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The Level of the Wood Raw Material Base Processing in the Czech Republic

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Abstract

The Czech Republic (CR) is one of the countries with high forest coverage and high levels of forestry and its high production potential. Annual timber logging is around 16 million m3, where from the above mentioned amount, nearly 90% presents the coniferous wood – with a decisive proportion of sawlog. The professional paper is focused on the level of processing of wood raw material base, which is in the Czech Republic over a long period unsatisfied, despite a number of strategic documents and the measures adopted. Dissatisfactory, almost alarming situation related manly with the progressive rise of total export of raw timber and products with the low degree of the added value. The particular issue is problem of the forestry-wood processing sector with consequences to the competitiveness in wood processing in the Czech Republic - in this case focusing on sawmill production.
In a broader context, the competitiveness in wood processing, particularly sawmill production, seems as the principle problem of sustainable management of forests and the economic viability of forestry- wood processing sector in the CR.

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Keywords: Forestry; National Forest Programme; Sawlogs; Wodd processing; Sawntimber

1. Introduction

The Czech Republic (CR) is a country with a high forest coverage. Forest land covers an area of over 2655 thousand ha which represent 33.7 % of the total territory of the country. (Novotný et al., 2013)

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The 4th Ministerial Conference on the Protection of European Forests (Vienna, 2003) adopted the resolution, V2 Enhancing economic viability of sustainable forest management in Europe. In this economic viability is a key pillar of sustainable forest management and the crucial importance of maintaining forests and their multiple benefits to society is also noted (NFP, 2008).

The economic viability of sustainable forest management is principally correlated with the wood-producing function of forestry. It is necessary to highlight the role of manufacturing industry, especially the wood processing industry in relation to forestry. The wood processing industry in the CR is among the sectors with a long tradition – the early foundation of timber companies foundation, their number and their capacity and location have been historically associated with the proportion of the country's forest coverage. The plentiful amount of the constantly renewable resource base today is a major advantage of the processing and utilization of timber in the CR (Kupčák, 2003).

This paper mentions these considerations and is focused on the level of the processing of this raw material base, which has over a long period been unsatisfied, despite a number of strategic documents and the measures adopted. The unsatisfactory, almost alarming, situation is mainly related with the continuous rise of total exports of raw timber and products with low degree of added value. The particular issue is a problem of the forestry-wood processing sector with consequences in the competitiveness of wood processing in the Czech Republic - in this case focused on sawmill production. In a broader context it is a future economic viability issue for the forestry-wood processing sector in the CR.

2. Material and methods

The aim of this paper is a situational analysis of the economic viability regarding the level of wood raw material base utilization in the CR, in the context of strategies put forward in forest policy documents. Practices and procedures were thus structured under wood-forestry sector in the CR – in respect of: Forest management – wood processors.

A broad timeframe analysis of the ten-year period 2003-2013 was carried out in relation to the national forestry programs of the CR that were focused on promoting the use of wood in the applicable processing industry.

In terms of the methodology used, in its own way it was also built on earlier analysis – see the National Forest Programme of the CR for the period 2003-2006 and economic instruments to ensure this (Kupčák, 2003).

Within the industrial structures of the national economy of the CR, forestry is incorporated under the Ministry of Agriculture (MoA). The sectoral characteristics of Czech forest management (FM) are based on statistical survey. Although complex, however basically the only official information data of CF is regular represented by the Report on the State of Forests and Forestry in the CR by respective year (since 1994 systematically) – the so-called "Green Report" (GR, 2014).

The National Forest Programmes are considered to be concepts for the implementation of sustainable forest management in the long-term improvement of forestry competitiveness. They are a part of National forest policy and fulfil the EU Forestry Strategy. (NFP, 2008) In the Czech Republic 2 national forest programs were adopted:

- A National Forest Programme for the Czech Republic (2003-2006) was adopted by CR Government resolution in 2003
- In 2008 the CR Government adopted a National Forest Programme for the Czech Republic for the period up to 2013

The timber industry of the CR belongs to the Ministry of Industry and Trade of the Czech Republic – Manufacturing industry section. According to the classification of economic activities (CZ-NACE) it falls into different subsections: 16 –Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials, 17 – Manufacture of paper and paper products, 31 – Manufacture of furniture, 32 – Other manufacturing. Subsection 16 is divided into groups:

- 16.1 Sawmilling and planing of wood
- 16.2 Manufacture of products of wood, cork, straw and plaiting materials

Information about the timber industry in the CR is recorded in the annual reports of the Ministry of Industry and Trade of the CR – Panorama of manufacturing industry (2013).

The wood processing analysis was situated in the 16.1 subsection: Sawmilling and planing of wood, which was followed by the selection of the largest sawlog processors in the CR – represented by the following companies: Stora Enso Wood Products Ždírec s.r.o., Stora Enso Wood Products Planá s.r.o. and Mayr-Melnhof Holz Paskov s.r.o. The data was drawn from the Czech register of economic entities.

The company Stora Enso Wood Products Ždírec s.r.o. (hereafter Stora Enso Ždírec), headquartered in Ždírec nad Doubravou; annual manufacturing capacity of company installed in 2012 amounted to 1,200 thousand m3. Stora Enso Wood Products Planá s.r.o. headquartered in Planá (hereafter Stora Enso Planá); manufacturing capacity installed in 2012 amounted to 730 thousand m3. Both companies are part of Stora Enso Wood Products (SEWP), the second largest timber company in the world. Group SEWP is a wholly owned subsidiary of Stora Enso Oyj, Helsinky, Finland.

The Mayr-Mellnhof Holz Paskov Ltd. Company headquartered in Staříč (hereafter Mayr-Melnhof Holz Paskov); manufacturing capacity installed in 2012 amounted to 1,100 thousand m3.

The main subject of business of these three named companies is the sawmill production and processing of coniferous spruce logs for sawn timber for building.

The custom analysis procedure consisted of the following steps:

- Projections of the CR National Forest Programme 2003-2006,
- Projections of the CR National Forest Programme 2008-2013,
- Selected production characteristics of forestry in the CR,
- Selected production characteristics of subsection 16.1 Sawmilling and planing of wood

3. Results

3.1. National Forest Programme of the CR 2003-2006

The Czech government resolution from 13. January 2003 no. 53 set up the National Forest Programme of the CR (NFP I.). It contains a number of the aspects of the European forest policy; the basic principle, on which NFP I. is based, is the management of forests in a sustainable way. Strategic objectives are linked to forestry strategy, approved by the EU Council Resolution of 1998 "EU Forestry strategy".

There are always, after a brief analysis of the current status and description of persistent problems, specific precautions required to improve the current situation in the individual chapters of NFP I. In the field of legislation the priorities are for example:

- To prepare a proposal to amend the Industrial Policy Concept of the CR and its sub-programs by supporting buildings and the modernization of the capacity of the effective final processing of timber production
- To initiate the processing of the state programme concerning Raw material policy in the field of renewable energy sources, dealing with wood and some agriculture crops

Chapter 2. The current state of forests and forestry in the CR, among others, notes that the use of domestic sources of wood processing and wood-products consumption is extremely low. More than half of the harvested timber is exported unprocessed or as semi-finished products – sawn timber and cellulose (converted to raw equivalent). Levels of production and consumption, especially timber production at a higher stage of finalization is low and cannot be compared to other economically developed European countries. The development of the capacity of a modern timber industry is determined primarily by the strong participation of foreign capital, mostly targeted at timber blanks with a high proportion of raw material and a low proportion of value added by processing, mainly with a view to export to the home country of the investor, with subsequent re-export to third countries.

Chapter 6. The production and use of wood finds that wood production still remains one of the most important mission of forestry. Wood, as the product, is increasingly important for social development and its role in the life of modern society is continuously and significantly increasing. Wood is a universally usable raw material that is used to produce a varied and extensive range of products and commodities. Its main advantage is the fact that its resources are, by the implementation of sensible sustainable management, virtually inexhaustible and can be constantly renewed.

Revenues realized for lumber are a critical factor and often the only source of funds, by which the forest owner supports the development of other functions that the forest in the current cultural landscape provides. Without these funds the owner could not ensure the reproduction of the rate of return on forest property or public non-productive desired beneficial effects.

The significant social context of production and wood processing are expressed in the employment of the population. Maintaining the employment of rural areas populations can be marked as a priority in terms of maintaining the overall character of the landscape.

The ecological aspects of wood production are also appreciable. The replacement of wooden products by those made of plastics is usually unfavorable to the micro- and macroeconomic perspective and primarily has long-term adverse ecological consequences.

The good economic results of the current FM are achieved mainly thanks to the high proportion of conifers in the market supplies. Their share is consistently around 90% of total production. Domestic and foreign timber markets in the long term will continue to show a high and stable demand for coniferous cut, primarily spruce sawmill viewports and after coniferous pulpwood. The product mix of raw timber production in the CR is dominated by roundwood sortiment and pulpwood; the share of roundwood sortiment supply in the CR has long exceeded 50%.

The extremely high share of exports is partly due to the low level of domestic consumption of raw timber in the CR. The share of timber exports of domestic production is significantly higher than in the vast majority of other significant timber producing countries.

The existing capacity of sawmills in the CR allows the processing of 8-8.5 mill. m3 sawmill cut-outs a year. Processing 6.2 mill. m3 sawmill cut-outs corresponds to the current lumber production of 3.4 mill. m3, 40% of which is exported. Consumption of wood-blank in the CR is relatively low and one of consequences is the extremely high proportion of exports.

Increasing the level of production, consumption and export of wood and paper commodities with a higher degree of value added is one of the most important problems in this area. Its solutions include the basic preconditions for developing forestry.

3.2. The National Forest Programme of the CR 2008 – 2013

In 2008 the National Forest Programme of the CR was adopted by the Czech Government resolution for the period up to 2013 (hereafter called NFP II.). The dictum is quoted in the introduction: “Strong economic performance must go hand in hand with the sustainable use of natural resources” (see the main principles of the Common agricultural policy, market policy and rural development policy. The European Council, Goteborg, 2001).

The formulation of government resolutions illustrate the forest-politics, but also political, legislative and national economic (respective Above-sectoral) character and significance of NFP II. (also Program).

A crucial part of NFP II. are the objectives, key actions and measures that hierarchically contain four basic objectives – “pillars”, 17 related key actions and 123 program measures. Objective I. Improving long-term competitiveness – an economic pillar that covers 5 key actions, especially regarding the economic viability of competitiveness and sustainable forest management. Objective II. Improving and protecting the environment – the environmental pillar consists of 6 key actions, focusing for example on: the preservation and enhancement of biodiversity in forests, the development of monitoring forests and improving the health and protection of forests. Objective III. Improving the quality of life – the social pillar contains two key actions; Support the improvement of the social situation of workers in FM and Increase the contribution of forests and forestry (forest products and services) in rural development.

Recently NFP II. incorporated Objective IV. Strengthening coordination and communication – communication pillar, which includes 4 key actions focused on for example: improving the weak position of forestry within public administration, improving public awareness about the actual condition of forests and forestry needs.

From the already mentioned pillar structure, key actions and program measures of NFP II. are obviously a significant shift of conceptual focus of forestry on economic part and because of the utilitarian and consensual approach proposers of various interest groups it is almost surprising that the first pillar became a pillar of the economy.

There are strengths in the SWOT analysis formulated in NFP II. as: FM, together with the related sectors processing timber are an important part of the national economy as their share of the GDP is between 5-7% (FM about 0.7% of GDP, related sectors 5-6% of GDP). The Forest area in modern history has gradually increased. Stocks of wood in forests are growing and growing stock are mostly made by good marketable pine timber.

However weaknesses are more numerous in the economic pillar of FM: Positive externalities and services provided by forests are not sufficiently used and taken into account in economic processes. FM has no built economic information system that would allow detailed economic analysis. Adequate compensation to forest owners for the restrictions on forest management due to environmental protection is not provided. Complex administrative system of providing support from the EU hinders their greater use.

Economic characters are, however, weaknesses in the social pillar, for example: The social situation of employees in forestry is unsatisfactory in both earnings and social ladder are one of the lowest. There are no adequate conditions created for the use of forests for the benefit of the involvement of local forestry and wood-processing entities nor for the development of infrastructure and services, rural economies and regions.

Among the tools to support research and technological development in order to increase The competitive ability of the forestry sector (as mentioned Objective I) can include the following program measures:

- Do an analysis of the economic efficiency of various management models in different natural conditions and make conclusions reflected in current legislation and state subsidy policy
- Establish a technological platform for FM and related industries with a view to promoting innovation and technological development in the forestry sector, through its participation in supporting domestic forestry operators in European forestry and wood technology platform in the 7th EU framework research programme and other international research projects
- Create economic or legislative conditions for more intensive cooperation among research, corporations and third parties in the innovation and development of new products, processes, technologies and efficient markets

3.3. Selected production characteristics of the FM in the CR

Species and spatial composition of forests in the CR is based on a long history and the proportion of coniferous trees prevails (76%) over deciduous (24%). Production forests capabilities corresponding to the timber – data for the period 2003 – 2013 (exports included) are shown in Table no. 1.

Table 1. Timber harvesting (million m^3).

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Timber harvesting	15,1	15,6	15,5	17,7	18,5	16,2	15,5	16,7	15,4	15,1	15,3
- coniferous	13,7	13,9	13,9	16,1	17,3	14,9	14,0	15,1	13,3	13,1	13,2
- deciduous	1,4	1,7	1,6	1,6	1,2	1,3	1,5	1,67	2,1	2,0	2,1
Exports	3,6	3,9	3,7	3,8	4,3	4,2	5,6	5,4	6,8	5,3	6,2

Source: MoA

Table 1 obviously show the species composition of harvested wood, where the proportion of coniferous wood has long been around 90% (in 2007 almost 94%), and spruce namely represented around 75%. Among others, it is important for processing of wood in the CR timber industry as well as exports.

Total exports of raw timber in the CR during the reference period are shown in table 2. The data on the market for coniferous roundwood and coniferous sawntimber in the CR complements Table 3. The proportion of exports of coniferous roundwood and coniferous sawntimber in the CR (in %) are shown in table 4.

Table 2. Total export of raw timber in the CR (thous. m3).

Indicator	2008	2009	2010	2011	2012	2013
Total	4 163	5 566	5 364	6 772	5 316	6 183
Of which						
EU	4 147	5 564	5 325	6 685	5 284	6 155
Germany	1 028	1 449	2 151	2 464	2 150	2 374
Austria	2 722	3 779	2 874	3 001	2 805	3 420
Slovakia	192	171	157	128	117	156

Source: CSO, MoA

Table 3. Coniferous roundwood and coniferous sawntimber market in the CR (thous. m3).

Indicator	2008	2009	2010	2011	2012	2013
Roundwood production	8 503	8 332	8 982	8 014	7 911	7 925
Roundwood export	1 825	2 514	1 658	3 100	2 571	2 797
Sawntimber production	4 409	3 800	4 492	4 153	3 997	3 760
Sawntimber export	1 897	2 743	3 166	3 084	2 910	3 225

Source: CSO, MoA

Table 4. Share of exports of coniferous roundwood and coniferous sawntimber in the CR (in %).

Indicator	2008	2009	2010	2011	2012	2013
Total for harvesting	25,7	35,9	32,0	44,0	35,3	40,3
Roundwood export	21,5	30,2	18,5	38,7	32,5	35,3
sawntimber export	43,0	72,2	70,5	74,3	72,8	85,8

Source: CSO, MoA

Manufacturers CZ-CPA 16 export volumes of critical products to EU countries, mainly to neighboring countries Germany (40%), Austria (15%), Slovakia (8%) and Italy (6%). Germany mainly receives sawntimber, joinery and pallets, Austria is most interested in roundwood, sawntimber, veneer, plywood and agglomerated products. Exports of products CZ-CPA 16 to EU countries is about 83% of total production. The CR is one of Europe’s largest and possibly even one of the largest global exporters of raw timber, but without further processing in relation to total production.

3.4. The production characteristics of wood processors

Some of the production characteristics of wood processors in the CR with the whole group 16.1 is introduced in Table 5. The chart below shows a steady decline in the number of companies and employment. Table 6 shows selected indicators of manufacturing enterprises – the largest processors of sawlogs in the CR and includes their market share in the market of roundwood and sawntimber in the CR. Note: from 2013 some processors have essential product characteristics disclosed.

Table 5. Chosen indicators CZ-NACE 16.1.

Indicator	MU	2008	2009	2010	2011	2012	2013
Number of enterprises	Pieces	2 265	2 328	2 322	2 273	2 071	1 759
Number of employees	Persons	9 436	8 697	8 144	7 666	7 257	6 831
Sales	Million CZK	21 004	19 060	20 647	21 481	20 657	21 721

Source: CSO, MoA

Table 6. Indicators of production of selected enterprises (thous. m3).

Indicator/Operations	2008	2009	2010	2011	2012	2013
Sawing logs						
Stora Enso Ždírec	1 071	941	939	916	936	n/a
Stora Enso Planá	731	619	625	593	642	n/a
Mayr-Melnhof Paskov	879	1 022	992	1 033	1 015	1 073
Total	2 681	2 582	2 556	2 542	2 593	
Market share	40,1	44,4	34,9	51,7	48,6	
Sawntimber production						
Stora Enso Ždírec	607	525	527	521	529	n/a
Stora Enso Planá	389	322	318	314	331	n/a
Mayr-Melnhof Paskov	n/a	579	561	592	575	607
Total		1 426	1 406	1 427	1 435	
Market share		37,5	31,3	34,4	35,9	

Source: See Material and Methods n/a - data not available

4. Discussion

Utilization of the raw material wood by domestic processing capacities is extremely low as is domestic consumption and recycling of wood products in the CR. More than half of the harvested timber is either exported as unprocessed or semi-finished products. Levels of production and especially the consumption of wood production at a higher stage of finalization is low and cannot be compared with other economically developed European countries. The development of modern capacities of the wood processing and paper processing industries is so far largely supported by the strong participation of foreign capital, focused primarily on timber and paper blanks with a high proportion of raw material and low proportion of processing added value (NFP II., 2008).

There is a substantial concentration in the woodworking industry of the CR and the dominant role in the market appreciation of domestic raw material wood takes few companies that thanks to the strong participation of foreign capital that have modern capacity (Jánský, 2007). However, its activities focus primarily on the production of semi-finished products, mainly with a view to their export to the country of the investor and its subsequent re-export to third countries. In terms of employment however, the woodworking industry has the highest number of employees in the category of micro-enterprises – almost 39 thousand people, of which a considerable number of these enterprises are located in marginal areas of the CR, where the minimum employment opportunities exist. A similar situation exists in the manufacture of furniture and other manufacturing industry (Kupčák, 2010).

According to Babuka (2007) the backwardness of the CR in their ability to influence the use of its largest renewable wealth is evident when looking at the position of the CR in the export of raw timber. Not only are we one of the largest exporters of raw wood in Europe in terms of volume, but especially in the proportion of exports to harvesting the CR takes first place among the European countries (with coniferous wood for sawmill processing) and so we rank among the top in the world. This fact shows very clearly the fundamental lack of raw material policy and related economic strategy of wood processing.

According to Porter (1980) the development of the competitiveness of the country has three stages. In the first stage, the country benefits from cheap labour. In the second stage, a source of comparative advantage becomes the efficient production of a standard commodity. The third stage is associated with the manufacture of innovative products and innovative processes (Porter, 1980).

5. Conclusion

The conclusions of international summits but also national documents (e.g. National forest programs) underline the increasing importance of the economic concept of sustainable forest management and the increasing importance of forests to society. At the same time also they postulate the questions of resource funding and the need for solutions.

The economics of forestry in the CR is essentially determined by the harvesting possibilities, when more than 90% of the current timber production is represented by coniferous wood. This is followed by the level and development of the economic results achieved by forest owners. From a macroeconomic point of view the integral use of wood raw material and its appreciation of domestic woodworking processing capacities belongs here.

Previously analyzes show an overall negative factual conclusion: long term, disturbing and progressive –export growth of timber as well as sawn wood. All this happens in the developed market environment and with the participation of foreign manufacturing investments, while the inflow of foreign investments into the CR once used to be one of the main priorities of the state economic policy and the premise of competitiveness. All this stands up in the contradictory contrary to the adopted strategies and instruments of legislative (normative) and economic character etc. Overall, and in conclusion – even a layman here may come to mind renowned turnover of Shakespeare’s tragedy – Hamlet’s mouth: Words, words, words...

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