the total consumption in Slovenia. Wood chip manufacturers are technologically well equipped. There were more than 200 woodchippers in Slovenia in the first half of 2018, with over 50 that can achieve a production capacity of at least 100 nm^3/h. Yearly production scope remains at a high level due to restoration following the damage caused by bark beetles and the wind damage in 2018. According to data collected by the Slovenian Forestry Institute, in 2017 the production of wood chips exceeded 2.2 million loose m^3. The production of wood chips in Slovenia has increased more than fivefold over the last 10 years (from 0.48 to 2.2 million loose m^3). Slovenia is a net exporter of conifer wood chips and a net importer of deciduous wood chips. With regard to the import of wood chips, deciduous wood chips prevail (80 – 90%), while exports are dominated by conifer wood chips (70 – 80%). Last year, wood chip exports exceeded 350 000 tons, and imports increased by 10%. Wood chips are predominantly imported from Croatia and exported to Austria and Italy. We can see that the increase in the export of green wood chips in recent years has been due to the lack of domestic users and new demand generated in neighbouring countries.

The price of the best-selling wood chips (with a humidity of approx. 30% and particle size of approx. 31 mm) averaged EUR 90.8/t at the beginning of the heating season 2018/2019, which is approximately 17% more compared to the same period in the previous year.

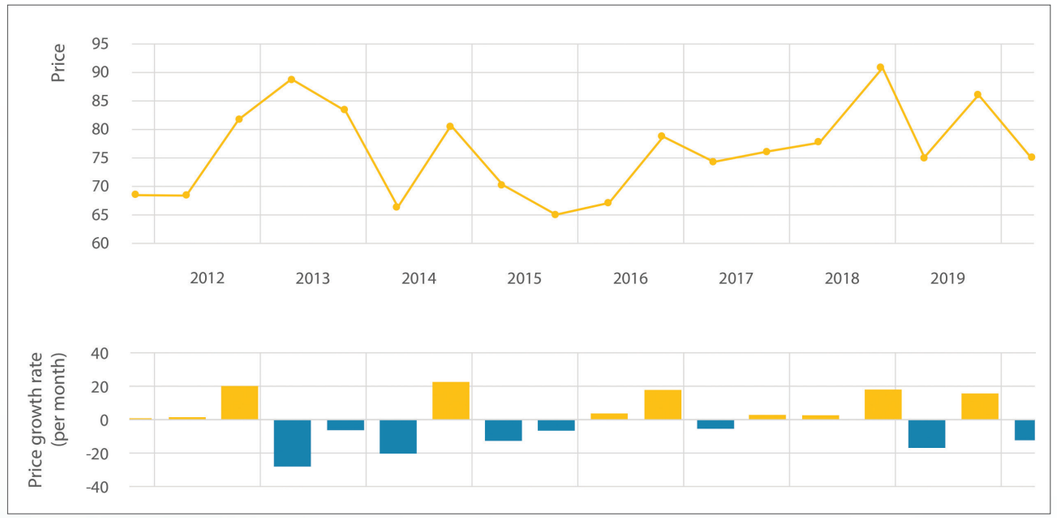

Figure 37: Price of wood chips on the Slovenian market in the period from 2011-2018 (in €/t with VAT).

Use of roundwood in Slovenia

From an economic point of view, the use of roundwood in industry or manufacturing is the most important use of wood. The wood industry includes business entities that process round timber into sawn wood, veneer, wood pulp, particle and fibreboard and chemical products (e.g. tannin). The production of solid wood fuels (pellets, briquettes and chips for energy production) is not included in this subchapter.

The use of roundwood in industry is divided into the production of sawn timber at sawmills, which are also the largest roundwood consumers in Slovenia, the production of veneer, pulp, fibre and particle board, and the use of other industrial timber.

Most logs are processed in the sawn timber industry. Sawmills with up to five employees predominate in Slovenia, while the largest share of production is done by medium size sawmills (more than 20 employees). The structure of sawmill processing is dominated by conifer logs, with a more than 75% share of the total.

The sawn softwood industry in Slovenia is still hindered by the unfavourable structure of sawmills (in terms of size and technological equipment), however investments have been secured for new, larger plants as well as for upgrades, technological modernization and an increase of the capacities of existing Slovenian sawmills, indicating significant structural changes in the future.

Figure 38: Sawn beech wood from Slovenian forests. (Photo: SFI archive)

Table 8: **Structure of sawmills according to number of employees and amount of wood processed per year** (year 2016, source: the Slovenian Forestry Institute)

Business entities (number of employees)	Structure according to the number of business entities [%]	Structure according to cross-cutting of logs [%]
Complementary activity on a farm	20	3
0-1	46	9
2-4	16	12
5-9	6	14
10-19	4	14
Over 20	8	48

Slovenian sawmills continued to maintain a high level of wood processing activities in 2018, which is a consequence of increased quantities of logs on the market due to restoration following ice damage, damage caused by bark beetle gradation, market surpluses and lower log prices.

Sawn hardwood production is strongly influenced by the positive trends in Europe and difficulties in the supply of logs. Owing to favourable market trends in sawn beech and oak wood, in the coming years we could see an increase in both production and exports.

Important companies in Slovenia processing low quality and small diameter wood are producers of particle board (Lesonit, d.o.o.), mechanical pulp (Količevo Karton, d.o.o., VIPAP Videm Krško, d. d.) and chemicals (Tanin Sevnica, d. d.). The largest wood processing companies are among these (Lesonit, d.o.o. and Količevo Karton, d.o.o.) process more than 500 000 m^3 per year.

Producers of mechanical pulp are important, since they are the only larger user of low quality and small diameter coniferous wood. The scope of mechanical pulp production increased by 9% in 2017. Production is expected to remain at the same level in 2018 and 2019. Pulp exports are negligible, as the production in Slovenia is entirely integrated. In 2017 pulp imports decreased by 2.4% and was expected to increase by 2% in 2018.

Figure 39: Industrial wood chips for the production of fibreboards in the company Lesonit d.o.o. (Photo: SFI archive).

The production and consumption of all types of wood-based panels remains at a relatively high level, which indicates a continuation of the positive trend in the construction of buildings and the whole construction sector. A similarly high level of production and consumption is foreseen for 2018 and 2019.

Imports and exports have an important role in the development and status of roundwood use. In the last 15 years (after 2004, when Slovenia entered the EU) we can see increase in roundwood exports, and the restoration of damaged forests pushed these to a record level, reaching more than 3 million m^3 in 2016.

Certified wood products

A total of 265 000 ha of forests are certified by the FSC system, which represents more than 20% of the total forest area in Slovenia, where these are predominantly state forests (90%).

The area of forests included in the PEFC national certification scheme increased significantly in 2017, as the SiDG company (Slovenski državni gozdovi, d.o.o.) entered the regional PEFC certification scheme with its total area of 231,500 ha of certified forests in November 2017. A total of 286,000 ha of forests are now certified according to the PEFC system in Slovenia.

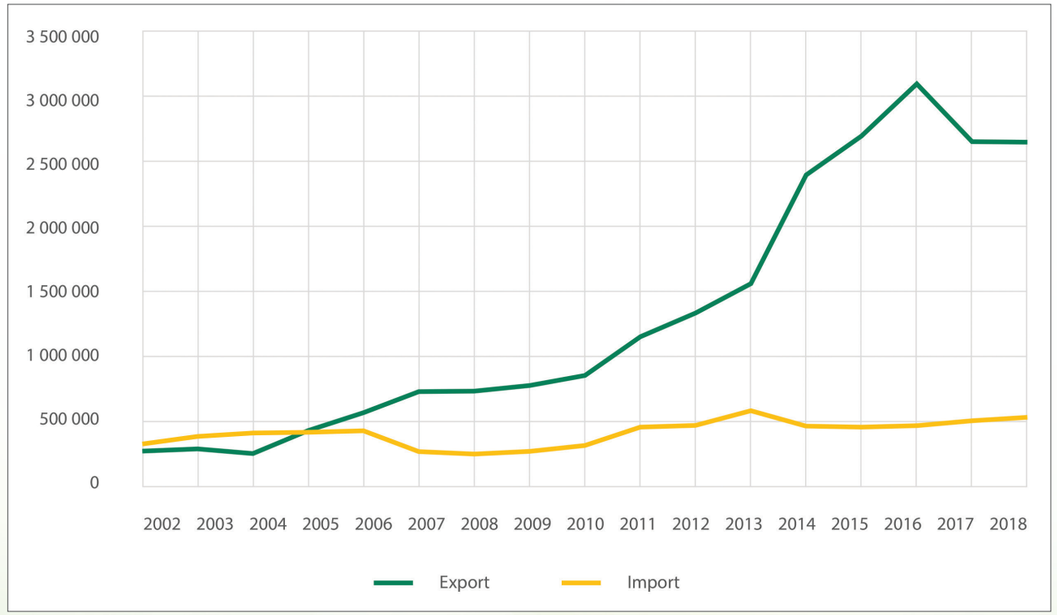

Figure 38: Exports and imports of roundwood in Slovenia
(source: Statistical Office of the Republic of Slovenia, calculated by the Slovenian Forestry Institute).

Photo M. Čater

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