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## MARKET STATEMENT OF THE CZECH REPUBLIC 2018

Economy development in the Czech Republic in 2018. Czech Republic – a country oriented on technics and technology. Market relations between the Czech Republic and Asia-Pacific countries with respect to timber and timber based products. Timber harvest and calamity within forest management in the Czech Republic in 2018. Results of wood-processing industry in the Czech Republic in 2018. Economic stimuli and forestry-related legislation and political measures adopted in the Czech Republic in 2018. Political measures related to climate change, supporting timber market the Czech Republic in 2018 and 2H 2019. New incentives and benefits to producing energy from timber adopted by the Czech Government in 2018. Support and measures related to research and development contributing to higher timber and timber based market efficiency in the Czech Republic in 2018. Measures for increasing responsibility of social associations within forestry in the Czech Republic in 2018. Stock, harvest and market with raw timber in the Czech Republic in 2018. Harvest and market with roundwood in 2018. Production and market of pulp wood in the Czech Republic in 2018. Production of coniferous and broad-leaved sawn wood by Czech sawmills in 2018. Production and market with fuel wood in the Czech Republic in 2018. Market with other wood based products the Czech Republic in 2018. Production of pulp and paper in the Czech Republic in 2018. Forest certification in the Czech Republic in 2018. Contribution of wood-processing industry products to development of processing industry. Value added produced by wood-processing industry and processing industry in the Czech Republic in 2018 wood-processing industry. Electricity and energy produced from wood in the Czech Republic in 2018. Carbon trace in the Czech Republic in 2018.

## BASIC TRENDS OF ECONOMY DEVELOPMENT IN THE CZECH REPUBLIC IN 2018.

### 1. Economy development in the Czech Republic in 2018

a) In 2018, Czech economy was influenced by the slowdown of its growth which was confirmed by the tempo of the Czech GDP growth. Czech GDP growth has been dropping since 2015, namely from 5.3% in 2015 to relatively high 3% in 2018.

In 2018, Czech economy was forced by the turbulent development worldwide to fight for keeping the values rather than enforcing needed growth. Low debt rate of both private and public sector, pressure to automate and robotize, fast orientation on sectors with higher value added are the factors helping the Czech Republic to keep a steady growth tempo.

Ministry of Industry and Trade concluded last year that the Czech processing industry is lacking behind in market efficiency with goods and innovations, as low innovation capabilities, high regulation and complicated tax and subvention systems do not help both the industry and the Czech economy in growing. In 2018, productions of computers, electronic and optic devices contributed the most to the growth of processing industry, namely by 13.7%; electronic appliances production grew by 5.5% year-on-year; pharmaceutical devices and appliances by 8.2% along with production of metal constructions and metal-related products by 4.1%. Timber processing, paper production, printing and furniture contributed also a good deal, e.g. investments into new technologies, digitalisation, robotisation and management lead to the growing exports by 5.1% in 2018.

Using timber as domestic, renewable and green raw material in Czech building industry improved a lot and amounted to approx. 15% of GDP. Building industry grew by 9.2% year-on-year; ground constructions by 9.1% and supplying networks by 9.3%. Also building flats did well. The number of flats with the starting day in 2018 grew by 5.1% as compared to 2017 and the number of finished flats by 18.5%. Number of built wooden family

houses grew as well year-on-year by 7.3% and it is growing 2.5 times faster as compared to brick houses which is desired from the environmental perspective.

b) Czech Republic – a country oriented on technics and technology. Czech Republic is an educated country oriented on technics and technology. It has excellent scientists as well as great and flexible companies. Czech companies made progress in introducing fully automated operations with dominated by robotics and cloud solutions and where new technologies were tested and introduced to the operation. Companies are re-training their employees from manual work to of fully automated operations.

In order to cope with scientific and artificial intelligence issues, International Council for Science and Research in the Czech Republic and for Digital Strategy was appointed. The Council using industrial traditions, research background and entrepreneurial skills should provide good conditions for catching up with the research and education progress. In the International Council for Science and Research there are representatives of Czech and foreign scientists, academicians and experts on research, missions of directors of prestigious US federal bureau for science as well as representatives of Singapore and India. AI belongs to the pillars of Czech-US research cooperation. In the coming years, to 5-7 elite development centres are to be built in the Czech Republic where cutting edge technologies should be developed.

## 2. MARKET RELATIONS BETWEEN THE CZECH REPUBLIC AND ASIA-PACIFIC COUNTRIES WITH RESPECT TO TIMBER AND TIMBER BASED PRODUCTS.

Currently it is clear that Asia, India and other Asian countries are essential for European timber sales; the same goes for China that was generally in the lead of roundwood and sawn wood sales. Czech exporters are developing the market with low-quality coniferous timber with China and to lesser extent with other Asia-Pacific countries. For the first time, only 253 k m<sup>3</sup> of coniferous roundwood for the 1992 prices were exported to China. End of June 2019, direct negotiations were held between small and medium forest owners with Chinese partners, producers and wood processors which resulted in direct business cooperation in experts. Timber could be transported on railways rather than by containers on the sea, which would be faster and cheaper.

As for exporting calamity timber to China, it is rather a temporary business based on the need to trade timber that cannot be processed by domestic capacities and capacities in neighbouring countries, and to do so as efficient as possible. China has proven a suitable market.

## 3. ECONOMIC TRENDS IN FORESTRY AND IN TIMBER HARVEST IN 2018.

Based on statistical data, Czech forestry produced CZK 52,219 m in current prices on 2017 and CZK 52,474 M in 2016. As for the dynamic a growth of +2.6% was recorded, but in 2018, there was a decline due to unusual drop in the prices by -3.0%. As for GVA of forestry, there was an increase in current prices of 0.97%, but in 2018 a decline up to 1.8%. In 2017, there was a year-on-year increase in employment, but in 2018 a decline of -3.6% was recorded. This demonstrated by growing GVA per employee within Czech forestry and timber harvest namely by 1.9% year-on-year as compared to decline by -1.8% in 2017.

As for wood-processing industry, raw timber supplies – in spite rather undesired quality – allowed the following development of production and other quantitative indicators: production in current prices of wood processing industry grew by 3.3% and 4.3% in 2018 and 2017 respectively. GVA grew year-on-year by 4.5% and 4.4% in 2018 and 2017 respectively.

## 4. Timber harvest and calamity in Czech forest in 2018.

Problems with the calamity and partially with bark beetles between 1982 and 1987, between 1990 and 1999, 2014 and 2015 persist till now. Uprooted and broken trees after wind calamities and drought help bark beetles to propagate. But the problem was primarily caused by the weather.

Temperatures were breaking records already in the spring and the drought was growing so that at the end of August 2018 approx. 94% of the country was hit by the drought.

Ground water level dropped; even wells were without water. Mainly spruce as well as other tree species could not cope with dropping ground water level. Trees were weakened by the drought and were infested by bark beetles. Bark beetle hit vast areas in North Moravia and spread fast in the direction of the Highlands. Czech foresters are facing the biggest bark beetle calamity ever. Both Czech, German and Austrian markets were actually flooded with low-quality timber.

Work in forests was carried out on 332 k ha as compared to 71 k. ha in 2017. Profit in forestry amounted to CZK 714 per 1 ha. In 2017, the profit amounted to CZK 1,083 per 1 ha. Calamities keep spreading in the Czech Republic also in 2019. The table below shows the highest timber harvests in the Czech Republic (k m<sup>3</sup> w/o bark).

Year	Timber harvest in k m <sup>3</sup>				Thereof salvage felling	Per 1 ha forest (m <sup>3</sup> w/o bark/ha)
	total	thereof coniferous	Broad-laved			
2018	25,689	24,213	1,476		23,013	9.61
2017	19,387	17,735	1,652		11,743	7.26
2007	18,508	17,278	1,230		14,885	6.98
2006	17,678	16,118	1,560		8,027	6.67
2016	17,617	15,924	1,693		9,399	6.60

Over 100 k pheromone traps for bark beetles and 400 k m<sup>3</sup> trapping trees were installed. 25,320 ha of forest stands were reforested as compared to 24,446 ha in 2017. Artificial regeneration; i.e. replanting, grew year-on-year by 6.4%; coniferous species dropped by -4.2% and broad-leaved species grew by 5.7%. YE 2017, Ministry of Agriculture adopted extraordinary measures to combat the persisting calamity. The Forestry Act will be amended; the amendment allows to postpone the cutting of dead trees incl. sterile bark beetle tress till YE 2022. However, the obligation to search actively, harvest and remove trees infested by bark beetles remains effective. Forest owners are still obliged to replant the tress immediately and not to keep cleared areas.

Ministry of Agriculture declared new conditions for sales, zonation and use of calamity timber as fuel wood and for energy purposes. Non-governmental forest owners receive compensations of dropping prices of coniferous timber. In Czech Republic there are approx. 300 k forest owners with estates under 50 ha.

Ministry of industry and trade elaborated a new EXPANZE programme. It focuses on more efficient processing of calamity timber within Czech wood processing industry and on using water for wet storing, if possible. It will also support project combusting biomass infested by bark beetles if it is used locally to avoid the transportation increasing the costs and the supplies must be contracted for the programme sustainability.

In the Czech Republic, there is one million of hectares of spruce forests, i.e. 60% of all forests (only 11% in 1750). In spite of the above, the forest coverage has not been shrinking. Given the calamity and needs of Czech industry and building industry spruce (36.8%), beech (22.4%) and oak (14.1%). When replanting the forest, 133.2 m seedlings were used, thereof 55.9% were broad-leaved. The growing timber stock in forests is documented in the table below.

year	1930	1950	1960	1970	1980	1990	2000	2010	2017	2018
M of m <sup>3</sup>	307	322	348	445	536	564	630.5	680.6	699.0	702.9

Average stock per 1 ha forest amounts to 270 m<sup>3</sup>.

## 5. RESULTS OF WOOD PROCESSING INDUSTRY IN THE CZECH REPUBLIC IN 2018.

Wood processing industry has been optimising gradually the use of domestic raw materials, it increases automated production and makes it more efficient, and it substitutes

fossil products by renewable materials. Since 2016, the sector has reduced its share on processing industry production from 2.39% to 2.27% in 2018.

Timber as natural material used within all wood processing sectors is fully of domestic origin and it poses a competitive advantage. Coniferous round wood is the most processed timber. Timber supplied from Czech forests to the industry comes from forests managed in line with legislation for centuries

Wood processing industry production has been growing except for broad-leaved roundwood, broad-leaved sawn wood and broad-leaved pulp wood. In parallel, the consumption of all products has grown (except for broad-leaved pulp wood). The market with timber products has growing tendencies.

As for individual wood processing industries, the following results were achieved.

As for timber processing, based on data from the Czech Statistical Office the production in current prices grew by 5.7% year-on-year as compared to 4.3% in 2017. Revenues from industrial activity in current prices grew by 6.0% year-on-year as compared to 3.6% in 2017. GVA per employee in current prices grew by 9.8% year-on-year as compared to -0.8% in 2017. For these sectors, small enterprises and family businesses are typical. There are only 11 large companies in timber processing and 7 thereof are international.

Pulp and paper production reported a growth in current prices by 3.4% year-on-year, as compared to 3.7% in 2017. GVA per employee in current prices dropped by 0.6% year-on-year as compared to growth of 7.7% in 2017. Employment rate grew by 1.8% year-on-year. Revenues from industrial activity in current prices grew by 8.5% year-on-year as compared to 3.7% in 2017. New contracts abroad grew by 9.3% as compared to growth of 4.0% in 2017.

Furniture production grew by 4.2%, however the year-on-year growth in current prices amounted only to 0.6% in 2018 as compared to 5.5% in 2017. GVA per employee in current prices grew by 2.3% year-on-year as compared to 5.2% in 2017. The number of employees dropped by 3.5% however the production was able to cope with that. Revenues from industrial activity in current prices dropped by -1.4% year-on-year as compared to +2.2% in 2017. The steady figures are based on the export success, in spite of the growing share of furniture import on the domestic consumption. This is in spite that Czech furniture is of high quality.

## 6. ECONOMIC STIMULI AND FORESTRY-RELATED LEGISLATION AND POLITICAL MEASURES ADOPTED IN THE CZECH REPUBLIC IN 2018.

In the Czech Republic, similar to the EU, the market is based on national legislation including also EU legislation and other regulations and decrees of respective ministries and other central bodies.

1. In 2018, new decree no. 76/2018 Coll. amending and specifying some outdated provisions and replacing them by those that are in line with forestry research and current needs was adopted given the ongoing calamity in the forests caused by bark beetles.

2. In 2018, amendment of Forestry Act was drafted that allows to postpone the cutting of dead trees incl. sterile bark beetle tress till YE 2022. However, the obligation to search actively, harvest and remove trees infested by bark beetles remains effective. Forest owners are still obliged to replant the tress immediately and not to keep cleared areas.

## 7. POLITICAL MEASURES RELATED TO CLIMATE CHANGE, SUPPORTING TIMBER MARKET THE Czech Republic IN 2018 AND 2H 2019.

The European forestry policy under the New EU Forestry Strategy from September 2013 focuses also in the Czech Republic on addressed climate change, forest protection, creating new afforested areas, keeping genetic resources as well as modernisation of forest machinery and technology.

The impacts of climate change on forest protection measures result into the support of sustainable forest management and increase of forest ecosystems resistance, ecological value, forest stands potential, soil protection and adjustment of water quantity and quality. They also concern the pressure on using renewable resource's where timber has the desired development potential.

Namely, as for climate change and timber market support, the Government adopted only one decree, 298/2018 Coll., that came into force on 1 May 2018. Its goal was to amend and specify some outdated provisions and to replace them by those that are in line with forestry research and current needs was adopted given the ongoing calamity in the forests caused by bark beetles.

Certain actions were taken to tackle this issue and they can be summarised as follows:

1. Ministry of Agriculture elaborated process and extraordinary measures to tackle the persisting bark beetle calamity in Czech forests. To improve the forest gene pool and clone identity, certain bearing tree species such as Norwegian spruce, Silver fir, Scots pine, small-leaved lime, wild cherry, European larch and sycamore were selected. Based on DNA analyses (microsatellite loci), multiloci genotype profiles of individuals were acquired that can be used for identification of clone matching trees and hence further improve the forest gene pool.

2. In forest stands, where the lack of nutrition of tree species was documented and was caused by insufficient magnesium and calcium stock, projects of chemical amelioration of forest soils were implemented; these projects are the follow-up actions of Government's resolutions.

3. Investments were made into the production of high quality of the reproduction material of tree species as well as into forestry machines and forest management technologies, mainly for pruning forest stands which improves the economic value of forests by applying environmental friendly technologies and machines; damage to forest soils and stands is limited.

4. Construction and re-construction of forest roads in order to drain them, equip them and to increase their density carried on successfully.

5. Investments were made into protection of amelioration and pioneering species that prevent gradual forest soil degradation, improve water regime of forest soils, help to stabilise the forest stand skeleton and hence improve the wind resistance and reduce the susceptibility of forest stands toward calamities caused by insects.

6. Also non-productive investments were made into forest in order to support boost of environmental and social forest functions. Forest stands adaptation focused on forest stands with replacement tree species in immission areas and forests endangered by immissions.

#### 8. NEW INCENTIVES AND BENEFITS TO PRODUCING ENERGY FROM TIMBER ADOPTED BY THE CZECH GOVERNMENT IN 2018.

Major user of the energy derived from the biomass is the wood processing industry itself. It uses 75% of this energy directly for drying the timber and for producing wooden boards and other materials. Efficient and modern use of energy from timber, sawdust and harvest residues have priority when it comes to governmental and ministerial support.

The original legislation for using renewable sources in the Czech Republic was adopted by the Government already in 2005 (Act no. 180/2005 Coll.).

With regard to the legislation adopted in the past, there was no need to open new incentives for energy produced from timber within power and heat industry. Ministry of Industry and Trade is newly offering subsidy to biomass under the Renewable energy sources within the Entrepreneurship and Innovation Operational Programme. The goal of the programme and individual calls is to subsidise production and distribution of energy from combined electricity and heat production from biomass and construction and reconstruction of biomass-based heat sources.

#### 9. SUPPORT AND MEASURES RELATED TO RESEARCH AND DEVELOPMENT CONTRIBUTING TO HIGHER TIMBER AND TIMBER BASED MARKET EFFICIENCY IN THE CZECH REPUBLIC IN 2018.

The concept of research and development to contribution to higher efficiency of the Czech market incl. wood and wood-based products, as the main steering document is elaborated by Czech Government and central authorities.

Both the Ministry of Industry and Trade and Ministry of Agriculture elaborated the main documents such as the Analysis of Competitiveness of the Czech Republic. To reach higher efficiency, the analysis comprises some tasks for selected authorities, organisations, enterprises and institutions in the Czech Republic. Therefore, the analysis provides necessary incentives and proposals to reach higher efficiency. Also private technical institutes and several regional bodies that have their regions usually well mapped and may come up with interesting and unusual solutions when it comes to production and timber processing.

Then, there is the Strategy of International Competitiveness that is follow-up document. It focuses directly on supporting higher market efficiency, incl. wood and wood-based products. The main focus are the development priorities of Czech economy for next years. It is structured in a way allowing modification according to the changes in the global economy as well as the position of the open, and export dependant Czech economy. The document also reacts to the implementation of changes in relation to industrial revolution 4.0. Also respective agencies that focus on searching suitable and prosperous partners for Czech business and cooperation relations both from the EU and worldwide, not only with respect to the USA, where these activities have needed effect, participate in handling this issue.

Companies that handle the use of timber may apply in a standard way and receive subsidy for projects within public tenders supporting research, development and innovations. This comprises newly the TREND programme, provided by the Technological Agency of the Czech Republic. Under the previous programme, TRIO (2015 – 2018), the total of 4 projects were subsidised. The goal of the projects was to create an overall proposal for road safety system using wooden constructions and wood agglomerates or to develop light-weight facade elements comprising mainly wood and glass with the minimum impact on the environment. Along with this, the first public tender under The Country for the Future programme that will focus on introducing innovations in operations should be opened by YE 2019.

#### **10. MEASURES FOR INCREASING RESPONSIBILITY OF SOCIAL ASSOCIATIONS WITHIN FORESTRY IN THE CZECH REPUBLIC IN 2018.**

There have been no major changes in the past years. Measures for increasing social responsibility of social associations are handled according to the effective legislation all over the country.

As for forestry, these issues are incorporated in the National Forestry Programme as a task to support the improvement social situation of forestry employees.

Social associations registered in forestry in the Czech Republic are voluntary, non-profit and non-government organisations. The Government does neither regulate, nor steer, nor finance these associations. Their task is to protect the interest of citizens, workers and employees in forestry, support in increase of producers operating within forest management and for sustainable forest management. These non-governmental associations within Czech forestry help the forestry employees with maintaining social securities and dealing with social issues, legal and other consultancy, cooperation and solving problems with local authorities as well as issues of economic management and handling forest property in order to educate due managers in this area.

#### **11. STOCK, HARVEST AND MARKET WITH RAW TIMBER IN THE CZECH REPUBLIC IN 2018.**

In the Czech Republic, the total stock of raw timber are still good and amount to 703 m<sup>3</sup>. This was contributed also by the total annual average growth that amounted to 17.7 m<sup>3</sup> w/o bark and 18.0 m<sup>3</sup> in 2010 and 2018 respectively as well as by the total annual growth that amounted to 21.2 m<sup>3</sup> w/o bark and 22.3 m<sup>3</sup> in 2010 and 2018 respectively.

The total harvest amounted to 25,689 k m<sup>3</sup> of coniferous and broad-leaved timber which is a year-on-year growth by substantial 32.5%. This enormous growth was caused by the salvage felling above.

The total export of coniferous and broad-leaved roundwood in the rough, coniferous and broad-leaved pulp wood and fuel wood amounted to 8,517 k. m<sup>3</sup>. In 2017, the export of this goods amounted to 6,801 k m<sup>3</sup>. The import amounted to 1,460 k. m<sup>3</sup> and 1,934 k. m<sup>3</sup> in 2017 and 2018 respectively. The change in the trend is caused by the salvage felling and dropping sales prices.

## **12. HARVEST AND MARKET WITH ROUNDWOOD IN THE CZECH REPUBLIC 2018.**

The total harvest of coniferous and broad-leaved roundwood amounted to 14,428 k m<sup>3</sup>. In 2017 the harvest was only 11,488 k m<sup>3</sup>. The year-on-year growth of the harvest amounted to 25.6%. The harvest of coniferous roundwood amounted to 13,993 k m<sup>3</sup> and 10,986 k m<sup>3</sup> in 2018 and 2017 respectively. The year-on-year growth amounted to 27.4%. The harvest of broad-leaved roundwood to 435 k m<sup>3</sup> and 502 k m<sup>3</sup> in 2018 and 2017 respectively.

The total export of coniferous and broad-leaved roundwood amounted to 6,187 k m<sup>3</sup> and 4,910 k m<sup>3</sup> in 2018 and 2017 respectively. The export of coniferous roundwood amounted to 5,983 k m<sup>3</sup> but only to 4,781 k m<sup>3</sup> in 2018 and 2017 respectively. The export of broad-leaved roundwood amounted to 204 k m<sup>3</sup> in 2018, i.e. the same amount as in 2017, namely 203 k m<sup>3</sup>.

The total import of coniferous and broad-leaved roundwood amounted only to 1,160 k m<sup>3</sup> and 1,211 k m<sup>3</sup> in 2018 and 2017 respectively. The import of coniferous roundwood amounted to 990 k m<sup>3</sup> but only to 936 k m<sup>3</sup> in 2018 and 2017 respectively. The export of broad-leaved roundwood amounted only to 170 k m<sup>3</sup> and 275 k m<sup>3</sup> in 2018 and 2017 respectively.

The domestic consumption of coniferous and broad-leaved roundwood amounted only to 9,401 k m<sup>3</sup> and 7,715 k m<sup>3</sup> in 2018 and 2017 respectively. The domestic consumption of coniferous roundwood amounted to 9000 k m<sup>3</sup> but only to 7,141 k m<sup>3</sup> in 2018 and 2017 respectively. The domestic consumption of broad-leaved roundwood amounted only to 401 k m<sup>3</sup> and 574 k m<sup>3</sup> in 2018 and 2017 respectively.

## **13. PRODUCTION AND MARKET WITH PULP WOOD IN THE CZECH REPUBLIC IN 2018.**

The total harvest of coniferous and broad-leaved pulp wood amounted to 7,015 k m<sup>3</sup>. In 2017 the harvest was only 5,523 k m<sup>3</sup>. The year-on-year growth of the harvest amounted to 27%. The import amounted to 262 k m<sup>3</sup> and 789 k m<sup>3</sup> in 2018 and 2017 respectively. The export of coniferous and broad-leaved pulp wood amounted to 2,122 k m<sup>3</sup>, i.e. a growth by 26.8%. In 2017, the export amounted 1,673 k m<sup>3</sup>.

The harvest of coniferous pulp wood amounted to 6,620 k m<sup>3</sup> and 5,102 k m<sup>3</sup> in 2018 and 2017 respectively. The year-on-year growth amounted to 29.8%. The import of coniferous pulp wood 256 k m<sup>3</sup> and 687 k m<sup>3</sup> in in 2018 and 2017 respectively. The export of coniferous pulp wood 2,117 k m<sup>3</sup> and 1,599 k m<sup>3</sup> in in 2018 and 2017 respectively. The production of broad-leaved pulp wood amounted to 395k m<sup>3</sup> and 421 k m<sup>3</sup> in 2018 and 2017 respectively. The import of coniferous pulp wood 6 k m<sup>3</sup> and 102 k m<sup>3</sup> in 2018 and 2017 respectively. The export of coniferous pulp wood 5 k m<sup>3</sup> and 74 k m<sup>3</sup> in 2018 and 2017 respectively.

The domestic consumption of coniferous and broad-leaved pulp wood amounted to 5,155 k m<sup>3</sup> and 4,639 k m<sup>3</sup> in 2018 and 2017 respectively. The domestic consumption of coniferous pulp wood amounted to 4,759 k m<sup>3</sup> and 4,190 k m<sup>3</sup> in 2018 and 2017 respectively. The domestic consumption of broad-leaved pulp wood amounted to 369 k m<sup>3</sup> and 449 k m<sup>3</sup> in 2018 and 2017 respectively.

## **14. PRODUCTION OF CONIFEROUS AND BROAD-LEAVED SAWN WOOD BY CZECH SAWMILLS IN 2018.**

Czech saw mills had ready 8,150 k m<sup>3</sup> of coniferous and broad-leaved roundwood for breakdown, i.e. by 650 k m<sup>3</sup> more as compared in 2017.

In 2018, up to approx. 1 m<sup>3</sup> of coniferous roundwood from the calamities was stored at Czech sawmills. The volume remained stored also in 2019.

From the total volume of 8,150 k m<sup>3</sup> of coniferous and broad-leaved roundwood, 4,550 k m<sup>3</sup> of coniferous and broad-leaved sawn wood was produced. In 2017, it was 4,305 k m<sup>3</sup>. The year-on-year growth amounted to 5.7%. The export of coniferous and broad-leaved sawn wood amounted to 3,870 k m<sup>3</sup> and 3,632 k m<sup>3</sup> in 2018 and 2017 respectively. The import of coniferous and broad-leaved sawn wood amounted to 977 k m<sup>3</sup> and 834 k m<sup>3</sup> in 2018 and 2017 respectively. The domestic consumption of coniferous and broad-leaved sawn wood amounted to 1,657 k m<sup>3</sup> and 1,507 k m<sup>3</sup> in 2018 and 2017 respectively.

The growth of annual domestic consumption by 150 k m<sup>3</sup> can be credited to the revival of construction industry, mainly by growing numbers of wooden family houses. Sawn wood is produced mainly by big producers such as Stora Enso Timber, s.r.o., Ždírec nad Doubravou, Stora Enso Timber Planá s.r.o., Mayer-Melnhof Holz Paskov, Pila Lukavec Sawmill and Pila Javořice Sawmill. The export of Czech coniferous and broad-leaved sawn wood amounted to 85.1% of the total breakdown in 2018 as compared to 84.40% in 2017.

## **15. PRODUCTION AND MARKET WITH FUEL WOOD IN THE CZECH REPUBLIC IN 2018.**

The production of fuel wood has been growing every year, but 2018 was extraordinary due to the bark beetle calamity. The production amounted to 4,246 k m<sup>3</sup>, i.e. a year-on-year growth by 1,870 k m<sup>3</sup> and significant 78.7%. The production of pulp wood amounted to 2,376 k m<sup>3</sup> in 2017.

The export and import of coniferous and broad-leaved fuel wood amounted to 208 k m<sup>3</sup> and 36 k m<sup>3</sup> respectively. The domestic consumption of coniferous and broad-leaved fuel wood amounted to 4,076 k m<sup>3</sup> and 2,194 k m<sup>3</sup> in 2018 and 2017 respectively, i.e. a year-on-year growth by 85.8%.

The production of coniferous fuel wood amounted to 3,600 k m<sup>3</sup> and 1,642 k m<sup>3</sup> in 2018 and 2017 respectively. The production of broad-leaved fuel wood amounted to 646 k m<sup>3</sup> and 734 k m<sup>3</sup> in 2018 and 2017 respectively

## **16. MARKET WITH OTHER WOOD BASED PRODUCTS THE CZECH REPUBLIC IN 2018.**

In the Czech Republic, this market with other wooden products comprises also the market with agglomerates as well as pellets and other agglomerates, chips, splinters and sawdust and wood residues. The production in 2018 is no exception to past years, except for the improvement of particle board production, which is the most efficient. As for Czech producers the following are the major market players: KRONOSPAN CR, spol. s. r. o. in Jihlava and Dřevozpracující družstvo Lukavec in Lukavec.

**Market with particle boards incl. OSB in 2018.** The production amounted to 1,230 k m<sup>3</sup>, i.e. a year-on-year growth by 6.4%. The production of this commodity is the highest from other wood-based products. If expressed in m<sup>3</sup>, it is beaten only by pellets and other agglomerated materials production. The export of particle board incl. OSB amounted to 1,608 k m<sup>3</sup>, i.e. a year-on-year growth by 6.4%. The import of particle board incl. OSB amounted to 840 k m<sup>3</sup>, i.e. a year-on-year growth by 11%. The domestic consumption amounted to 462 m<sup>3</sup> and 401 m<sup>3</sup> in 2017 and 2016 res in 2018 and 2017 respectively. The year-on-year growth of domestic consumption amounted 15.2%.

OSB desks production amounted to 719 k m<sup>3</sup> and 673 k m<sup>3</sup> in 2018 and 2017 respectively. The export amounted to 685 k m<sup>3</sup> and 650 k m<sup>3</sup> in 2018 and 2017 respectively. Import of OSB desks amounted to 195 k m<sup>3</sup> and 180 k m<sup>3</sup> in 2018 and 2017 respectively.

**Market with fibreboards in 2018.** The market with this commodity remained on the same level as in 2017. In 2018, the production of fibreboards amounted to 34 k m<sup>3</sup>. i.e. 1 k k m<sup>3</sup> more than in 2017. The trend of past years remains the same. The export remained the same, i.e. 103 k m<sup>3</sup>. The import amounted to 246 k m<sup>3</sup> and 247 k m<sup>3</sup> in 2018 and 2017 respectively. Annual domestic consumption amounted to 177 k m<sup>3</sup>.

**Market with plywood and batton plywood in 2018.** The production of plywood and batton plywood has experienced a certain boom recently. The production amounted to 243 k

m<sup>3</sup>; i.e. a year-on-year growth by 6.4%. The import amounted to 98 k m<sup>3</sup>, i.e. a year-on-year growth by 2.1%. The export amounted to 178 k m<sup>3</sup>, i.e. a year-on-year growth by 7.9%. The domestic consumption of plywood and batton plywood is fairly good, and amounted to 154 k m<sup>3</sup> in 2018, i.e. a growth in the internal consumption only by 2%, by 65.8% of the total production.

**Market with wooden pellets in 2018.** The production of wooden pellets amounted to 377 k tons and 367 k tons in 2018 and 2017 respectively. The import amounted to 33.7 k tons, i.e. a year-on-year decline by 2.9%. The export amounted to 323 k tons, i.e. a year-on-year growth by 9.9%. Domestic consumption recorded 79 k tons, i.e. a year-on-year decline by 0.5%.

The biggest pellet producers in the Czech Republic are Mayer-Melnhof in Paskov, Pfeifer Holz, Stora Enso Wood Products Ždírec, s.r.o. and Biomac; they use their own sawdust and shavings for their production. Part of the pellets is used on the domestic market (the number of kettles combusting pellets is growing in the Czech Republic) and the remaining part of the production was exported to Italy, Austria and Germany.

**Market with splinters and wood residues in 2018.**

This market comprises wooden splinters, sawdust and wood residues incl. wood for agglomerates. The production amounted to 1,738 k m<sup>3</sup> and 1,412 k m<sup>3</sup> in 2018 and 2017 respectively. From this volume, approx. one half, i.e. 863 k m<sup>3</sup> of splinters and sawdust, and the other half of 875 k m<sup>3</sup> of wood residues incl. wood for agglomerates were produced. The export of all these products amounted to 483 k m<sup>3</sup>, thereof 303 k m<sup>3</sup> splinters and sawdust and to 180 k m<sup>3</sup> of wood residues incl. wood for agglomerates. The import of all these products amounted to 479 k m<sup>3</sup>. Domestic consumption of splinters and sawdust and wood residues incl. wood for agglomerates amounted to the total of 1,734 k m<sup>3</sup>.

## **17. PRODUCTION OF PULP AND PAPER IN THE CZECH REPUBLIC IN 2018.**

The development of pulp and paper industry was characterized by several good steps, mainly in terms of investments. The majority of investments within this sector of wood processing industry focused mainly on major improvement of the quality and increase of capacities for paper production and cardboard, mainly from primary fibre, i.e. pulp from timber. Increased consumption of wood pulp is basically covered by domestic production. Paper production grew significantly in 2013. However it is expected that it will keep growing, probably till 2023. Growing paper production can be credit mainly to wrapping paper such as corrugated paper, folding paper, wrapping paper and paper for bags. The per capita paper consumption amounted to 155 kg. The Czech Republic should be on the same level as developed countries by 2024.

The total wood used for pulp and paper production amounted to 3,564 k m<sup>3</sup> of coniferous timber, thereof 2,228 k m<sup>3</sup> of coniferous pulp wood and 1,336 k m<sup>3</sup> wood chips and coniferous splinters were used. The total paper production amounted to 843 k tons. The pulp and paper industry produced 420 k tons and 460 k tons of paper pulp in 2018 and 2017 respectively. 414 k tons of chemical pulp was produced from the paper pulp. The production of paper pulp declined year-on-year by 38 k tons.

## **18. FOREST CERTIFICATION IN THE CZECH REPUBLIC IN 2018.**

The goal of forest certification is to support sustainable management of Czech forests. We succeed in complying with this goal, in spite that the forest certification is not a must, it is forest owners' facultative tool (decision). By this certificates, forest owners declare their commitment to manage their forests according predefined criteria.

Current certification requirements for use of forests do not focus only on harvesting timber, but they comprise a comprehensive complex of social, ecological and economic function of forests with sustainable use of natural resources.

In the Czech Republic, there are two certification systems - FSC (Forest Stewardship Council) and PEFC (Programme for the Endorsement of Forest Certification Schemes).

**FSC® Czech Republic.** FSC ČR is the Czech representative of the international organisation of Forest Stewardship Council® (FSC) that created and maintains the

certification scheme for forest certification and wood-based products in forests covering over 200 m ha in 85 countries. Forests with FSC certificate covered 54,470 ha, i.e. 3.91 % as compared to PEFC certificate in the Czech Republic.

**PEFC Czech Republic.** PEFC Česká republika is an independent organisation that is to support sustainable forest management, use of wood as ecological, renewable source, nature conservation and sustainable development of the society. PEFC Česká republika is part of the most spread forest certification system based in Geneva and it is the national PEFC governing body in the Czech Republic. In the Czech Republic, 70% of forests are certified under PEFC system and over 230 companies show their social responsibility by participating in PEFC Chain of Custody.

## **19. CONTRIBUTION OF WOOD PROCESSING INDUSTRY PRODUCTS TO PROCESSING INDUSTRY DEVELOPMENT IN THE CZECH REPUBLIC.**

Goods produced and delivered by wood processing industry (WPI) to other sectors of the Czech economy are of good quality, price and competitive. The WPI products contribute to the development of Czech processing industry. Supplies of WPI products merge the effects of close relations and mutual positive dependency between industry, construction sector, transportation and mining and economy sector. They facilitate also searching common markets and increase the quality of mutual business relations and hence the possibility of further development of the entire Czech economy.

In 2018, the WPI supplies to Czech economy grew year-on-year. This is shown by the figures: in 2018, from the total volume of 8,150 k m<sup>3</sup> of coniferous and broad-leaved roundwood, 4,350 k m<sup>3</sup> of coniferous sawn wood was produced and 1,300 k m<sup>3</sup> were supplied to domestic market, i.e. an annual growth by 20%. 357 k m<sup>3</sup> of broad-leaved sawn wood were supplied to domestic market, i.e. an annual growth by 53.2%. The domestic production of coniferous pulp wood amounted to 6,620 k m<sup>3</sup> and 4,759 k m<sup>3</sup> were supplied to the internal market, i.e. an annual growth by 13.6%. 396 k m<sup>3</sup> of broad-leaved pulp wood were supplied to the internal market, i.e. an annual growth by 13.6%. The supplies of paper and cardboard to internal market amounted to 1,530 k m<sup>3</sup>, i.e. an annual growth by 2.8%. The supplies of particle boards to internal market amounted to 462 k m<sup>3</sup> of the total production of 1,230 k m<sup>3</sup>, i.e. an annual growth by 15.2%. The supplies of plywood and batton plywood to internal market amounted to 154 k m<sup>3</sup> of the total production of 234 k m<sup>3</sup>, i.e. an annual growth by 2%. The supplies of wooden pellets and other agglomerate products to internal market amounted to 215 k tons of the total production of 535 k tons, i.e. an year-on-year decline by 20 k tons. The supplies of chips, splinters and wooden residues to internal market amounted to 1,734 k m<sup>3</sup> of the total production of 1,738 k m<sup>3</sup>, i.e. an year-on-year decline by 14 k m<sup>3</sup>.

The year-on-year growing supplies to Czech economy from WPI clearly documents the significance and contribution of WPI to the Czech economy.

## **20. VALUE ADDED OF WOOD-PROCESSING INDUSTRY AND PROCESSING INDUSTRY IN THE CZECH REPUBLIC IN 2018.**

The contribution of WPI to the development of domestic consumption industry was documented above. One can discuss whether the contribution could be higher. The answer would be positive for sure, had it not been for obstacles in the past. Further elaboration is based on the statistical data in current prices provided by the Czech Statistical Office.

Based on this data, WPI production amounted to CZK 253,620 m and CZK 270,740 m in 2008 and 2018 respectively. The production of Czech processing industry amounted to CZK 9,302,315 m and CZK 11,902,370 m in 2008 and 2018 respectively.

GVA of WPI amounted to CZK 75,167 m and CZK 83,858 m in 2008 and 2018 respectively. GVA of processing industry amounted to CZK 3,534,158 m and CZK 4,656,841 m in 2008 and 2018 respectively.

After recalculating GVA per employee, the value in WPI amounted to CZK 588,534 m and CZK 792,596 m in 2008 and 2018 respectively. The growth of Czech industry amounted to CZK 828,385 m and CZK 989,674 m in 2008 and 2018 respectively.

If we compare the values for WPI for the last ten years, one must conclude that the value per employee, i.e. the productivity per employee, shows an indisputable, almost tangible, improvement.

This WPI indicator proved the importance within processing industry. The GVA per employee can be an example worth following. Moreover, as WPI has incomparable preconditions and possibilities of equipment and implementation of artificial intelligence as compared to production of cars, airplanes, PC, electrical and optic devices and pharmacy and other sectors.

## **21. ELECTRICITY AND ENERGY FROM WOOD IN THE CZECH REPUBLIC IN 2018.**

Czech power plants produced 88 TWh of electricity, i.e. a year-on-year growth by over 1%. However, Czech power plants used 6 TWh and other 4.2 TWh were lost on the way to the consumers. Nuclear power plants possess less than one fifth of total Czech installed performance, but they produced over one third of the electricity. The other extreme are the solar power plants that have 9% share on the total installed performance, but they supplied only 1% of the electricity to the network.

As for Czech electrification network, it is clear that it will be necessary to keep the production of nuclear power plants for reliable operation of the Czech electrification network to 2030. Needed precondition for safe operation of Czech electrification network after 2030 is the extended lifetime of Dukovany nuclear power plant at least to 50 years. Czech Republic is not happy with burning coal in power plants, especially as for each 10 ton of burned coals one has to add 30 tons of oxygen used during the combustion.

Due to the bark beetle calamity, more timber was used for producing electricity and heat. One kilometre of dry wood holds approx. 4.5 kWh of energy, and during combustion, only the amount of carbon is released that was accumulated when the wood was growing. This would be the right steps from environmental perspective. The total annual harvest amounted to 25,689 k m<sup>3</sup> and 90% thereof was salvage felling. Given the unusual volumes of bark beetle timber, dropping timber prices and the situation of processing capacities, there is no other option but search for other ways of using the timber. Along with exporting smaller amounts to China, there is a temporary possibility of using the biomass in Czech energy industry.

Combusting of biomass incl. timber produced 2,118.7 GWh of electricity. The total production of electricity from all renewable resources amounted to 9,403.9 GWh.

As for salvage felling, 806.2 k m<sup>3</sup> and 759.5 k m<sup>3</sup> of chips and splinter were produced in 2018 and 2017 respectively. The annual import amounted to 406.9 k m<sup>3</sup> and 581.2 k m<sup>3</sup> in 2018 and 2017 respectively. The export of chips and splinters amounted to 303.6 k m<sup>3</sup> and 236.2 k m<sup>3</sup> in 2018 and 2017 respectively

The production of pellets amounted to 377 k m<sup>3</sup> and 367 k m<sup>3</sup> in 2018 and 2017 respectively. The import of pellets amounted to 50.0 k tons and 49.8 k tons in 2018 and 2017 respectively. The export of pellets amounted to 377 and 367 k m<sup>3</sup> in 2018 and 2017 respectively.

WPI is a major energy user of energy from the biomass used mainly for drying wood-based products.

## **22. EVALUATING CARBON FOOTPRINT IN THE CZECH REPUBLIC IN 2018.**

In the Czech Republic carbon footprint is anchored in the standard ČSN ISO 14064 – greenhouse gases, ISO 140067. The Company Carbon Footprint "CCF" has been monitored for several years. A National programme was created and new Climate Protection Policy was drafted. The SEA process was started too. The climate protection strategy by 2030, with outlook to 2050 and proposed measures for efficient reduction of emissions of greenhouse gases are part of this new Climate Protection Policy in the Czech Republic.

Czech companies are developing and implementing low-carbon technologies and solutions from energy savings to renewable energy in order to reduce the emissions by 80-95% by 2050. Trade with emission allowances (EU ETS) is carried out by 330 facilities, thereof 200 within energy sector, other in industrial processes.

Over 60% of Czech companies is standard process to reflect the goals above in their strategies, policies or reporting. They also defined measures for reducing emissions. These companies comprise e.g. ČEZ, Veolia Group, Vodafone Czech Republic a.s, etc. The measures above also help increasing the competitiveness of Czech businesses and provide many benefits.