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EU4Business
Za konkurentnu i inovativnu domaću ekonomiju
For competitive and innovative local economy

Implementation of the IPA 2016 Support in the Sector of Competitiveness and Innovation, "Local Development Strategies" Action, Local Self-Government and Economic Development Programme in Bosnia and Herzegovina

THE WOOD INDUSTRY IN BOSNIA AND HERZEGOVINA

Performance and Export Analysis

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Miloš Šipragić, PhD

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Glossary/Acronyms

BiH	Bosnia and Herzegovina
EU	European Union
FDI	Foreign Direct Investment
FSC	Forest Stewardship Council
GDP	Gross Domestic Product
GVA	Gross Value Added
SMEs	Small and Medium Enterprises

1. Introduction

The Action "**Local Development Strategies**" (the Action) has the objective to strengthen BiH capacity for generating growth and employment through support to competitiveness and innovation. The specific objective of the Action is to support BiH private sector development with a focus on export-oriented, agro-rural and tourism sectors, and to enhance the operational environment for micro, small and medium-sized enterprises (MSMEs) including the development of local digital entrepreneurship.

The Action is co-financed by the European Union (EU) and the German Federal Ministry for Economic Cooperation and Development (BMZ). The overall duration is 48 months, starting 01.04.2018 and ending 31.03.2022. The Action is implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (hereinafter referred to as GIZ) as the Lead Organisation with UNDP and ILO as the Co-Delegates' under the Co-Delegation Agreement with the EU. The implementing partners have defined budget allocations and different sets of responsibilities.

The Action is implemented under the project title EU4Business. EU4Business envisages three inter-related results:

1. MSMEs performance is increased due to better access and availability of well-targeted measures and innovative business development services in competitive export-oriented sectors;
2. The business environment for the development of new businesses and support to existing ones is improved;
3. Entrepreneurial initiatives in tourism and rural value chains for income and employment generation are increased.

The project is based on a two-pronged approach, a Grant Fund Facility (GFF) complemented by Technical Assistance (TA). Both GFF and TA are focused on the following areas of intervention:

1. Export-oriented sectors;
2. Tourism;
3. Agri-food and rural development.

The Project also promotes entrepreneurship and start-ups within these sectors emphasizing the importance of the digital economy. Beneficiaries are MSMEs, farmers and entrepreneurs with a special focus on youth, women and vulnerable groups.

As part of the technical assistance, the project conducts **sector and market analyses** which can be used for the design of private sector support measures by public institutions and service providers and/or directly for business development by BiH MSMEs.

The purpose of the Study is to offer relevant insights and recommendations to the wood sector in BiH regarding opportunities to enter new markets and/or increase penetration of existing markets and in the long run ensure the sustainability of the industry.

2. Executive Summary

The wood processing industry of BiH consists of **1,348 companies** that are active in **10 business sectors** and employ more than **25,000 workers** in 2020. The structure of the wood processing industry of BiH is relatively unfavourable since **there is the largest number of those companies that generate relatively small GVA (e.g., sawmills).** The total **sales value** of all product categories in 2020 was **EUR 1.03 billion**, while the **total export value** was **EUR 576 million**. Key export product groups in 2020 were: **seats and parts thereof** (USD 298 million), **furniture and parts thereof** (USD 208 million), **wood sawn or chipped lengthwise** (USD 191 million), **builders' joinery and carpentry** (USD 63 million) and **fuel wood** (USD 61 million). Exported value of furniture is on average 40% larger than the exported value of wood and wooden products.

Based on the total exported value of all product groups, it can be concluded that the **top 5 export markets for BiH in 2020 were Germany, Croatia, Italy, Serbia and Slovenia**. The most important **competitors** in key export markets come from **Poland, China, Germany, Italy and Austria.** Having in mind the Export Potential Map's projections for both wood products and wood, **the most promising export markets in the forthcoming period may be Germany, Italy and Austria.**

Value chain analysis showed that weak links extend through the entire value chain. At the beginning of the chain, it is the supply of raw materials, in its middle it is the lack of professional staff, the need to improve production processes, better capacity utilization and improvement of production technologies, and at the end of the chain, it is the need for information on attractive export markets, potential buyers and current trends, with a proactive market presence.

It may be assumed that BiH companies use the strategy of low prices - cost leadership when exporting seats, furniture and parts thereof to the markets of Germany and Austria, while when exporting wood and builders' joinery and carpentry to Italy and Austria they use the strategy of prices that are higher than average market prices.

Near-shoring to countries and regions closer to Western Europe is likely to emerge after the pandemic. To enhance their potential in the post-pandemic world, Western Balkans should change the position and narrative from economies that offer low costs for investors, to the destination that offers high quality.

The furniture of the future must be eco-friendly, tailor-made and multifunctional. Eco-friendly furniture is manufactured based on the concept of eco-design following a **circular economy model** and concept of the 7Rs: recycle, redesign, reduce, reuse, repair, renew and recover. Given the trend of decarbonization, the **increasing use of wood in construction is evident**. Producers will have to accept the emerging concept - innovability that expresses the ability to constantly innovate while respecting the values of which the sustainable model is the bearer.

The concept of the Smile curve suggests that **the most value is added in** either upstream activities (development of a new concept, research and development) or downstream activities (marketing, branding and customer service), and these are precisely those **functions that are insufficiently developed or do not exist in most wood processing companies**. In areas that affect the creation of added value, performance and competitiveness of companies (market research, product development, industrial design, marketing, branding, process improvement, etc.), the consulting market is relatively underdeveloped.

In order to make **the best use of the limited forest resources available to BiH, to satisfy demanding customers in the target markets** (Germany, Austria and Italy), **and to adapt to new market trends** (sustainability, eco-friendly products, etc.), **it is necessary to support companies to gradually reorient:**

- from the business model/strategy of contract manufacturing (lohn), **to the business model/strategy of development own products**, and
- from the business model/strategy of low prices (based on low value-added products), **to the business model/strategy of focused differentiation (based on high value-added products aimed at specific, small, market niche)**.

Although doing business according to this business model/strategy is demanding, it is not impossible. This was shown and proven by companies such as Artisan, Gazzda, MS & Wood, Rukotvorine and others who have created not only their own products but also brands that are recognizable in the European and global market. In order to have as many companies in BiH as possible that would take that path, **it is needed to work on promoting the benefits of such business models and strategies based on creating high value-added products (brands)** on the one hand **and to create a stimulating environment and support instruments so that as many companies as possible start taking the first steps, probing and experimenting in this direction**, on the other hand. Having in mind a **high level of complexity** in this area, there is a need to accept an approach based on the continuous loop that consists of probing, adjustment and learning. Having that in mind, the following **activities/initiatives may be supported**:

1) Preparation, discussion, advocacy and adoption of appropriate policies to discourage the export of raw materials - timber and to some extent also semi-raw materials - sawn timber (since many producers of final/high value-added products don't have enough raw materials);
2) Promotional activities and scholarships aimed at strengthening interest in woodworking occupations and improving their image (since many producers are faced with the problem of decreasing workforce);
3) Establishing and improving institutional cooperation with international reference institutions (to stay updated with the latest trends, technological achievements and know-how);
4) Facilitation of networking, communication, and cooperation between faculties, clusters, LIND and companies (so that companies may better use available equipment and know-how available at faculties, LIND but also at other companies);
5) Establishment of a center for research, development and design of products (since most companies don't have enough capacities in these areas, and it is very important for creating high added-value products);
6) Improving the quality infrastructure for the wood processing industry (since the quality infrastructure for the wood processing industry in BiH is poor);
7) Support the promotion of the wood processing industry of BiH (since in interviews with the representatives of the target markets lack of information on BiH wood processing industry - companies was identified, and more intensive, targeted promotion was suggested);
8) Raising awareness and education of directors of companies on: I) benefits of gradual reorientation from the business model/strategy of contract manufacturing (lohn), to the business model/strategy of development own products, as well as from the business model/strategy of low prices (based on low value-added products) to the business model/strategy of focused differentiation (based on high value-added products aimed at specific market niche), II) importance of non-production functions in creating high added-value products (e.g., research, industrial design, marketing, branding), III) importance of HRM (human resources management)

in retaining existing and attracting new employees, IV) benefits of optimisation of production and business processes followed by introducing appropriate digital solutions – digitalisation and V) new trends on target export markets;

9) Strengthen the consulting market in those areas that especially contribute to the creation of higher added-value products, and that are underdeveloped in wood processing companies (e.g., research and development, industrial design, marketing, branding, process improvement, etc.);
10) Providing both professional and financial support (e.g. grants) to companies to introduce a product, process, marketing and organisational innovations, appropriate standards, new technologies and energy-efficient machines, IT - digitalization solutions and equipment as well as energy efficiency management systems.

3. Methodology

The study was prepared by using a **combination of quantitative and qualitative research approaches** that are complementary to each other. The research was conducted in four phases.

In the first phase, **relevant information was collected and analyzed from already published publications and documents (desk research).** Then, data from appropriate databases were gathered, processed and analysed, in order to identify the performance and export potentials of the BiH wood processing industry and to make relevant conclusions and recommendations. The first of the mentioned databases is the Dun&Bradstreet[1] that contains data on companies registered as a limited liability company and a joint-stock company in Bosnia and Herzegovina (BiH) that are classified according to their business activities. i.e., the NACE classification[2]. Another source of data used is the Trade Map[3] that covers international trade of 220 countries and territories and 5,300 products that are classified by the Harmonized System[4]. Also, it was used the Export Potential Map that identifies products, markets, and suppliers with (untapped) export potential as well as opportunities for export diversification for 226 countries and territories and 4,376 products[5].

In the second phase, **the conclusions reached through desk research were verified through interviews with representatives of institutions, organizations and companies in the key export markets (Germany, Austria and Italy)**. The interviews also provided information on current trends on key export markets, opinions on activities that may contribute to improving foreign trade with key partners, as well as the perception of competitiveness of wood processing companies from Bosnia and Herzegovina. Interview findings are available in the Annex (Chapter 10.2.)

In the third phase, **recommendations on the market entry/penetration strategies for BiH companies were prepared.** In order to make the best use of the limited forest resources available to BiH, to satisfy

[1] More information: https://www.dnb.com/bs-latn/bisnode-proizvodi/
[2] The NACE classification is available at: http://www.export.gov.il/files/EEN/ListNACEcodes.pdf
[3] Trade Map was developed by the International Trade Centre UNCTAD/WTO (ITC) with the objectives of facilitating strategic market research, monitoring both national and product-specific trade performance, revealing comparative and competitive advantage, identifying the potential for market or product diversification and designing and prioritizing trade development programmes for both firms and trade support institutions. Trade Map provides users with indicators on country or product performance, demand, alternative markets and the role of competitors. More information: https://www.trademap.org/Index.aspx
[4] The Harmonized Commodities Code Database is available at: https://asycuda.org/en/online-hs/
[5] The Export Potential Map is a tool that turns economic analysis into practical trade information using the ITC export potential methodology. More information: https://exportpotential.intracen.org/en/

demanding customers in the target markets (Germany, Austria and Italy), and to adapt to new market trends (circular economy, sustainability, eco-friendly products, etc.), it is necessary to support companies to gradually reorient from: 1) the business model/strategy of contract manufacturing (lohn), to the business model/strategy of development own products and 2) from the business model/strategy of low prices (based on low value-added products) to the business model/strategy of focused differentiation (based on high value-added products aimed at specific, small, market niche). In order to have as many companies in BiH as possible that would take that path, it is needed to work on promoting the benefits of such business models and strategies based on creating high value-added products (brands) on the one hand and to create a stimulating environment and support instruments so that as many companies as possible start taking the first steps, probing and experimenting in this direction, on the other hand. In this process, it is necessary to make the most of the identified strengths and minimize weaknesses. Recommended measures and activities were presented in Chapter 9 and Annex (Chapter 10.1.).

In the fourth phase, **the recommendations were verified through interviews with representatives of companies from the wood sector in BiH**. Interview findings are available in the Annex (Chapter 10.3.)

4. Summary of most relevant product and geographic markets

4.1. Structure and key performances of the wood processing industry

According to the NACE classification[6], the wood processing industry includes the production of the following product groups:

- C 16.10 - Sawmilling and planing of wood[7]
- C 16.21 - Manufacture of veneer sheets and wood-based panels
- C 16.22 - Manufacture of assembled parquet floors
- C 16.23 - Manufacture of other builders' carpentry and joinery
- C 16.24 - Manufacture of wooden containers
- C 16.29 - Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials
- C 31.01 - Manufacture of office and shop furniture
- C 31.02 - Manufacture of kitchen furniture
- C 31.03 - Manufacture of mattresses
- C 31.09 - Manufacture of other furniture

There are 1,348 companies in BiH that produce the above-mentioned products. Most of them (587 or 44%) are sawmills, 228 (17%) are manufacturers of other builders' carpentry and joinery, 167 (12%) are manufacturers of other furniture, 140 (10%) are manufacturers of other products of wood, articles of cork, straw and plaiting materials, 64 (5%) are manufacturers of office and shop furniture, 60 (4%) are manufacturers of kitchen furniture, 55 (4%) are manufacturers of wooden containers, 24 (2%) are

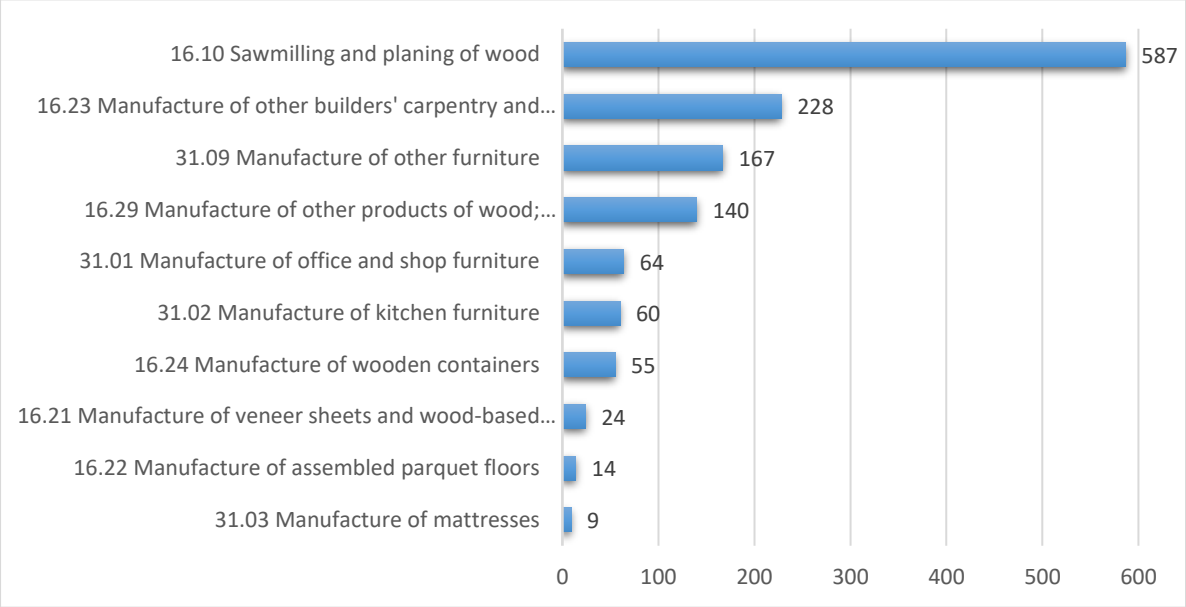
[6] List of NACE codes is available at: https://nacev2.com/en

[7] Business activities/codes C 16.10 - Sawmilling and planing of wood, C 16.21 - Manufacture of veneer sheets and wood-based panels, C 16.23 - Manufacture of other builders' carpentry and joinery and C 16.24 - Manufacture of wooden containers create relative small Gross Added Value (GVA) which will be elaborated later in this chapter and therefore are often not in focus as a product group to be supported.

manufacturers of veneer sheets and wood-based panels, 14 (1%) are manufacturers of assembled parquet floors and 9 (1%) are manufacturers of mattresses.[8]

So, 84% of wood processing companies are concentrated in 4 business activities: 16.10 - sawmilling and planing of wood, 16.23 - manufacture of other builders' carpentry and joinery, 31.09 - manufacture of other furniture and 16.29 - manufacture of other products of wood, articles of cork, straw and plaiting materials.

Figure 1. Number of wood processing companies by business sector

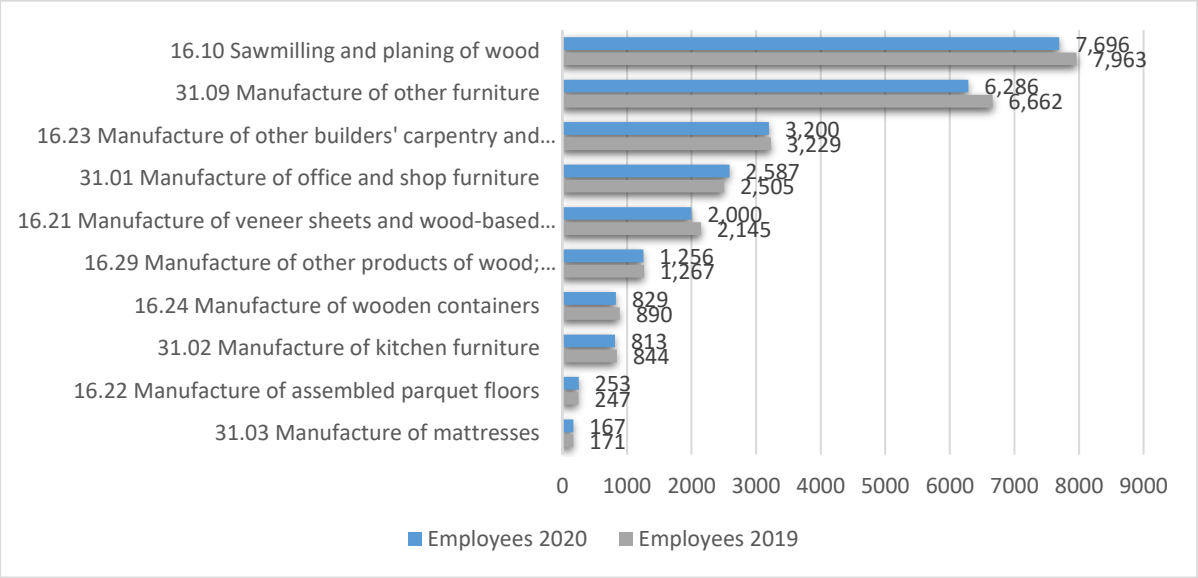


Source: Author, based on the Dun&Bradstreet data (Dun&Bradstreet, 2021)

It is important to have in mind that wood processing companies employed 25,087 workers in 2020. Most of them work in sawmills (7,696 or 31%), manufacturing of other furniture (6,286 or 25%), manufacturing of other builders' carpentry and joinery (3,200 or 13%) and manufacturing of office and shop furniture (2,587 or 10%). In total, 79% of employees work in the 4 mentioned business sectors.

[8] These numbers do not fully correspond to the real situation, given the fact that some companies have evolved from primary processing and production of furniture parts to furniture manufacturers, while their registration code has not been updated. One such example is company Tamex from Busovača (https://tamex.ba), which produces solid furniture (and in terms of revenue is among the top 10 companies in BiH for 2020), which is registered under the activity code C 16.10 - Sawmilling and planing of wood.

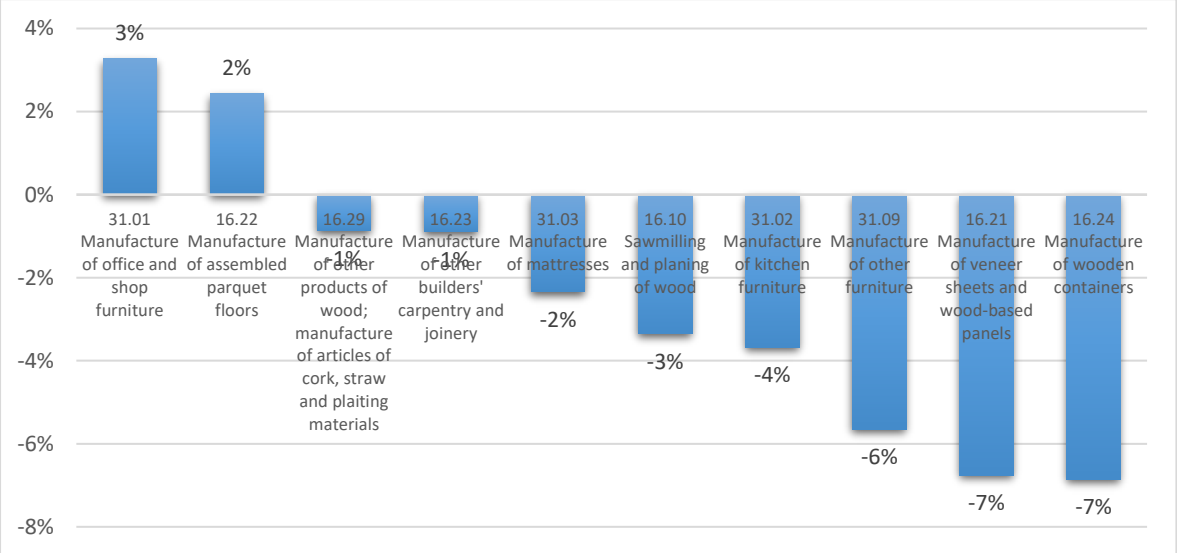
Figure 2. Number of employees by business sector



Source: Author, based on the Dun&Bradstreet data (Dun&Bradstreet, 2021)

It is an interesting fact that the number of employees in the wood processing industry, in general, was not significantly decreased in 2020 despite the Covid-19 pandemic. To be precise, it was decreased by 3,22% in 2020, compared to 2019. The highest decrease in the number of employees was evident in the companies that produce wooden containers (-7%), as well as veneer sheets and wood-based panels (also -7%). On the other hand, the number of employees was increased by manufacturers of office and shop furniture (3%) and manufacturers of assembled parquet floors (2%). The increase or decrease of the number of employees by specific business activities is aligned with the increase and decrease of their production/exports, so that change in employees number can be explained in that way.

Figure 3. Increase/decrease of employees by the business sector in 2020 compared to 2019

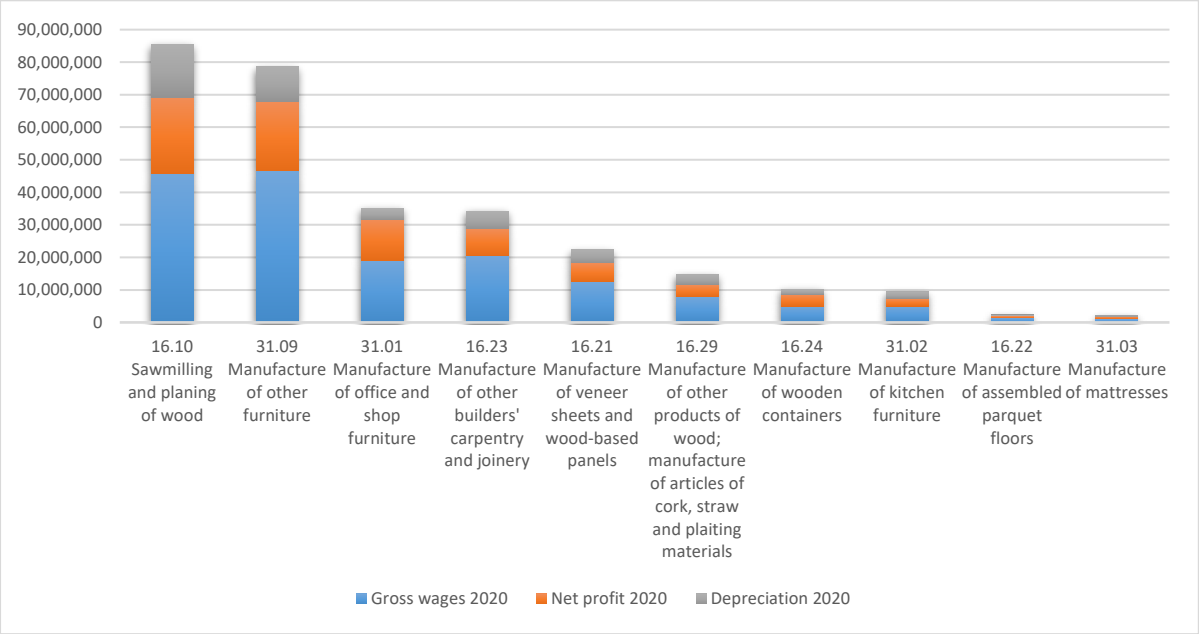


Source: Author, based on the Dun&Bradstreet data (Dun&Bradstreet, 2021)

In order to gain a more comprehensive and clearer picture of the performance of the wood processing industry in BiH, in addition to data on sales and exports, it is important to analyse information on gross value added (GVA). According to the revenue-based approach (bottom-up), GVA is calculated as the sum of gross wages, depreciation and net profit (Albu, Zubrzycki, Scholz, Ostwald, Somweber and

Haut, 2020, p. 7). When analysing the total GVA in 2020 by activities of the company, it is evident that the largest GVA was generated by sawmills and manufacturers of other furniture.

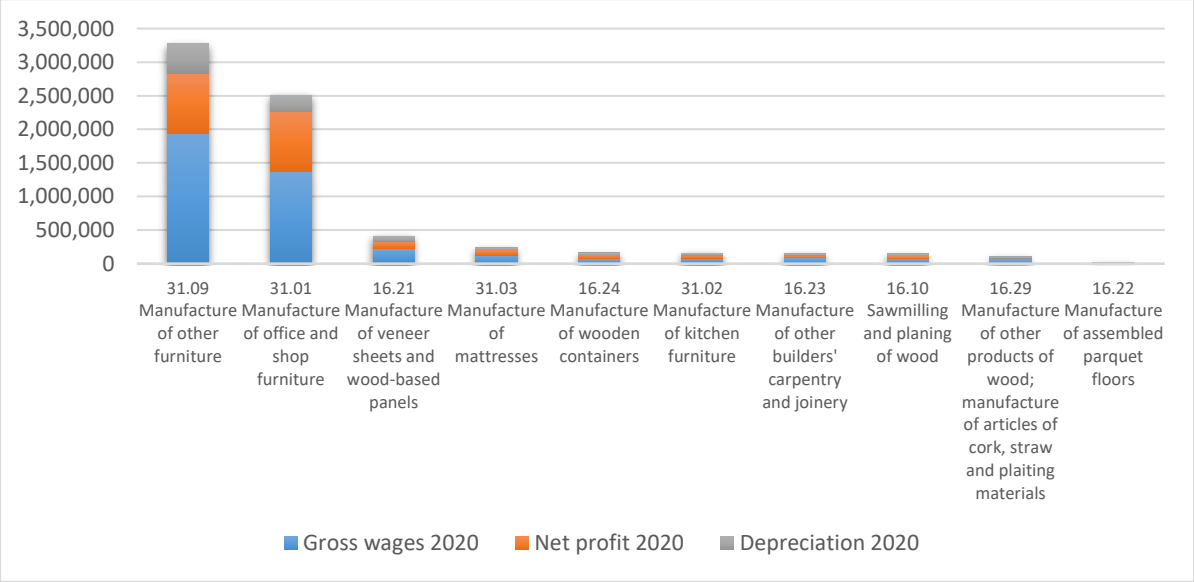
Figure 4. GVA by the business sector in 2020, in EUR



Source: Author, based on the Dun&Bradstreet data (Dun&Bradstreet, 2021)

However, an even clearer picture is obtained when GVA is analysed in a relative sense, i.e. when the **average GVA per enterprise** is analysed. Then the previous rank changes drastically. **Sawmills** that were in the 1st place and generated (absolutely) the highest GVA, **are now "dropped" in the 8th place. Manufacturers of other furniture came in the 1st place, while furniture manufacturers of office and shop furniture came in the 2nd place.**

Figure 5. Average GVA per company, by the business sector in 2020, in EUR

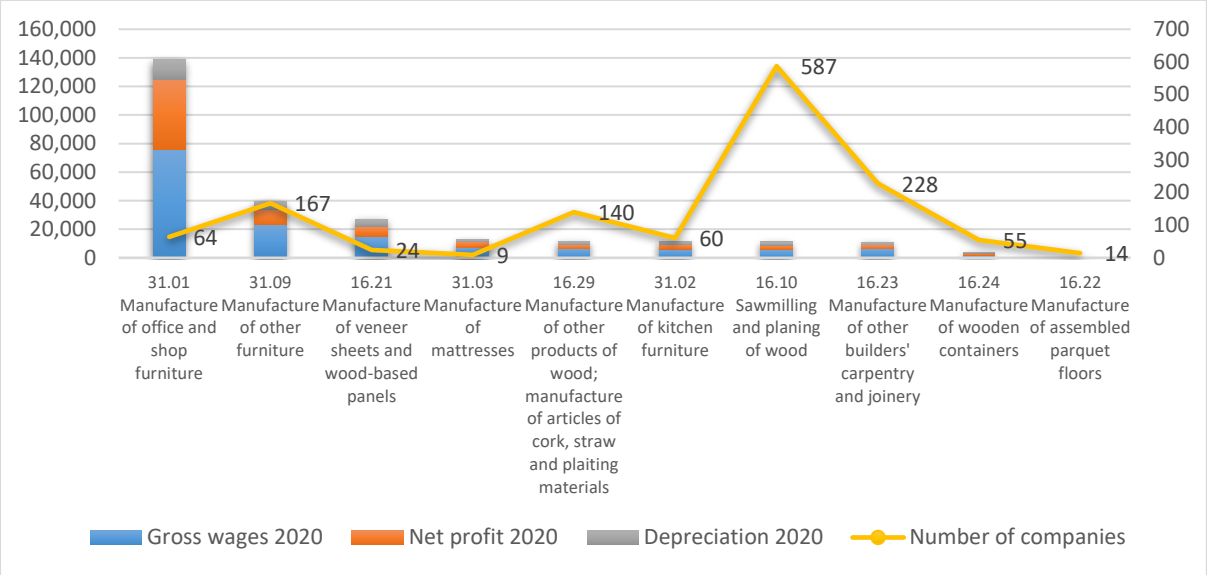


Source: Author, based on the Dun&Bradstreet data (Dun&Bradstreet, 2021)

The situation is relatively similar when analysing the **average GVA per employee**. Now in the 1st place are manufacturers of office and shop furniture. In the 2nd place, with far lower GVA per employee, are manufacturers of other furniture. If we add to this the number of companies per business activity,

it can be concluded that the number of companies in those business activities that generate relatively high GVA is small (e.g. there are only 64 companies active in the production of office and shop furniture), while the number of companies in those business activities that generate relatively small GVA is large (e.g. 587 there are sawmills). So, it is evident that **the structure of the wood processing industry of BiH is relatively unfavourable and that there is the largest number of those companies that generate relatively small GVA.**

Figure 6. Average GVA per employee in EUR vs. number of companies, by the business sector in 2020



Source: Author, based on the Dun&Bradstreet data (Dun&Bradstreet, 2021)

The **average profit rate in 2020 ranges from 6% to 13%.** Manufacturers of veneer sheets and wood-based panels have the lowest profit rate have (6.17%), while manufacturers of office and shop furniture have the highest profit rate have (12.68%).

Figure 7. Average profit rate by the business sector in 2020

Source: Author, based on the Dun&Bradstreet data (Dun&Bradstreet, 2021)

The following table shows the largest wood processing companies in BiH according to the criterion of total revenues in 2020.

Table 1. Top 10 companies in the wood processing industry, based on total revenues in 2020

No	Company	Acivity code	Activity	Employees 2020	Export 2020	Total revenues 2020
1	"FEN" d.o.o, Lukavac	C 31.09	Manufacture of other furniture	381	57,302,594	59,096,457
2	"LATTONEDIL BIH" d.o.o, Gradiška	C 16.21	Manufacture of veneer sheets and wood-based panels	42	31,578,826	44,603,326
3	"STANDARD FURNITURE FACTORY" d.d, Sarajevo	C 31.09	Manufacture of other furniture	426	39,663,392	41,416,561
4	"EXPORT CITY" d.o.o, Prnjavor	C 31.09	Manufacture of other furniture	335	38,221,997	39,298,366
5	"DRVOPRODEX" d.o.o, Banja Luka	C 16.10	Sawmilling and planing of wood	330	28,609,512	35,951,976
6	"SINKRO" d.o.o, Sarajevo	C 31.09	Manufacture of other furniture	536	28,394,603	35,668,140
7	"PRIMA ISG" d.o.o, Gradiška	C 31.01	Manufacture of office and shop furniture	344	136,802	30,507,593
8	"STANDARD" d.o.o, Prnjavor	C 31.01	Manufacture of office and shop furniture	333	26,380,145	27,444,884
9	"LUXOR XL" d.o.o, Sarajevo	C 31.01	Manufacture of office and shop furniture	297	27,081,982	27,228,760
10	"TAMEX" d.o.o, Busovača	C 16.10	Sawmilling and planing of wood	325	22,383,387	24,400,356

Source: Author, based on the Dun&Bradstreet data (Dun&Bradstreet, 2021)

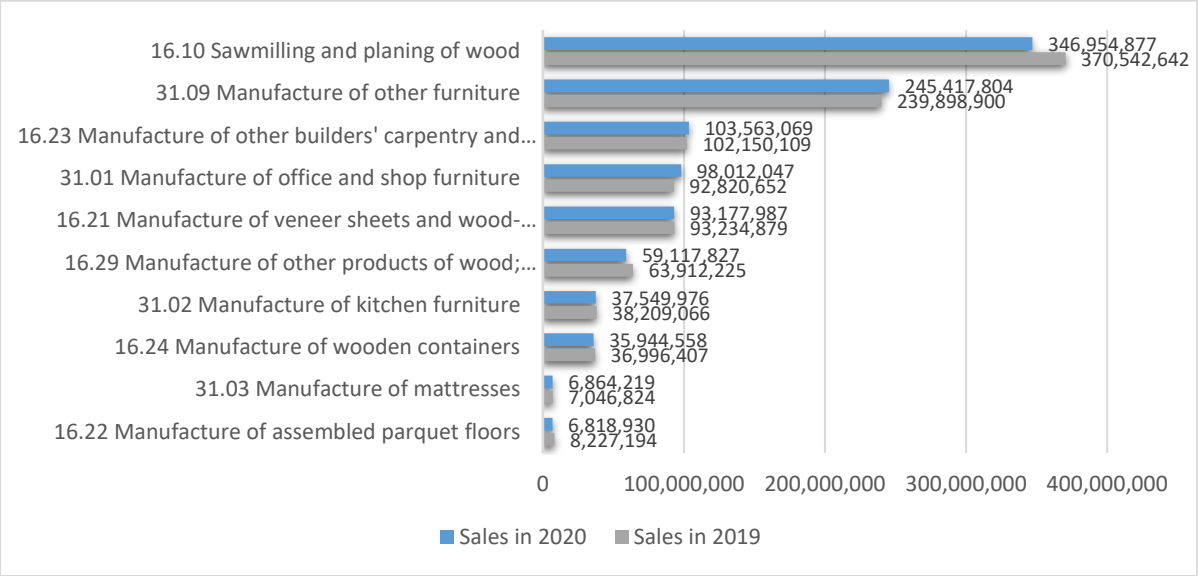
Summary of chapter 4.1.

The wood processing industry of BiH consists of **1,348 companies** that are active in **10 business sectors** and employ more than **25,000 workers** in 2020. Eighty-four percent of wood processing companies are concentrated in 4 business activities: 16.10 - sawmilling and planing of wood, 16.23 - manufacture of other builders' carpentry and joinery, 31.09 - manufacture of other furniture and 16.29 - manufacture of other products of wood, articles of cork, straw and plaiting materials. The structure of the wood processing industry of BiH is relatively unfavourable since **there is the largest number of those companies that generate relatively small GVA (e.g., sawmills).** The number of employees in the wood processing industry was decreased only by 3,22% in 2020 despite the Covid-19 pandemic, which illustrates the significant resilience of the industry.

4.2. Sales and export analysis

The total sales value of all product categories in 2020 was EUR 1.03 billion. The highest sales value (EUR 347 million or 34%) in 2020 had sawmills. Also, a very high sales value (EUR 245 million or 24%) had manufacturers of other furniture. Sales of other manufacturers were significantly lower. Despite the Covid-19 pandemic, the total sales value in 2020 remained at approximately the same level. In 2019 it was EUR 1.05 billion, so that drop in sales was only 1.86%.

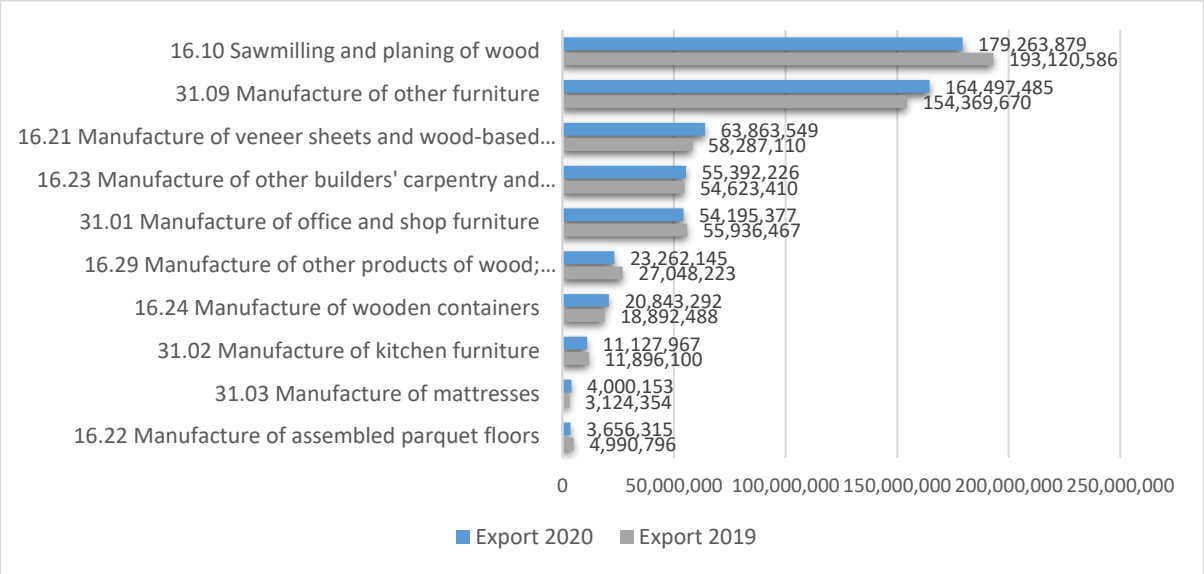
Figure 8. Sales by the business sector in 2020 and 2019 (in EUR)



Source: Author, based on the Dun&Bradstreet data (Dun&Bradstreet, 2021)

The structure of export data is relatively like the sales data. The total export value of all product categories in 2020 was EUR 576 million. The highest export value (EUR 179 million or 31%) in 2020 had sawmills and manufacturers of other furniture (EUR 164 million or 29%). Export values of manufacturers of other product categories were significantly lower. The total export value in 2020 decreased by only 0,53% in comparison to 2019, when it was EUR 579 million.

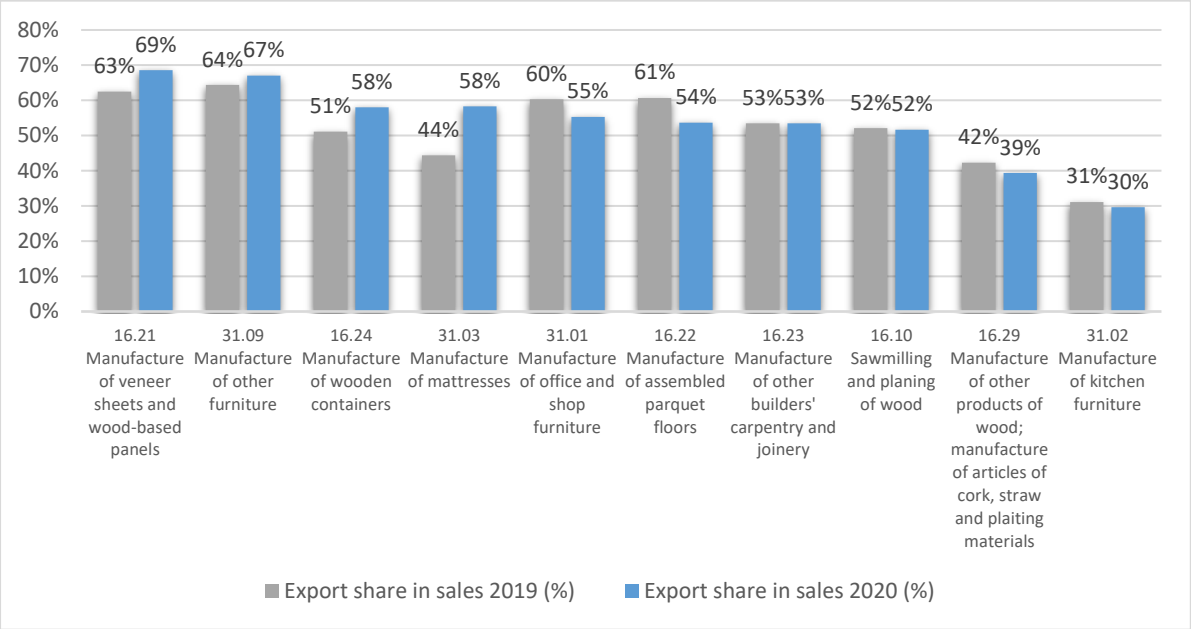
Figure 9. Export by the business sector in 2020 and 2019 (in EUR)



Source: Author, based on the Dun&Bradstreet data (Dun&Bradstreet, 2021)

The share of export value in sales value is relatively high. It ranges from 69% for veneer sheets and wood-based panels to 30% for kitchen furniture in 2020. That share is quite stable for all product categories. The difference in period 2019-2020 ranges in the interval from -7 percent points (for assembled parquet floors) to 7 percentage points (for wooden containers).

Figure 10. Export share in sales by business sector, 2020 and 2019



Source: Author, based on the Dun&Bradstreet data (Dun&Bradstreet, 2021)

Summary of chapter 4.2.
The total **sales value** of all product categories in 2020 was **EUR 1.03 billion**, while the total **export** value was **EUR 576 million**. The highest sales and export value in 2020 had sawmills (16.10) and manufacturers of other furniture (31.09).

4.2.1. Key export products

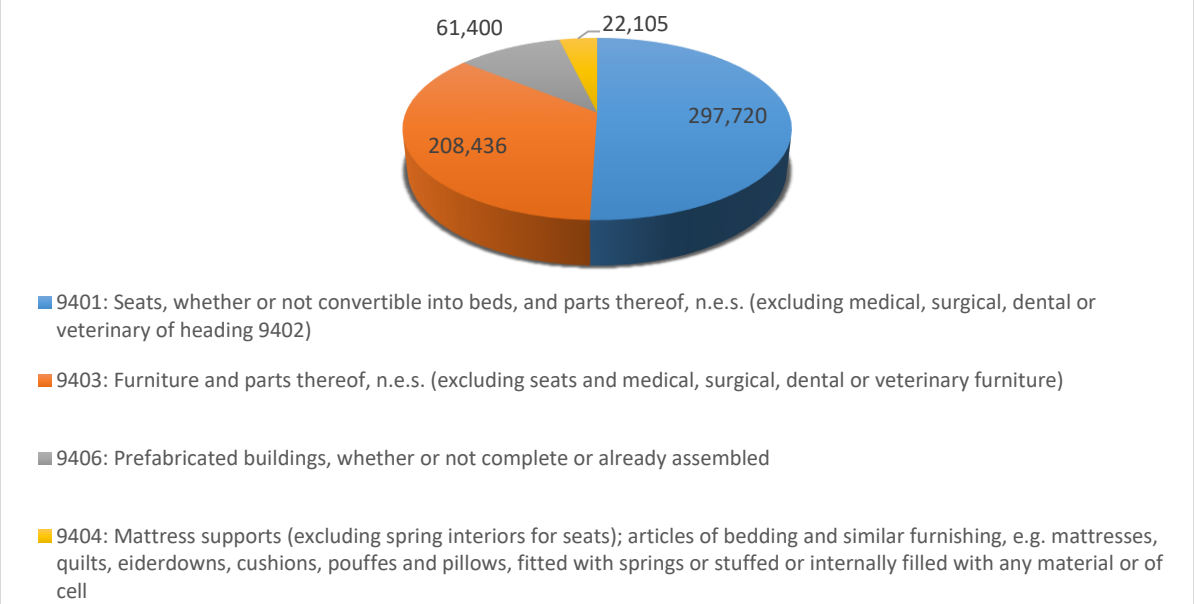
Advanced analysis of export is based on the international trade data available in the Trade Map developed by the International Trade Centre UNCTAD/WTO (ITC) (International Trade Centre, 2021a), which is based on the Harmonized System. The Harmonized System is a multipurpose international product nomenclature developed by the World Customs Organization. It comprises more than 5,000 commodity groups; each identified by a six-digit code, arranged in a legal and logical structure, and is supported by well-defined rules to achieve uniform classification. The system is used by more than 200 countries and economies as a basis for their Customs tariffs and the collection of international trade statistics. Over 98% of the merchandise in international trade is classified in terms of the Harmonized System.

According to the Harmonized System, the products of the wood processing industry are classified in group *94: Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; lamps and lighting fittings, not elsewhere specified or included; illuminated signs, illuminated nameplates and the like; prefabricated buildings* and group *44: Wood and articles of wood; wood charcoal*.

Group 94 includes 6 subgroups of products, 4 of which are relevant to the wood processing industry (9401, 9403, 9404 and 9406). Subgroups 9402 and 9405 are not relevant to the wood processing industry and are therefore not the subject of this analysis. The most valuable subgroup of exported products is *9401: Seats, whether or not convertible into beds, and parts thereof, n.e.s. (excluding medical, surgical, dental or veterinary of heading 9402)* with USD 298 million exported value. A very

high export value has also subgroup *9403: Furniture and parts thereof, n.e.s. (excluding seats and medical, surgical, dental or veterinary furniture).* These 2 subgroups of products have an 85% share in the value of total exports of the relevant product subgroups and therefore will be the focus of further analysis regarding export markets.

Figure 11. Products within group 94 with the highest export value in 2020 (USD thousand)

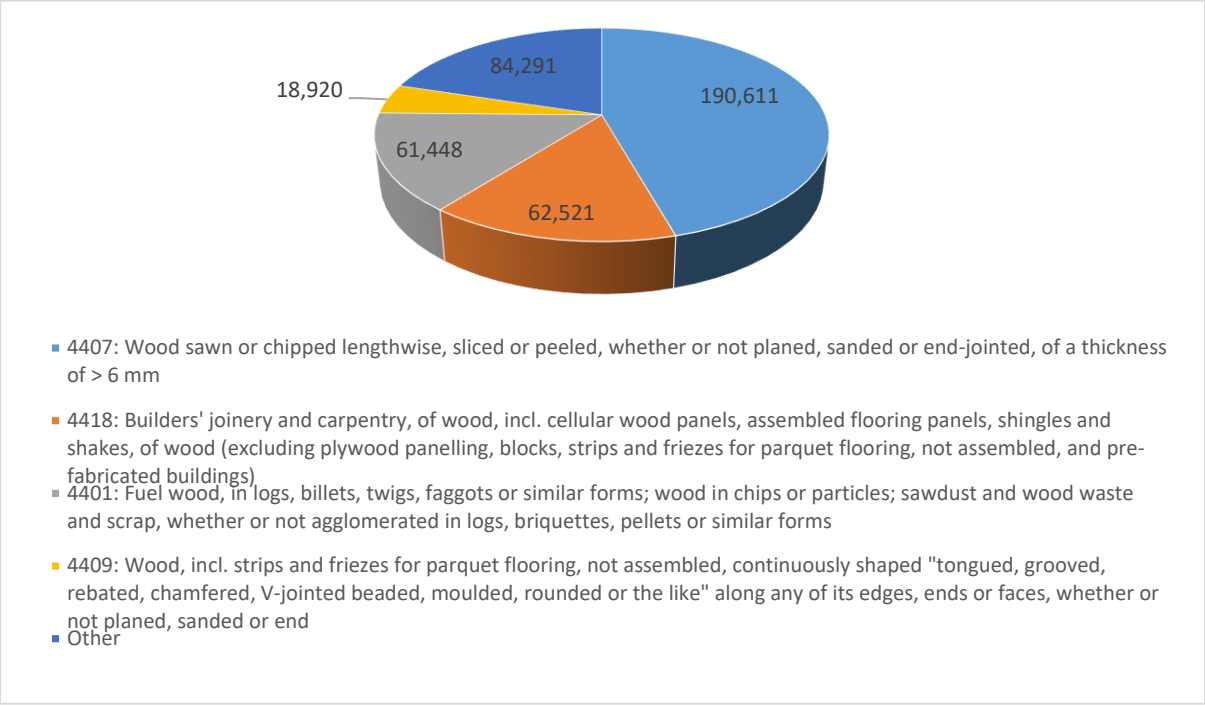


Source: Author, based on the Trade map data (International Trade Centre, 2021a)

Group 44 includes 21 subgroups of products, all of which are relevant to the wood processing industry. The total export value of the product group 44 in 2020 was USD 418 million. Out of that, the most valuable subgroup of exported products is *4407: wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm* with USD 191 million exported value. A quite high export value has also subgroup *4418: Builders' joinery and carpentry, of wood, incl. cellular wood panels, assembled flooring panels, shingles and shakes, of wood (excluding plywood panelling, blocks, strips and friezes for parquet flooring, not assembled, and pre-fabricated buildings)* with USD 63 million exported value and subgroup *4401: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms* with USD 61 million exported value[9]. These 3 subgroups of products have a 75% share in the value of total exports of the product group *44: Wood and articles of wood; wood charcoal* and therefore will be the focus of further analysis regarding export markets.

[9] It should be borne in mind that fuel wood has the lowest added value.

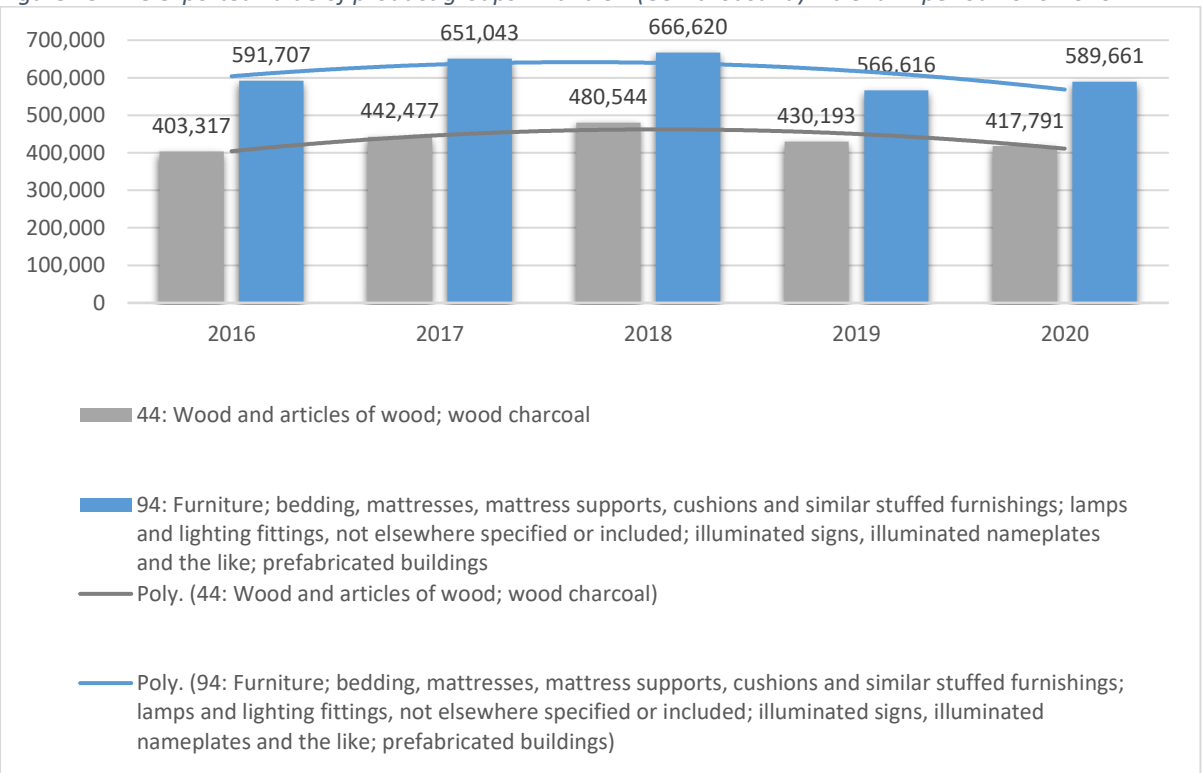
Figure 12. Products within group 44 with the highest export value in 2020 (USD thousand)



Source: Author, based on the Trade map data (International Trade Centre, 2021a)

When looking at the value of exports in the last 5 years, it can be noticed that in the period 2016-2018, exports grew at an average annual rate of about 10%. In 2019, exports fell by about 13% compared to 2018, while exports in 2020, despite the Covid-19 pandemic, remained at almost the same level as in 2019. Also, it is evident that exported value of furniture is on average 40% larger than the exported value of wood and wooden products.

Figure 13. The exported value of product groups 44 and 94 (USD thousand) – trend in period 2016-2020



Source: Author, based on the Trade map data (International Trade Centre, 2021a)

Although the Harmonized System (classification of products) and the NACE (classification of business activities) are two completely different classification systems, and there is no official statistical correspondence table between them[10], it is possible to make some logical connection between them in the context of the wood processing industry.

Table 2. Correspondence of the Harmonized System and the NACE classification

Harmonized System (classification of products)	NACE (classification of business activities)
- 9401: Seats, whether or not convertible into beds, and parts thereof, n.e.s. (excluding medical, surgical, dental or veterinary of heading 9402) - 9403: Furniture and parts thereof, n.e.s. (excluding seats and medical, surgical, dental or veterinary furniture) - 9404: Mattress supports (excluding spring interiors for seats); articles of bedding and similar furnishing, e.g. mattresses, quilts, eiderdowns, cushions, pouffes and pillows, fitted with springs or stuffed or internally filled with any material or of cellular rubber or plastics, whether or not covered (excluding pneumatic or water mattresses and pillows, blankets and covers)	- 31.01: Manufacture of office and shop furniture - 31.02: Manufacture of kitchen furniture - 31.03: Manufacture of mattresses - 31.09: Manufacture of other furniture
- 4401: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms	- 16.29: Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials
- 4407: Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm	- 16.10: Sawmilling and planing of wood
- 4418 - Builders' joinery and carpentry, of wood, incl. cellular wood panels, assembled flooring panels, shingles and shakes, of wood (excluding plywood panelling, blocks, strips and friezes for parquet flooring, not assembled, and pre-fabricated buildings)	- 16.23: Manufacture of other builders' carpentry and joinery

Source: Author

To get a complete and accurate picture about the product groups that are most exported, in addition to product groups and activities that are the focus of support of the EU4Business project[11], the analysis also includes those product groups whose share in exports is large and therefore cannot be ignored[12].

Summary of chapter 4.2.1.

Key export product groups in 2020 were:

- 9401: **Seats**, whether or not convertible into beds, and parts thereof, n.e.s. - USD 298 million (related business activities - 31.01: Manufacture of office and shop furniture, 31.02: Manufacture of kitchen furniture, 31.09: Manufacture of other furniture);

[10] More information: https://unstats.un.org/unsd/trade/classifications/correspondence-tables.asp

[11] These are the following business: 31.01 - Manufacture of office and shop furniture, 31.02 - Manufacture of kitchen furniture, 31.03 - Manufacture of mattresses, 31.09 - Manufacture of other furniture, 16.22 - Manufacture of assembled parquet floors and 16.29 - Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials.

[12] These are the product groups: 4407 - Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm and 4418 - Builders' joinery and carpentry, of wood, incl. cellular wood panels, assembled flooring panels, shingles and shakes, of wood.

- 9403: **Furniture and parts thereof**, n.e.s. - USD 208 million (related business activities - 31.01: Manufacture of office and shop furniture, 31.02: Manufacture of kitchen furniture, 31.09: Manufacture of other furniture);
- 4407: **Wood sawn or chipped lengthwise**, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm - USD 191 million (related business activity - 16.10 : Sawmilling and planing of wood);
- 4418: **Builders' joinery and carpentry**, of wood, incl. cellular wood panels, assembled flooring panels, shingles and shakes, of wood - USD 63 million (related business activity - 16.23: Manufacture of other builders' carpentry and joinery);
- 4401: **Fuel wood**, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms - USD 61 million (related business activity - 16.29: Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials).

In the period 2016-2018, exports grew at an average annual rate of about 10%. In 2019, exports fell by about 13% compared to 2018, while exports in 2020, despite the Covid-19 pandemic, remained at almost the same level as in 2019. **Exported value of furniture is on average 40% larger than the exported value of wood and wooden products.**

4.2.2. Key export markets

The key export markets for each of the 5 most important product groups described above (9401, 9403, 4407, 4418, 4401) will be analysed.

Key export markets for the product group *9401 Seats, whether or not convertible into beds, and parts thereof, n.e.s. (excluding medical, surgical, dental or veterinary of heading 9402)* are Germany, Croatia and Italy.

Germany is the leading export market with a share of 30.5% in total exports of this product group. Some 12,512 tons of this product group worth USD 90.9 million were exported to Germany in 2020, while the average exported value is 7,261 USD/ton. In the period from 2016 to 2020, the exported value to Germany was decreased at an average annual rate of -15%.

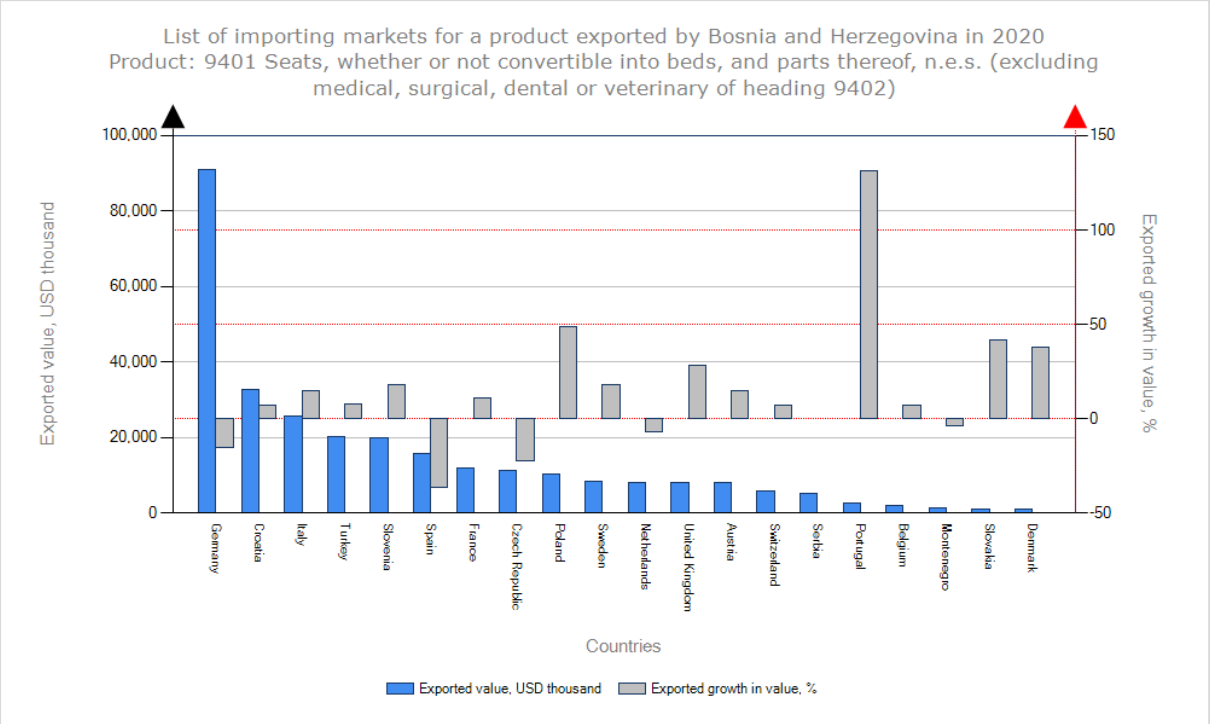
Croatia ranks 2nd in terms of export value with a share of 11% in total BiH exports of this product. Some 11,423 tons of this type of product worth USD 32.6 million were exported to Croatia in 2020, while the average value of exports is 2,858 USD/ton. In the period from 2016 to 2020, the exported value to Croatia was increased at an average annual rate of 7%.

Italy ranks 3rd in terms of export value with a share of 8.7% in total BiH exports of this product. Some 6.696 tons of this type of product worth USD 25.8 million were exported to Italy in 2020. The average export value was 3,855 USD/ton. In the period from 2016 to 2020, the exported value to Italy was increased at an average annual rate of 15%.

Table 3. Key export markets and trade data for the product group 9401 Seats, whether or not convertible into beds, and parts thereof, n.e.s. (excluding medical, surgical, dental or veterinary of heading 9402)

No.	Importers	Value exported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Bosnia and Herzegovina's exports (%)	Quantity exported in 2020	Quantity unit	Unit value (USD/unit)	Growth in exported value between 2016-2020 (%, p.a.)	Growth in exported quantity between 2016-2020 (%, p.a.)	Growth in exported value between 2019-2020 (%, p.a.)
1	Germany	90,850	88,604	30.5	12,512	Tons	7,261	-15	-3	-9
2	Croatia	32,646	31,335	11	11,423	Tons	2,858	7	3	7
3	Italy	25,811	20,380	8.7	6,696	Tons	3,855	15	16	-16
4	Turkey	20,326	15,873	6.8	907	Tons	22,410	8	-1	-12
5	Slovenia	20,056	19,162	6.7	2,076	Tons	9,661	18	-2	25
6	Spain	15,779	15,711	5.3	1,166	Tons	13,533	-36	-23	81
7	France	12,075	11,779	4.1	2,480	Tons	4,869	11	2	4
8	Czech Republic	11,321	11,037	3.8	2,178	Tons	5,198	-22	10	-41
9	Poland	10,376	9,767	3.5	1,063	Tons	9,761	49	26	217
10	Sweden	8,347	6,830	2.8	1,256	Tons	6,646	18	4	27
11	...	...	...	...	...	...	...	...	...	...
12	**World**	**297,720**	**260,204**	**100**	**52,940**	**Tons**	**5,624**	**-7**	**2**	**-3**

Source: Trade map (International Trade Centre, 2021a)



Source: Trade map (International Trade Centre, 2021a)

Key export markets for the product group *9403 Furniture and parts thereof, n.e.s. (excluding seats and medical, surgical, dental or veterinary furniture)* are Germany, Croatia and Netherlands.

Germany is the leading export market with a share of 35.6% in total exports of this product group. Some 25,297 tons of this product group worth USD 74.2 million were exported to Germany in 2020, while the average exported value is 2,934 USD/ton. In the period from 2016 to 2020, the exported value to Germany was increased at an average annual rate of 4%.

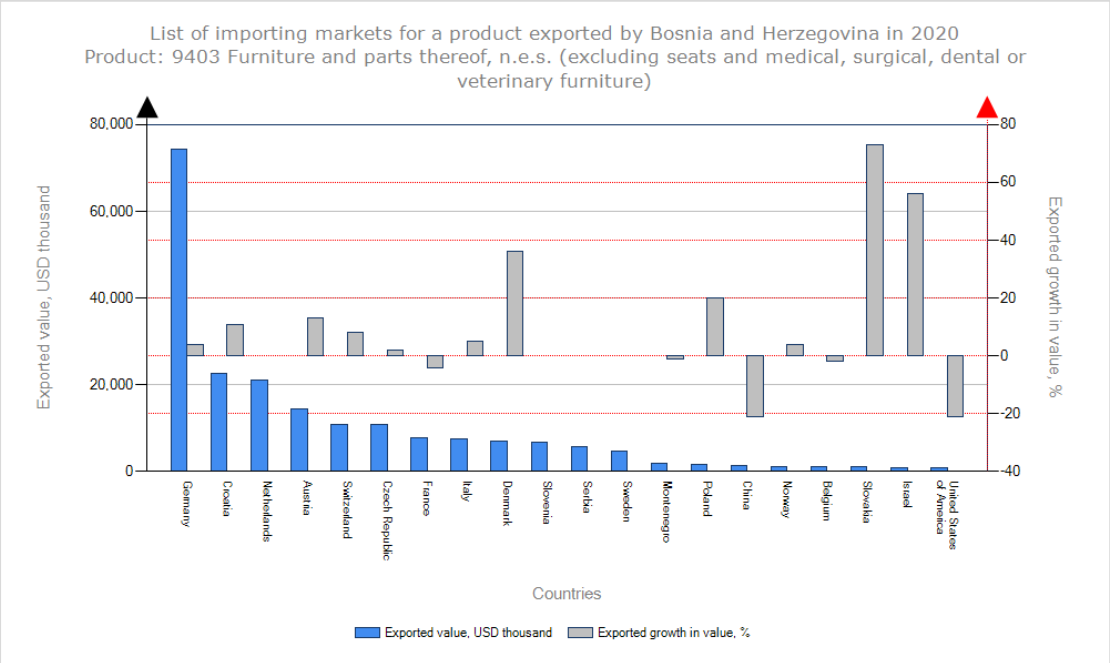
Croatia ranks 2nd in terms of export value with a share of 10.9% in total BiH exports of this product. Some 9,956 tons of this type of product worth USD 22.7 million were exported to Croatia in 2020, while the average value of exports is 2,283 USD/ton. In the period from 2016 to 2020, the exported value to Croatia was increased at an average annual rate of 11%.

The Netherlands ranks 3rd in terms of export value with a share of 10.1% in total BiH exports of this product. Some 4.805 tons of this type of product worth USD 21.1 million were exported to the Netherlands in 2020. The average export value was 4,386 USD/ton. In the period from 2016 to 2020, the average annual rate of exported value to the Netherlands was neither increased nor decreased.

Table 4. Key export markets and trade data for the product group 9403 Furniture and parts thereof, n.e.s. (excluding seats and medical, surgical, dental or veterinary furniture)

No	Importers	Value exported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Bosnia and Herzegovina's exports (%)	Quantity exported in 2020	Quantity unit	Unit value (USD/unit)	Growth in exported value between 2016-2020 (%, p.a.)	Growth in exported quantity between 2016-2020 (%, p.a.)	Growth in exported value between 2019-2020 (%, p.a.)
1	Germany	74,214	71,174	35.6	25,297	Tons	2,934	4	1	10
2	Croatia	22,733	20,076	10.9	9,956	Tons	2,283	11	4	14
3	Netherlands	21,076	20,721	10.1	4,805	Tons	4,386	0	-12	14
4	Austria	14,505	13,138	7	5,038	Tons	2,879	13	9	15
5	Switzerland	10,941	10,747	5.2	3,518	Tons	3,110	8	13	10
6	Czech Republic	10,754	10,255	5.2	5,116	Tons	2,102	2	-1	7
7	France	7,733	7,431	3.7	3,341	Tons	2,315	-4	-12	-8
8	Italy	7,416	1,795	3.6	3,163	Tons	2,345	5	-2	-15
9	Denmark	6,934	6,580	3.3	1,863	Tons	3,722	36	25	49
10	Slovenia	6,731	3,124	3.2	2,767	Tons	2,433	0	2	4
11	...	...	...	...	...	...	...	...	...	...
12	**World**	**208,436**	**145,487**	**100**	**73,642**	**Tons**	**2,830**	**5**	**0**	**8**

Source: Trade map (International Trade Centre, 2021a)



Source: Trade map (International Trade Centre, 2021a)

Based on the export data in 2020, key export markets for the product group *4407: Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm* are Serbia, Croatia and Germany.

Serbia is the leading export market with a share of 23.8% in total exports of this product group. Some 171,010 tons of this product group worth USD 36.7 million were exported to Serbia in 2020, while the average exported value is 265 USD/ton.

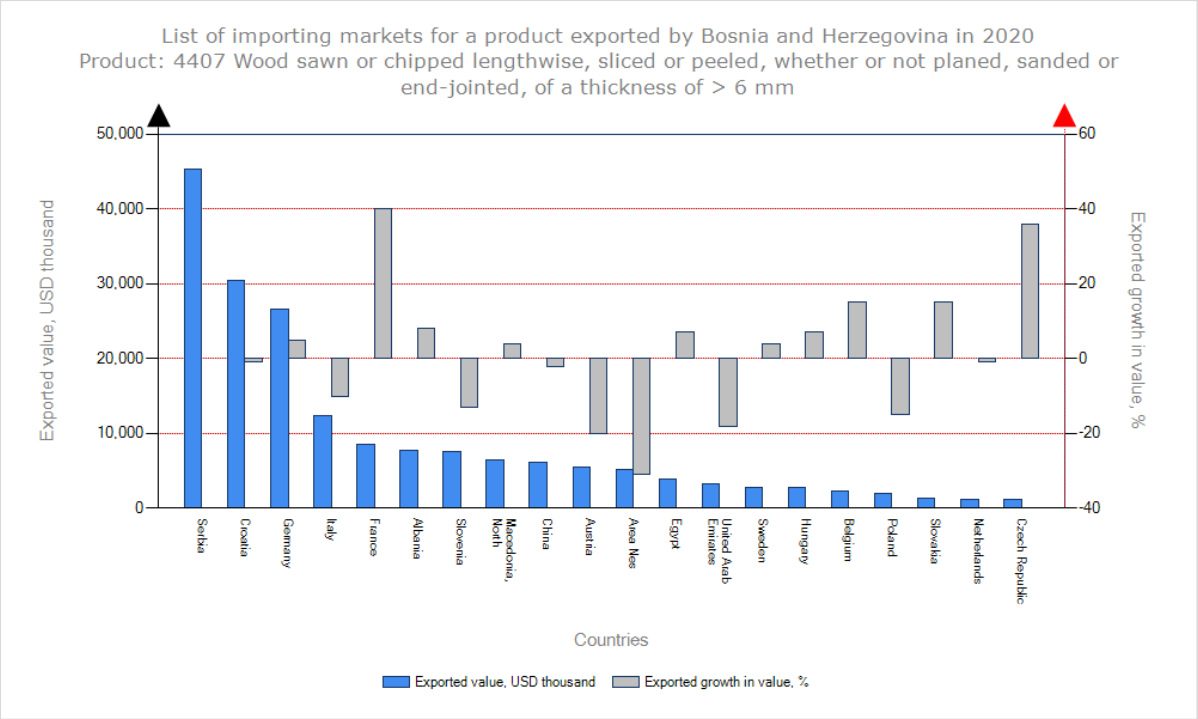
Croatia ranks 2nd in terms of export value with a share of 15.9% in total BiH exports of this product. Some 82,898 tons of this type of product worth USD 30.3 million were exported to Croatia in 2020, while the average value of exports is 367 USD/ton. In the period from 2016 to 2020, the exported value to Croatia was decreased at an average annual rate of -1%.

Germany ranks 3rd in terms of export value with a share of 14% in total BiH exports of this product. Some 24,040 tons of this type of product worth USD 26 million were exported to Germany in 2020. The average export value was 1,107 USD/ton. In the period from 2016 to 2020, the exported value to Germany grew at an average annual rate of 5%.

Table 5. Key export markets and trade data for the product group 4407: Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm

No.	Importers	Value exported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Bosnia and Herzegovina's exports (%)	Quantity exported in 2020	Quantity unit	Unit value (USD/unit)	Growth in exported value between 2016-2020 (%, p.a.)	Growth in exported quantity between 2016-2020 (%, p.a.)	Growth in exported value between 2019-2020 (%, p.a.)
1	Serbia	45,346	36,684	23.8	171,010	Tons	265			
2	Croatia	30,393	13,651	15.9	82,898	Tons	367	-1	-7	-9
3	Germany	26,612	25,981	14	24,040	Tons	1,107	5	1	16
4	Italy	12,356	11,362	6.5	29,059	Tons	425	-10	-12	-4
5	France	8,615	8,582	4.5	7,252	Tons	1,188	40	39	208
6	Albania	7,748	7,748	4.1	36,509	Tons	212	8	4	-6
7	Slovenia	7,647	6,571	4	18,059	Tons	423	-13	-17	-31
8	N. Macedonia	6,499	6,450	3.4	36,087	Tons	180	4	3	8
9	China	6,145	6,106	3.2	13,265	Tons	463	-2	-2	-21
10	Austria	5,537	3,397	2.9	9,617	Tons	576	-20	-28	-18
11	...	...	...	...	...	...	...	...	...	...
12	**World**	**190,611**	**156,206**	**100**	**495,150**	**Tons**	**385**	**-1**	**-3**	**5**

Source: Trade map (International Trade Centre, 2021a)



Source: Trade map (International Trade Centre, 2021a)

Key export markets for the product group *4418: Builders' joinery and carpentry, of wood, incl. cellular wood panels, assembled flooring panels, shingles and shakes, of wood (excluding plywood panelling, blocks, strips and friezes for parquet flooring, not assembled, and pre-fabricated buildings)* are Serbia, Italy and Croatia.

Serbia is the leading export market with a share of 13.5% in total exports of this product group. Some 5,270 tons of this product group worth USD 8.4 million were exported to Serbia in 2020, while the average exported value is 1.607 USD/ton.

Italy ranks 2nd in terms of export value with a share of 13.3% in total BiH exports of this product. Some 4,096 tons of this type of product worth USD 8.3 million were exported to Italy in 2020, while the average value of exports is 2,028 USD/ton. In the period from 2016 to 2020, the exported value to Italy was increased at an average annual rate of 24%.

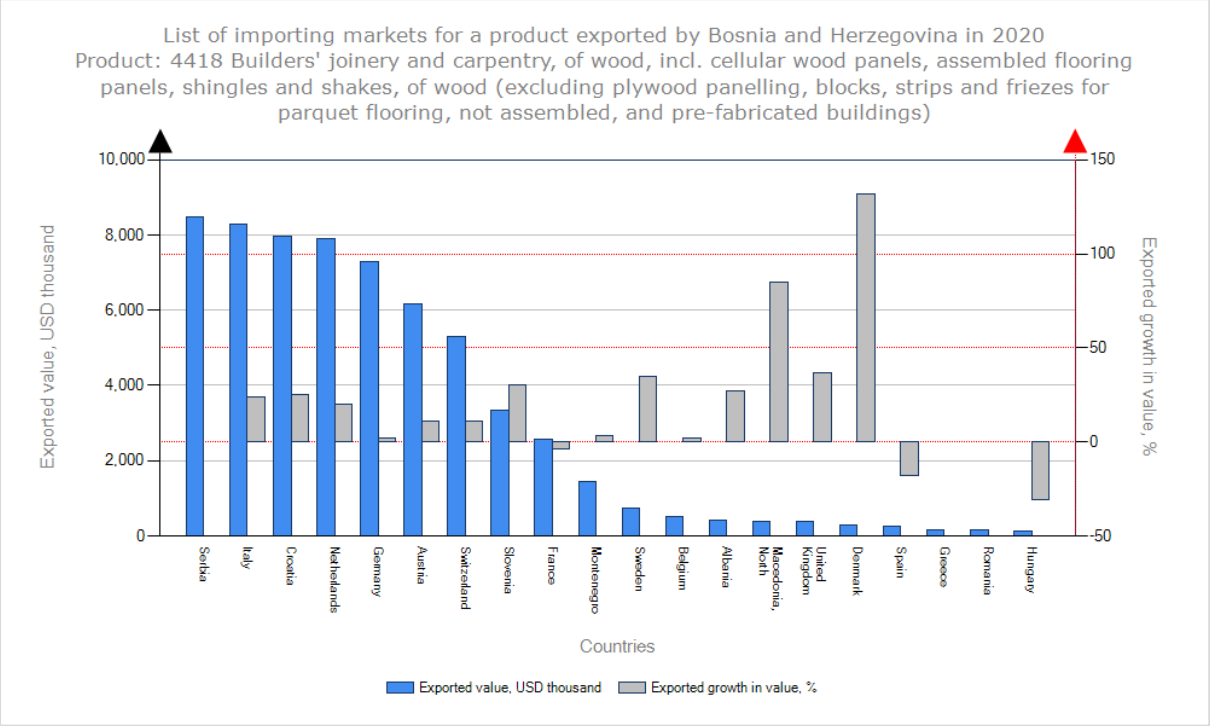
Croatia ranks 3rd in terms of export value with a share of 12.7% in total BiH exports of this product. Some 3,129 tons of this type of product worth USD 8 million were exported to Croatia in 2020. The average export value was 2,544 USD/ton. In the period from 2016 to 2020, the exported value to Croatia grew at an average annual rate of 25%.

Table 6. Key export markets and trade data for the product group 4418: Builders' joinery and carpentry, of wood, incl. cellular wood panels, assembled flooring panels, shingles and shakes, of wood (excluding plywood panelling, blocks, strips and friezes for parquet flooring, not assembled, and pre-fabricated buildings)

No	Importers	Value exported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Bosnia and Herzegovina's exports (%)	Quantity exported in 2020	Quantity unit	Unit value (USD/unit)	Growth in exported value between 2016-2020 (%, p.a.)	Growth in exported quantity between 2016-2020 (%, p.a.)	Growth in exported value between 2019-2020 (%, p.a.)
1	Serbia	8,469	5,652	13.5	5,270	Tons	1,607			
2	Italy	8,305	8,158	13.3	4,096	Tons	2,028	24	11	3
3	Croatia	7,959	6,889	12.7	3,129	Tons	2,544	25	26	-19

4	Netherlands	7,891	7,843	12.6	3,857	Tons	2,046	20	15	19
5	Germany	7,301	6,782	11.7	3,679	Tons	1,985	2	0	22
6	Austria	6,162	4,956	9.9	3,072	Tons	2,006	11	20	5
7	Switzerland	5,289	5,263	8.5	2,469	Tons	2,142	11	-3	14
8	Slovenia	3,331	2,869	5.3	1,187	Tons	2,806	30	22	20
9	France	2,562	2,543	4.1	987	Tons	2,596	-4	-19	19
10	Montenegro	1,444	1,431	2.3	810	Tons	1,783	3	8	-20
11	...	...	...	...	...	...	...	...	...	...
12	**World**	**62,521**	**53,116**	**100**	**31,175**	**Tons**	**2,005**	**16**	**11**	**11**

Source: Trade map (International Trade Centre, 2021a)



Source: Trade map (International Trade Centre, 2021a)

Key export markets for the product group *4401: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms* are Italy, Slovenia and Croatia.

Italy is the leading export market with a share of 43.6% in total exports of this product group. Some 5,270 tons of this product group worth USD 26.7 million were exported to Italy in 2020, while the average exported value is 113 USD/ton. In the period from 2016 to 2020, the exported value to Slovenia was decreased at an average annual rate of -6%.

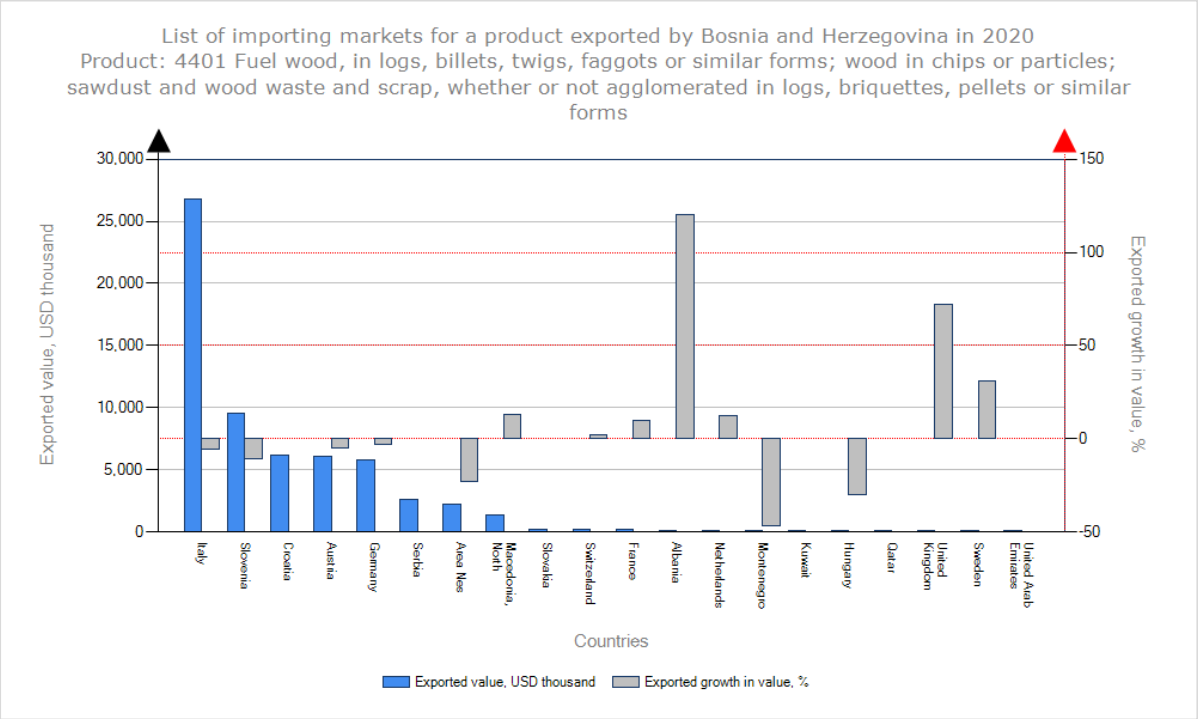
Slovenia ranks 2nd in terms of export value with a share of 15.6% in total BiH exports of this product. Some 85,200 tons of this type of product worth USD 9.6 million were exported to Slovenia in 2020, while the average value of exports is 112 USD/ton. In the period from 2016 to 2020, the exported value to Slovenia was decreased at an average annual rate of -11%.

Croatia ranks 3rd in terms of export value with a share of 10% in total BiH exports of this product. Some 58,786 tons of this type of product worth USD 6.2 million were exported to Croatia in 2020. The average export value was 105 USD/ton. In the period from 2016 to 2020, the average annual rate of exported value to Croatia was neither increased nor decreased.

Table 7. Key export markets and trade data for the product group 4401: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms

No.	Importers	Value exported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Bosnia and Herzegovina's exports (%)	Quantity exported in 2020	Quantity unit	Unit value (USD/unit)	Growth in exported value between 2016-2020 (%, p.a.)	Growth in exported quantity between 2016-2020 (%, p.a.)	Growth in exported value between 2019-2020 (%, p.a.)
1	Italy	26,777	26,743	43.6	237,064	Tons	113	-6	-11	-24
2	Slovenia	9,558	9,539	15.6	85,200	Tons	112	-11	-15	-33
3	Croatia	6,164	5,760	10	58,786	Tons	105	0	-7	1
4	Austria	6,091	6,059	9.9	43,174	Tons	141	-5	-11	-15
5	Germany	5,820	5,754	9.5	41,115	Tons	142	-3	-7	-24
6	Serbia	2,626	2,559	4.3	28,738	Tons	91			
7	Area Nes	2,202	2,202	3.6	22,852	Tons	96	-23	-23	-43
8	N. Macedonia	1,325	1,325	2.2	8,762	Tons	151	13	3	123
9	Slovakia	214	213	0.3	1,514	Tons	141		29	31
10	Switzerland	185	185	0.3	1,205	Tons	154	2	-6	47
11	...	...	...	...	...	...	...	...	...	...
12	**World**	**61,448**	**60,776**	**100**	**532,164**	**Tons**	**115**	**-6**	**-11**	**-19**

Source: Trade map (International Trade Centre, 2021a)



Source: Trade map (International Trade Centre, 2021a)

Based on the above-presented information and the total exported value in 2020 of both the product group *94: Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; lamps and lighting fittings, not elsewhere specified or included; illuminated signs, illuminated nameplates and the like; prefabricated buildings* and the product group *44: Wood and articles of wood; wood charcoal,* it can be concluded that top 3 export markets for BiH are: Germany with USD 254,6

million of the total export value in 2020, Croatia with USD 122,2 million of the total exported value and Italy with USD 92 million of the total exported value.

Table 8. Top 5 export markets for the wood processing industry, based on the total exported value in 2020

Rank	Key export markets for the product group 94	Value exported in 2020 (USD thousand)	Rank	Key export markets for the product group 44	Value exported in 2020 (USD thousand)	**Rank**	**Key export markets for both the product group 94 and 44**	**Total value exported in 2020 (USD thousand)**
1	Germany	185,210	1	Germany	69,390	**1**	**Germany**	**254,600**
2	Croatia	63,102	2	Serbia	63,299	**2**	**Croatia**	**122,159**
3	Netherlands	44,983	3	Croatia	59,057	**3**	**Italy**	**92,010**
4	Italy	36,681	4	Italy	55,329	**4**	**Serbia**	**63,299**
5	Austria	31,868	5	Slovenia	30,343	**5**	**Slovenia**	**61,287**

Source: Author

Summary of the chapter 4.2.2.

The top 3 export markets for relevant product groups in 2020 were:

- Germany, Croatia and Italy for the product group 9401: Seats, whether or not convertible into beds, and parts thereof, n.e.s.:
- Germany, Croatia and Netherlands for the product group 9403: Furniture and parts thereof, n.e.s.;
- Serbia, Croatia and Germany for the product group 4407: Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm;
- Serbia, Italy and Croatia for the product group 4418: Builders' joinery and carpentry, of wood, incl. cellular wood panels, assembled flooring panels, shingles and shakes, of wood;
- Italy, Slovenia and Croatia for the product group 4401: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms;

Based on the total exported value of all product groups, it can be concluded that the **top 5 export markets for BiH in 2020 were Germany, Croatia, Italy, Serbia and Slovenia**.

4.2.3. Market structure, competitors and relative position of BiH

When it comes to product group *9401: Seats, whether or not convertible into beds, and parts thereof, n.e.s.*, key export markets are Germany, Croatia and Italy. Key competitors in the German market are Poland (24.9% export share), China (19.6% export share) and the Czech Republic (17.5% export share). Bosnia and Herzegovina ranks 21st in terms of the exported value to Germany and has an export share of 0.6%. BiH has the largest export share (22.7%) in Croatia. Poland ranks second with an export share of 16.1%, while the third position holds Italy with an export share of 12.4%. Competitors from China (34.2%), Romania (11.8%) and Germany (11.8%) have the largest export share in Italy. Bosnia and Herzegovina ranks 8th in terms of the exported value to Italy and has an export share of 2.5%.

Table 9. Top 3 competitors/relative position of BiH on key export markets for the product group 9401: Seats, whether or not convertible into beds, and parts thereof, n.e.s.

No	Export market	Competitor 1 (export share in %)	Competitor 2 (export share in %)	Competitor 3 (export share in %)
1	Germany	Poland (24.9%)	China (19.6%)	Czech Republic (17.5%)
2	Croatia	BiH (22.7%)	Poland (16.1%)	Italy (12.4%)
3	Italy	China (34.2%)	Romania (11.8%)	Germany (11.8%)

Source: Author, based on the Trade map data (International Trade Centre, 2021a)

Key export markets for the product group *9403: Furniture and parts thereof, n.e.s.* are Germany, Croatia and Netherlands. On the German market, competitors from Poland (25.8%), China (18.5%) and Italy (10.2%) have the largest export share. Bosnia and Herzegovina ranks 21st in terms of the exported value to Germany and has an export share of 1.1%. On the Croatian market, competitors from Poland (21.8%), Germany (20.4%) and Italy (11.5%) have the largest export share. Bosnia and Herzegovina ranks 4th in terms of the exported value to Croatia and has an export share of 9.5%. On the Netherland market, competitors from Germany (29.6%), China (17.3%) and Belgium (11.5%) have the largest export share. Bosnia and Herzegovina ranks 24th in terms of the exported value to the Netherlands and has an export share of 0.4%.

Table 10. Top 3 competitors/relative position of BiH on key export markets for the product group 9403: Furniture and parts thereof, n.e.s.

No	Export market	Competitor 1 (export share in %)	Competitor 2 (export share in %)	Competitor 3 (export share in %)
1	Germany	Poland (25.8%)	China (18.5%)	Italy (10.2%)
2	Croatia	Poland (21.8%)	Germany (20.4%)	Italy (11.5%)
3	Netherlands	Germany (29.6%)	China (17.3%)	Belgium (11.5%)

Source: Author, based on the Trade map data (International Trade Centre, 2021a)

Key export markets for the product group *4407: Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm* are Serbia, Croatia and Germany. On the Serbian market, the export share of BiH is very high - 68.8%, so BiH has the market leader position. In second place are competitors from Austria (with an export share of 8.6%) and in third place are competitors from Croatia (with an export share of 7.6%). On the Croatian market, competitors from Austria have the largest export share (42.7%). In second place are products from BiH (with an export share of 21.8%), and in the third place are competitors from Slovenia (with an export share of 11.2%). On the German market, competitors from Austria (18.4%), the Russian Federation (15.8%) and Sweden (11.8%) have the largest export share. Bosnia and Herzegovina ranks 28th in terms of the exported value to Germany and has an export share of 0.4%.

Table 11. Top 3 competitors/relative position of BiH on key export markets for the product group 4407: Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm

No	Export market	Competitor 1 (export share in %)	Competitor 2 (export share in %)	Competitor 3 (export share in %)
1	Serbia	BiH (68.8%)	Austria (8.6%)	Croatia (7.6%)
2	Croatia	Austria (42.7%)	BiH (21.8%)	Slovenia (11.2%)
3	Germany	Austria (18.4%)	Russian Fed. (15.8%)	Sweden (11.8%)

Source: Author, based on the Trade map data (International Trade Centre, 2021a)

Key export markets for the product group *4418: Builders' joinery and carpentry, of wood, incl. cellular wood panels, assembled flooring panels, shingles and shakes, of wood* are Serbia, Italy and Croatia. On the Serbian market, BiH has the largest export share (25.9%). Austria holds the second position with an export share of 13.6%, while the third position holds Hungary with an export share of 8.7%. On the Italian market, competitors from Austria (49.7%), Germany (13.5%) and China (6.9%) have the largest export share. Bosnia and Herzegovina ranks 12th in terms of the exported value to Italy and has an export share of 1.2%. On the Croatian market, BiH has the largest export share (17.2%). Italy holds the second position with an export share of 16.2%, while the third position holds Austria with an export share of 14.2%.

Table 12. Top 3 competitors/relative position of BiH on key export markets for the product group 4418: Builders' joinery and carpentry, of wood, incl. cellular wood panels, assembled flooring panels, shingles and shakes, of wood

No	Export market	Competitor 1 (export share in %)	Competitor 2 (export share in %)	Competitor 3 (export share in %)
1	Serbia	BiH (25.9%)	Austria (13.6%)	Hungary (8.7%)
2	Italy	Austria (49.7%)	Germany (13.5%)	China (6.9%)
3	Croatia	BiH (17.2%)	Italy (16.2%)	Austria (14.2%)

Source: Author, based on the Trade map data (International Trade Centre, 2021a)

Key export markets for the product group *4401: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms* are Italy, Slovenia and Croatia. On the Italian market, competitors from Austria (30.5%), Germany (10.4%) and Brazil (7.2%) have the largest export share. Bosnia and Herzegovina ranks 5th in terms of the exported value to Italy and has an export share of 5.8%. On the Slovenian market, BiH has the largest export share (19.5%). Ukraine holds the second position with an export share of 18.5%, while the third position holds Croatia with an export share of 17.5%. On the Croatian market, BiH has the largest export share (37.4%). Slovenia holds the second position with an export share of 29.4%, while the third position holds Italy with an export share of 18.7%.

Table 13. Top 3 competitors/relative position of BiH on key export markets for the product group 4401: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms

No	Export market	Competitor 1 (export share in %)	Competitor 2 (export share in %)	Competitor 3 (export share in %)
1	Italy	Austria (30.5%)	Germany (10.4%)	Brazil (7.2%)
2	Slovenia	BiH (19.5%)	Ukraine (18.5%)	Croatia (17.5%)
3	Croatia	BiH (37.4%)	Slovenia (29.4%)	Italy (18.7%)

Source: Author, based on the Trade map data (International Trade Centre, 2021a)

Some of the biggest competitors (mostly furniture manufacturers), classified by countries are:

- Poland: Bydgoskie Fabryki Mebli, Fameg, Forte, Matex, NTS Wajnert, Paged-Meble, Polipol, PPUH Gabi-Jerczynscy, etc.
- China: Louvre, Quanu, Qumei, Red Apple, Daming furniture, Landond, M&Z, Kuka, etc.
- Germany: Bau-Art, Becker, brühl & sippold, Brunner, COR, Dedon, Eajy, Girsberger, Mäusbacher, New Tendency, Oldenburger, OSW, Rolf Benz, Thonet, Zeitraum, etc.
- Italy: Bonaldo, dePadova, Gruppo Molteni, Lube, Molteni&C, Natuzzi, Opinion Ciatti, Pedrali, Poliform, Poltrona Frau, Scavolini, Selva, spHaus, Woodly, etc.

These manufacturers set trends and standards that small companies must follow to remain competitive.

Summary of chapter 4.2.3.
Regarding product groups ***9401****: Seats, whether or not convertible into beds, and parts thereof, n.e.s.* and ***9403****: Furniture and parts thereof, n.e.s.* **the most important competitors in key export markets come from Poland, China, Germany and Italy**. When it comes to product group **9401:** Seats, whether or not convertible into beds, and parts thereof, nes., **BiH is the leading exporter in Croatia** (22.7% of the export share), while in Poland and Germany BiH has a much smaller export share (2.5% and 0.6%, respectively). **BiH ranks 4th (export share 9.5%) in terms of exports of** the product group ***9403****: Furniture and parts thereof, n.e.s* **to Croatia,** while in the German and Dutch markets, the share of BiH's exports is relatively small (1.1% and 0.4%, respectively).

Regarding product groups ***4407****: Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm,* ***4418****: Builders' joinery and carpentry, of wood, incl. cellular wood panels, assembled flooring panels, shingles and shakes, of wood* and ***4401****: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms,* **the most important competitors in key export markets come from Austria, Germany, Poland and Italy**. When it comes to product group **4407***: Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm,* **BiH is the biggest exporter in Serbia** (with 68.8% of the export share), **while in Croatia BiH holds the second position** with 21.8% of the export share. **BiH is the biggest exporter of the product group 4418***: Builders' joinery and carpentry, of wood, incl. cellular wood panels, assembled flooring panels, shingles and shakes, of wood* **in Serbia** (with 25.9% of the export share) **and Croatia** (with 17.2% of the export share). When analysing product group **4401***: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms,* it can be concluded that **BiH is the biggest exporter in Slovenia** (with 19.5% of the export share) **and Croatia** (with 37.4% of the export share).

In the previous chapters, the data related to the past period - 2019 and 2020, as well as trends related to exports in the period 2016 - 2020 were analysed. These data tell us **what happened in the past and what are the key export products and markets from that perspective**.

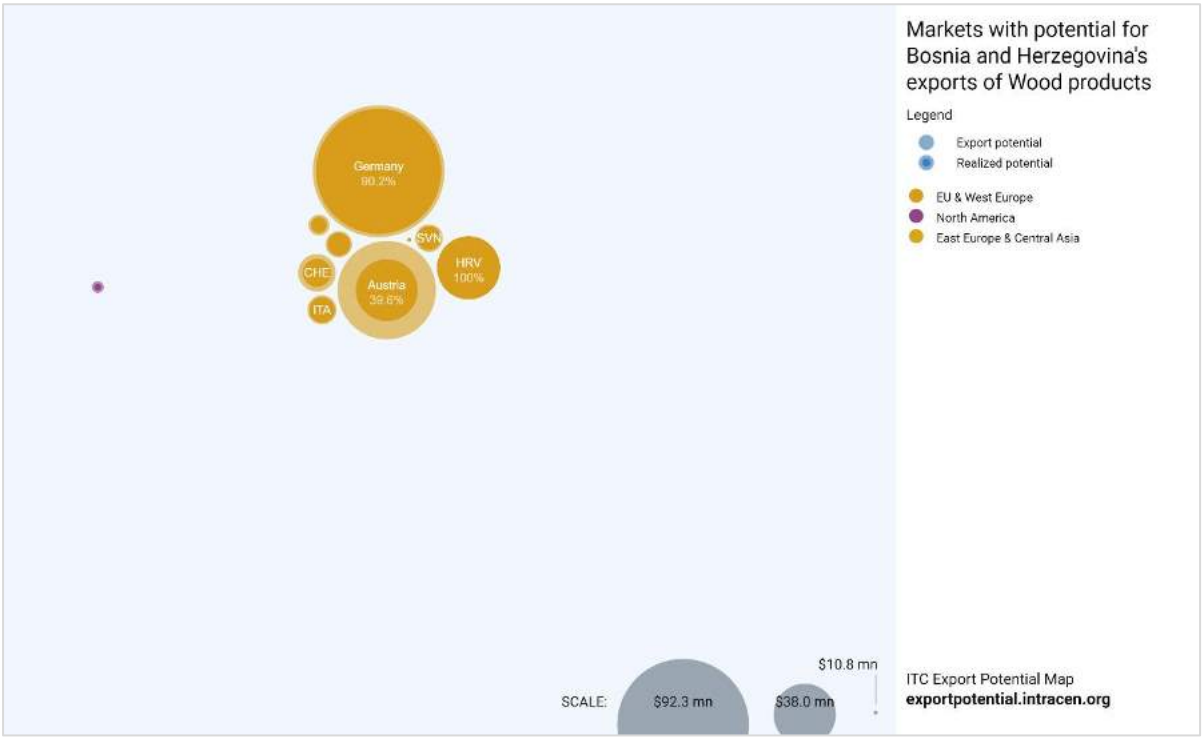
The following chapters will assess (based on the findings of the Export potential map), **which markets, and which product groups should be in focus in the future**, as well as which are the products that BiH does not yet export competitively but which seems feasible to export competitively in the future (based on the Product Diversification Indicator).

4.2.4. Export potential

To assess what markets may be attractive for export in the future, it is useful to use insights provided by the Export Potential Map which was developed by the International Trade Centre (ITC). The Export Potential Map model predicts the expected value of trade between two countries taking into account supply performance, demand for the selected product, and the relative strength of the trade relationship between the exporting and importing country. It generates a benchmark value of what can be reasonably expected given the characteristics of the trading countries and specific product based on historical trade and market access information projected into the future. Export potential for BiH wood processing companies was assessed by using ITC's export potential methodology that computes expected values of trade for each exporter-importer-product combination using the information on the exporter's projected supply capacity for a given product, the importer's projected demand for that same product and the ease of trade between the two trading partners. It takes into consideration the most recent Gross Domestic Product (GDP) forecasts to capture the expected evolution of demand and supply capacity. The difference between a country's total export potential and its actual exports (realized export potential) reveals its unrealized export potential. It captures by how much exports could increase within the next five years. In general, export growth potential can result from two sources: first, future economic growth in the country itself or demand growth in the target market (dynamic, or growth-based export potential), and second, factors that trade advisors may address together with local companies, such as lacking information about the rules and regulations of the target market or difficulties to comply with them or to meet the (quality) preferences of its consumers (static, or friction-based export potential) (International Trade Centre, 2021c).

Potential export value of product k supplied by country i to market j, in dollars, is calculated as supply × demand (corrected for market access) × bilateral ease of trade. Supply and demand are projected into the future based on GDP and population forecasts, demand elasticities and forward-looking tariffs. The estimated dollar value serves as a benchmark for comparison with actual exports and should not be interpreted as a ceiling value. In reality, the actual trade value may be below or above the potential value. Export potential is potential export value in 2026 based on projections of supply, demand, market access conditions and bilateral ease of trade, expressed in USD. Realized potential in % is the extent to which export potential has already been utilized (International Trade Centre, 2021c).[13]

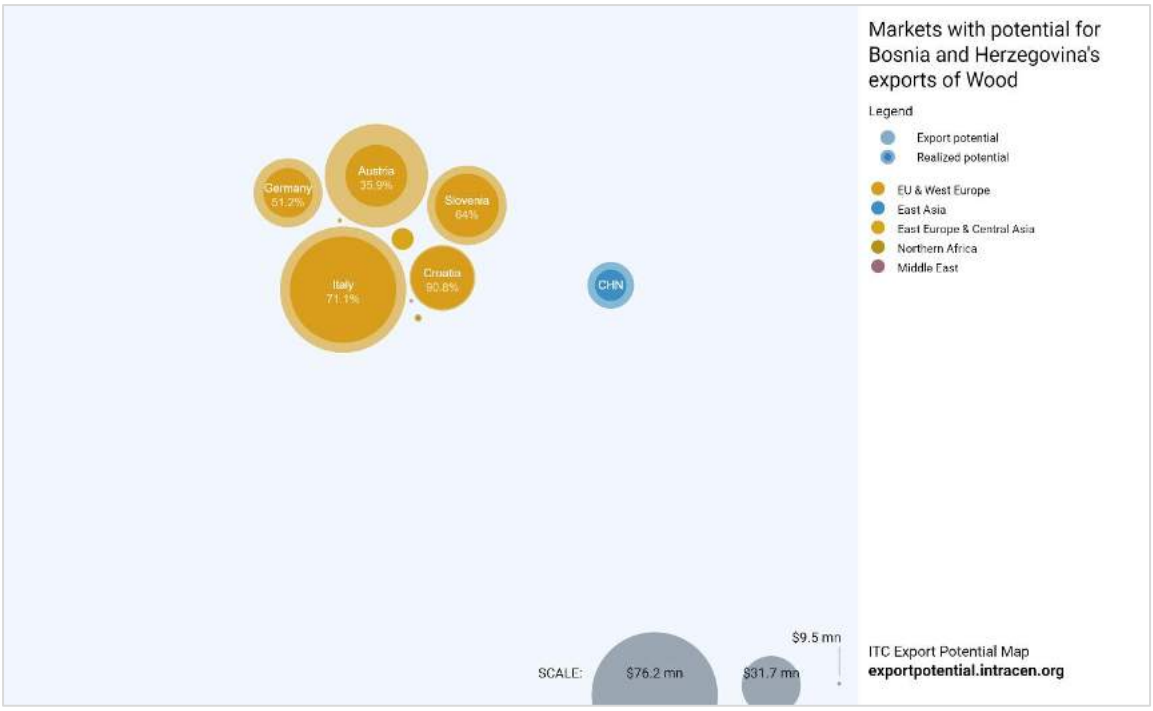
According to the Export Potential Map, **markets with the greatest potential for Bosnia and Herzegovina's exports of wood products are Germany and Austria**. Austria shows the largest absolute difference between potential and actual exports in value terms, leaving space to realize additional exports worth USD 38.2 million.



Source: Export potential map (International Trade Centre, 2021b)

Markets with the greatest potential for Bosnia and Herzegovina's exports of wood are Italy and Austria. Austria shows the largest absolute difference between potential and actual exports in value terms, leaving room to realize additional exports worth USD 37.8 million.

[13] More information about the methodology: https://umbraco.exportpotential.intracen.org/media/1089/epa-methodology_141216.pdf

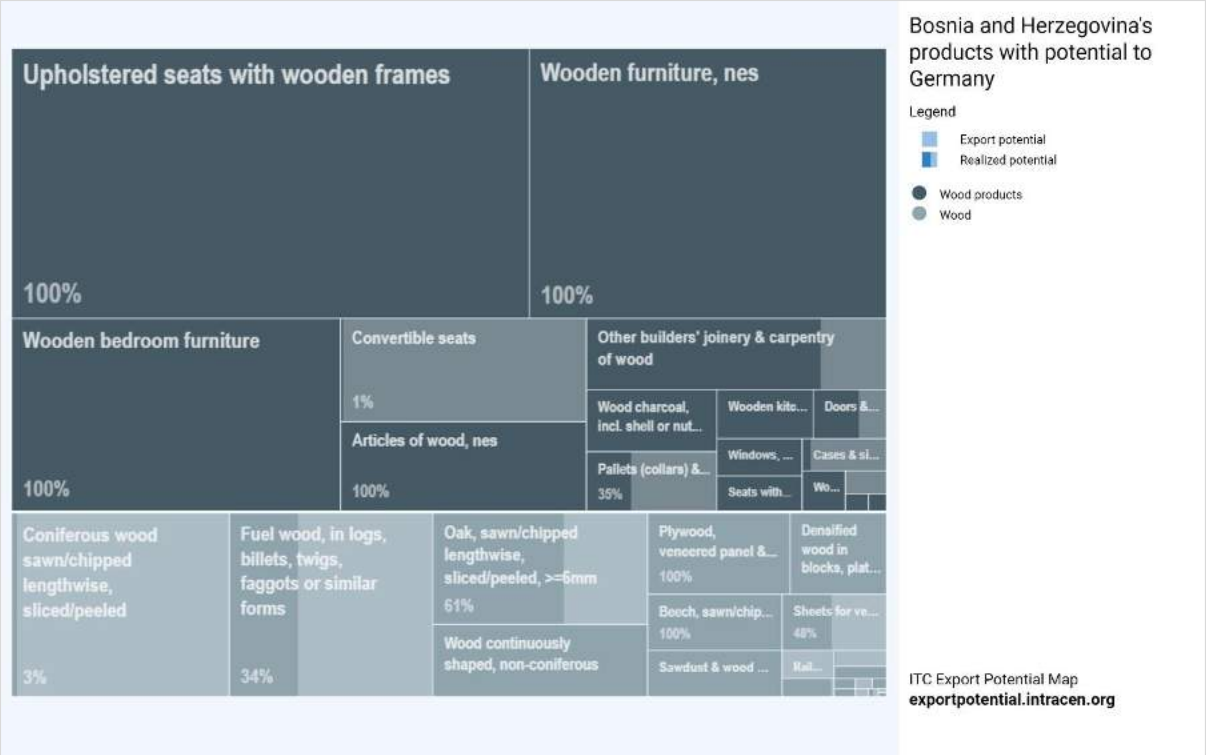


Source: Export potential map (International Trade Centre, 2021b)

Having in mind the Export Potential Map's projections for both wood products and wood, **the most promising export markets in the forthcoming period may be Germany, Italy and Austria.** Let's look what are **the product groups with the greatest export potential and remaining untapped potential on these markets.**

Product groups with the greatest export potential and remaining untapped potential for Germany (within the analysed product groups 94 and 44) are:

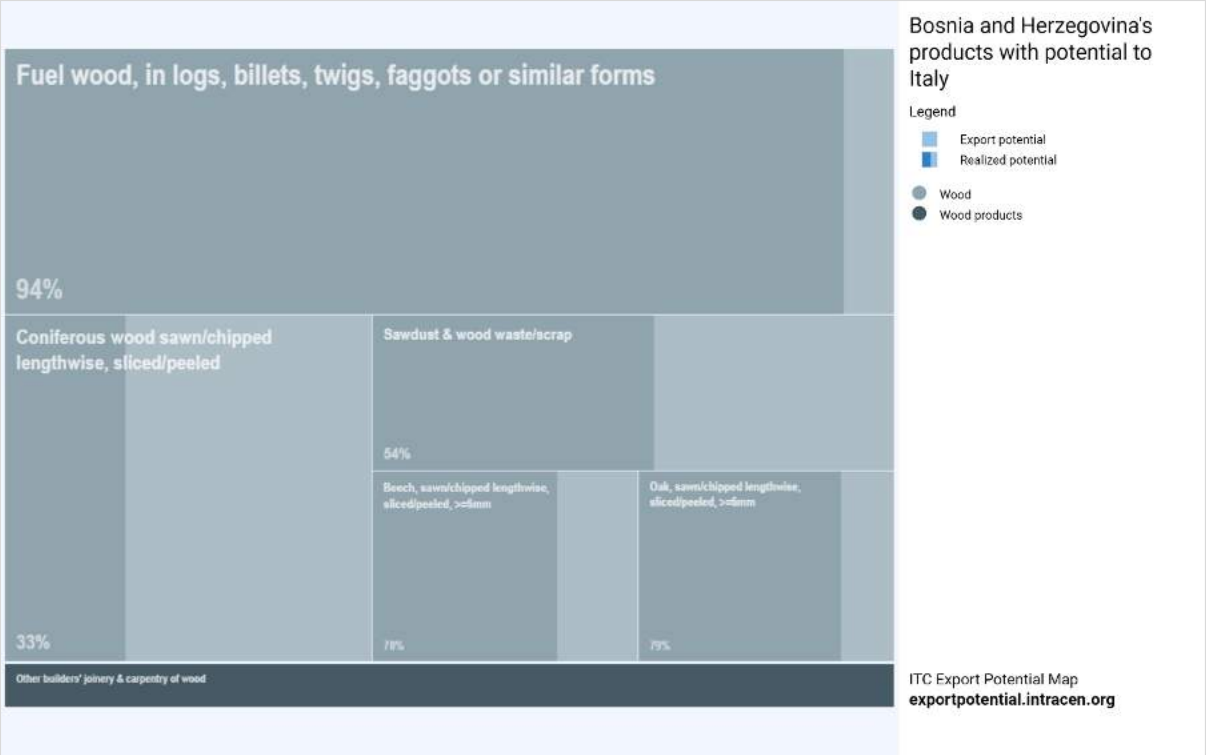
- *4407Xa Coniferous wood sawn/chipped lengthwise, sliced/peeled* (export potential USD 9.2 million, actual exports USD 247.400, untapped potential remaining USD 9.0 million),
- *4401Xa Fuel wood, in logs, billets, twigs, faggots or similar forms* (export potential USD 8.6 million, actual exports USD 2.9 million, untapped potential remaining USD 5.7 million),
- *440791 Oak, sawn/chipped lengthwise, sliced/peeled, >=6mm* (export potential USD 5.5 million, actual exports USD 3.4 million, untapped potential remaining USD 2.1 million),
- *940140 Convertible* seats (export potential USD 5.5 million, actual exports 3.4 million, untapped potential remaining USD 2.1 million),
- *4418XX Other builders' joinery & carpentry of wood* (export potential USD 4.9 million, actual exports USD 3.8 million, untapped potential remaining USD 1.1 million),
- *441520 Pallets (collars) & other load boards, of wood* (export potential USD 1.7 million, actual exports USD 606.000, untapped potential remaining USD 1.1 million).



Source: Export potential map (International Trade Centre, 2021b)

Product groups with the greatest export potential and remaining untapped potential for Italy (within the analysed product groups 94 and 44) are:

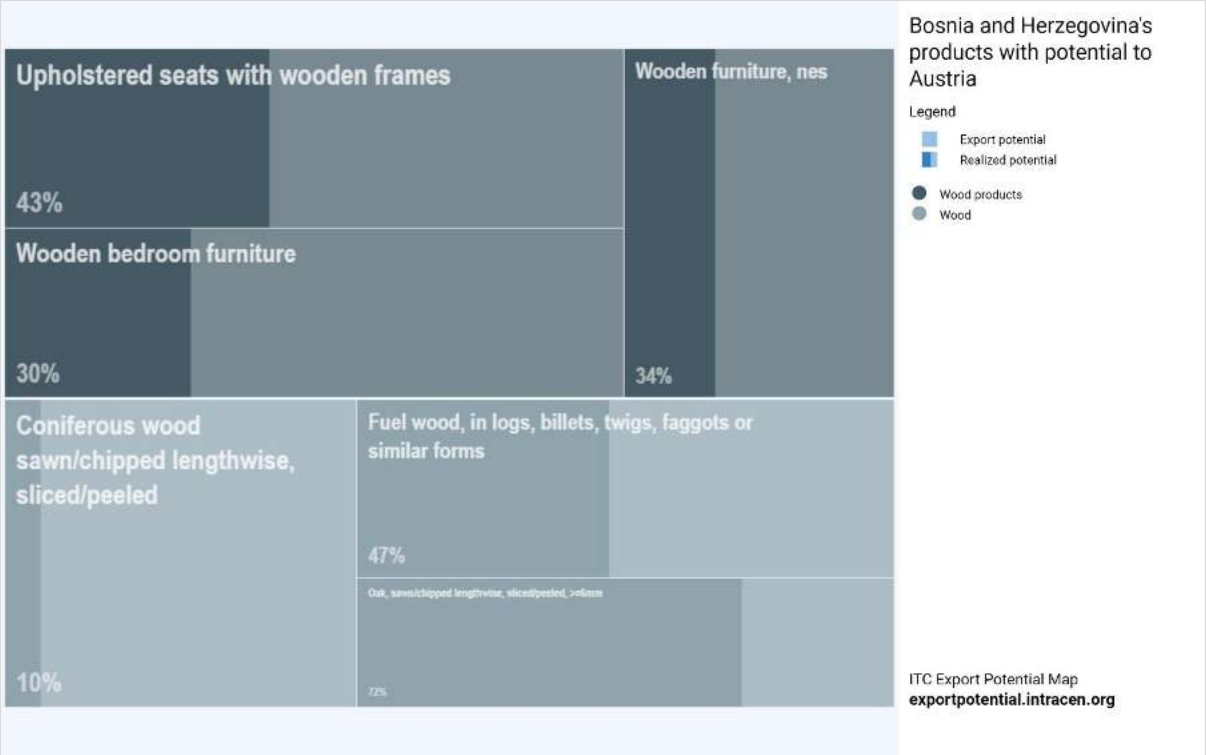
- *4407Xa Coniferous wood sawn/chipped lengthwise, sliced/peeled* (export potential USD 16.5 million, actual exports USD 5.4 million, untapped potential remaining USD 11.1 million),
- *4401Xb Sawdust & wood waste/scrap* (export potential USD 10.6 million, actual exports USD 5.7 million, untapped potential remaining USD 4.9 million),
- *440792 Beech, sawn/chipped lengthwise, sliced/peeled, >=6mm* (export potential USD 6.6 million, actual exports USD 4.6 million, untapped potential remaining USD 2.0 million),
- *4401Xa Fuel wood, in logs, billets, twigs, faggots or similar forms* (export potential USD 30.6 million, actual exports USD 28.9 million, untapped potential remaining USD 1.7 million),
- *440791 Oak, sawn/chipped lengthwise, sliced/peeled, >=6mm* (export potential USD 6.3 million, actual exports USD 5.0 million, untapped potential remaining USD 1.3 million).



Source: Export potential map (International Trade Centre, 2021b)

Product groups with the greatest export potential and remaining untapped potential for Austria (within the analysed product groups 94 and 44) are:

- *4407Xa Coniferous wood sawn/chipped lengthwise, sliced/peeled* (export potential USD 14.2 million, actual exports USD 1.5 million, untapped potential remaining USD 12.8 million),
- *940350 Wooden bedroom furniture* (export potential USD 13.9 million, actual exports USD 4.2 million, untapped potential remaining USD 9.7 million),
- *940161 Upholstered seats with wooden frames* (export potential USD 14.6 million, actual exports USD 6.2 million, untapped potential remaining USD 8.3 million),
- *940360 Wooden furniture, nes* (export potential USD 12.4 million, actual exports USD 4.2 million, untapped potential remaining USD 8.2 million),
- *4401Xa Fuel wood, in logs, billets, twigs, faggots or similar forms* (export potential USD 12.6 million, actual exports USD 5.9 million, untapped potential remaining USD 6.7 million),
- *440791 Oak, sawn/chipped lengthwise, sliced/peeled, >=6mm* (export potential USD 9.2 million, actual exports USD 6.6 million, untapped potential remaining USD 2.6 million).



Source: Export potential map (International Trade Centre, 2021b)

Summary of chapter 4.2.4.
Having in mind the Export Potential Map's projections for both wood products and wood, **the most promising export markets in the forthcoming period may be Germany, Italy and Austria.** Both for wood products and wood, Austria shows the largest absolute difference between potential and actual exports in value terms, leaving space to realize additional exports of wood products worth USD 38.2 million and wood worth USD 37.8 million.
Product groups with the greatest export potential and remaining untapped potential for **Germany** are: *4407Xa Coniferous wood sawn/chipped lengthwise, sliced/peeled; 4401Xa Fuel wood, in logs, billets, twigs, faggots or similar forms* and *440791 Oak, sawn/chipped lengthwise, sliced/peeled, >=6mm.*
Product groups with the greatest export potential and remaining untapped potential for **Italy** are: *4407Xa Coniferous wood sawn/chipped lengthwise, sliced/peeled*, *4401Xb Sawdust & wood waste/scrap,* and *440792 Beech, sawn/chipped lengthwise, sliced/peeled, >=6mm.*
Product groups with the greatest export potential and remaining untapped potential for **Austria** are: *4407Xa Coniferous wood sawn/chipped lengthwise, sliced/peeled*, *940350 Wooden bedroom furniture, 940161 Upholstered seats with wooden frames* and *940360 Wooden furniture, nes.*

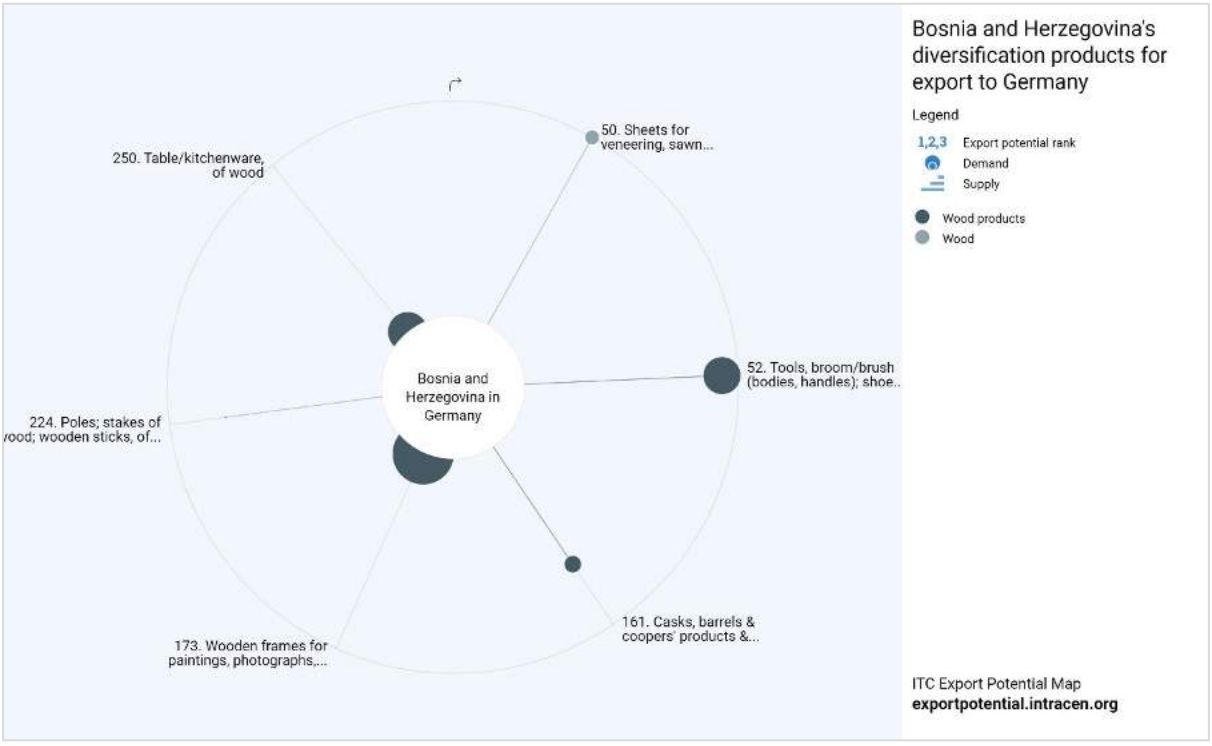
4.2.5. Diversification of products

The Product Diversification Indicator (PDI) serves countries that aim to diversify and develop new export sectors that face promising demand conditions in new or existing target markets. It **identifies products that the exporting country does not yet export competitively but which seem feasible based on the country's current export basket and the export baskets of similar countries** (extensive

product margin). PDI uses the Product Space methodology[14] to measure a country's capacity to supply new products. The PDI builds on this supply element by also evaluating whether a country has relevant capacities for producing the new products identified. In addition to taking into account supply, the PDI also evaluates the demand for these potential new products and considers the general and specific trade costs of shipping them to target markets. PDI relies on a measure called "density" to capture the likelihood of countries to diversify into a new product based on the assumption that these new products require similar capabilities to those already present in the country's export basket (International Trade Centre, 2021b; International Trade Centre, 2021c).

Within the analysed product groups (94 and 44), **the most attractive product groups for diversification and export to Germany** (ranked by the likelihood of successful product diversification based on supply, demand and market access conditions) are:

- *440810 Sheets for veneering, sawn lengthwise/sliced/peeled, thickness <=6mm,* with Germany's import of USD 25.8 million,
- *441700 Tools, broom/brush (bodies, handles); shoe lasts & shoetrees of wood*, with Germany's import of USD 38.9 million,
- *441600 Casks, barrels & coopers' products & parts thereof, of wood,* with Germany's import of USD 15.4 million,
- *441400 Wooden frames for paintings, photographs, mirrors & similar,* with Germany's import of USD 77.3 million,
- *440410 Poles; stakes of wood; wooden sticks, of coniferous wood,* with Germany's import of USD 8.8 million and
- *4419 Table/kitchenware, of wood,* with Germany's import of USD 111.6 million.

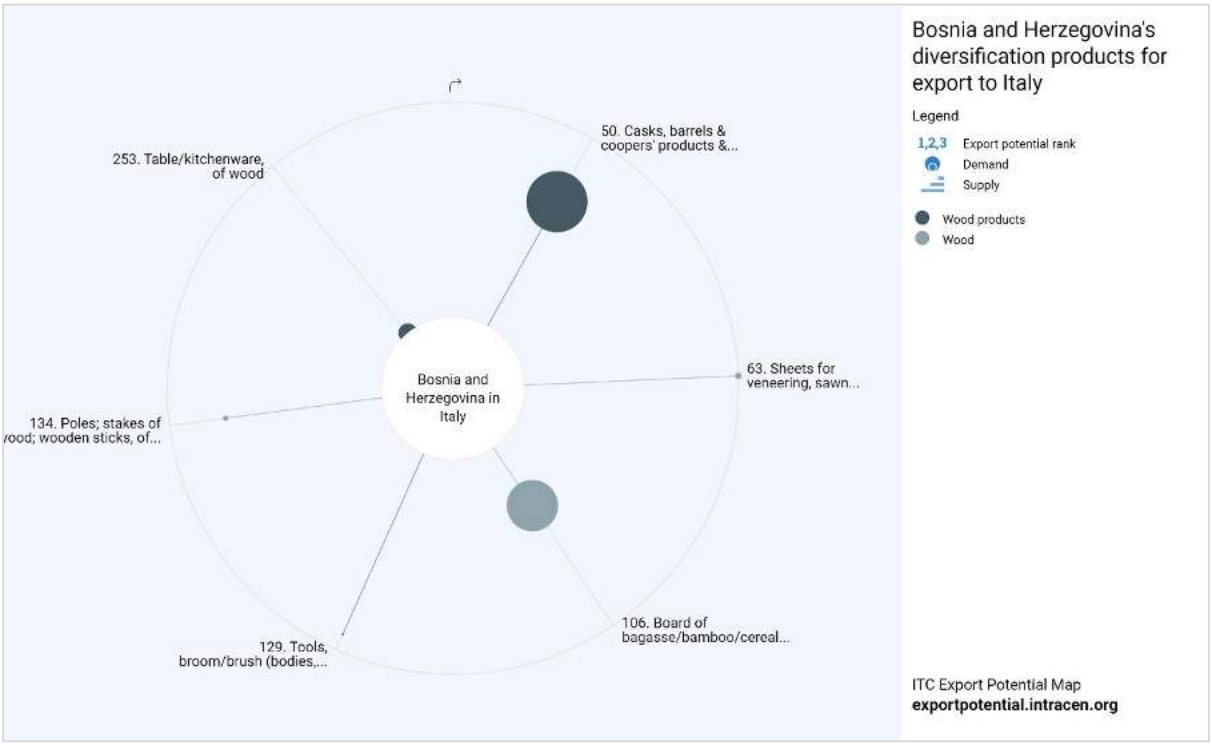


Source: Export potential map (International Trade Centre, 2021b)

[14] More information about the methodology: https://www.researchgate.net/publication/6181618_The_Product_Space_Conditions_the_Development_of_Nations

Within the analysed product groups (94 and 44), **the most attractive product groups for diversification and export to Italy** (ranked by the likelihood of successful product diversification based on supply, demand and market access conditions) are:

- *441600 Casks, barrels & coopers' products & parts thereof, of wood,* with Italy's import of USD 35.8 million,
- *440810 Sheets for veneering, sawn lengthwise/sliced/peeled, thickness <=6mm,* with Italy's import of USD 6.9 million,
- *441090 Board of bagasse/bamboo/cereal straw/other ligneous materials,* with Italy's import of USD 25.1 million,
- *441700 Tools, broom/brush (bodies, handles); shoe lasts & shoetrees of wood,* with Italy's import of USD 6.3 million,
- *440410 Poles; stakes of wood; wooden sticks, of coniferous wood,* with Italy's import of USD 7 million,
- *4419 Table/kitchenware, of wood,* with Italy's import of USD 31.9 million.

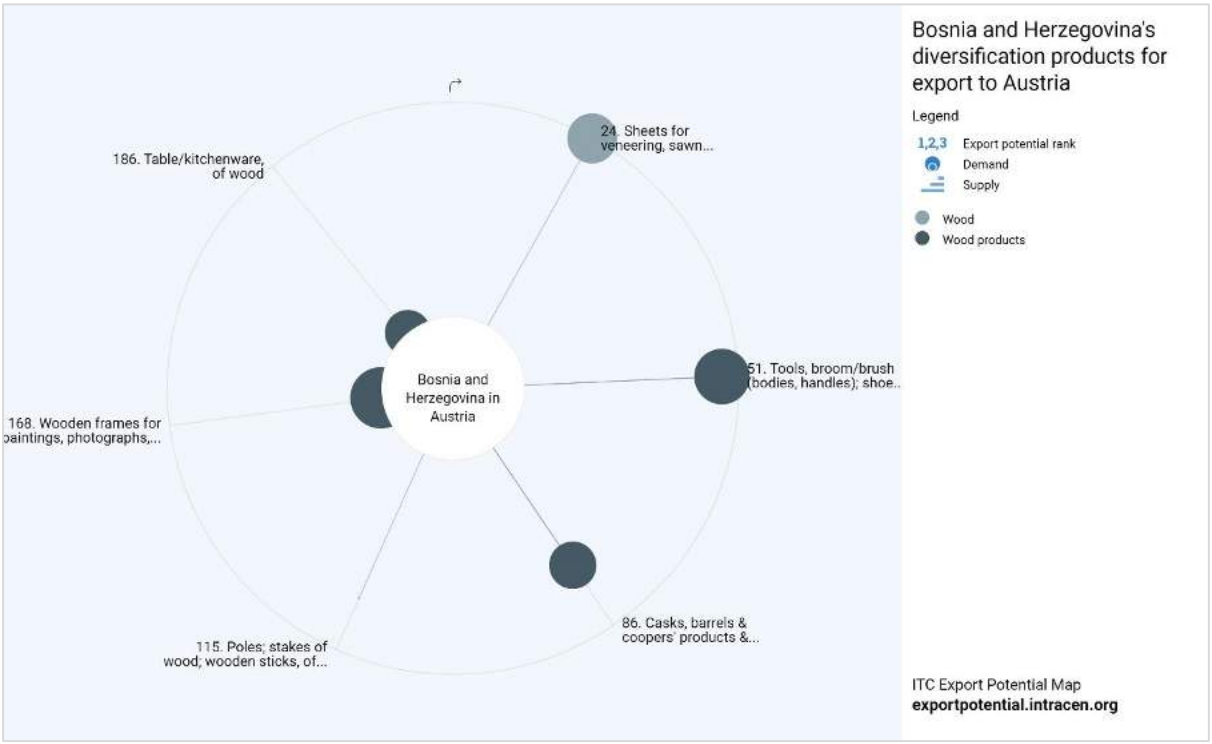


Source: Export potential map (International Trade Centre, 2021b)

Within the analysed product groups (94 and 44), **the most attractive product groups for diversification and export to Austria** (ranked by the likelihood of successful product diversification based on supply, demand and market access conditions) are:

- *440810 Sheets for veneering, sawn lengthwise/sliced/peeled, thickness <=6mm,* with Austria's import of USD 11 million,
- *441700 Tools, broom/brush (bodies, handles); shoe lasts & shoetrees of wood,* with Austria's import of USD 6.9 million,
- *441600 Casks, barrels & coopers' products & parts thereof, of wood,* with Austria's import of USD 8.2 million,
- *440410 Poles; stakes of wood; wooden sticks, of coniferous wood,* with Austria's import of USD 1.9 million,

- *441400 Wooden frames for paintings, photographs, mirrors & similar,* with Austria's import of USD 10.6 million,
- *4419 Table/kitchenware, of wood,* with Austria's import of USD 15.4 million.



Source: Export potential map (International Trade Centre, 2021b)

Summary of chapter 4.2.5.
The most attractive product groups for diversification and export to Germany are: *440810 Sheets for veneering, sawn lengthwise/sliced/peeled, thickness <=6mm, 441700 Tools, broom/brush (bodies, handles); shoe lasts & shoetrees of wood* and *441600 Casks, barrels & coopers' products & parts thereof, of wood.*
The most attractive product groups for diversification and export to Italy are: *441600 Casks, barrels & coopers' products & parts thereof, of wood, 440810 Sheets for veneering, sawn lengthwise/sliced/peeled, thickness <=6mm* and *441090 Board of bagasse/bamboo/cereal straw/other ligneous materials.*
The most attractive product groups for diversification and export to Austria are: *440810 Sheets for veneering, sawn lengthwise/sliced/peeled, thickness <=6mm, 441700 Tools, broom/brush (bodies, handles); shoe lasts & shoetrees of wood* and *441600 Casks, barrels & coopers' products & parts thereof, of wood.*

5. Value chain analysis

5.1. Value chains of the product/geographic market combinations identified above

A value chain is a sequence of related business operations (functions) from the provision of specific inputs for a particular product to primary production, transformation, marketing, and up to the final sale of the particular product to consumers. A value chain can also be defined as a set of enterprises

performing these operations i.e. producers, processors, traders and distributors of a particular product. Enterprises are linked by a series of business transactions in which the product is passed on from primary producers to end consumers (Springer-Heinze, 2018, p. xiv). The value chain includes a series of organizations and institutions involved in the process of creating and delivering of product/service, i.e. value for the consumer - from procurement, over production and distribution, to the final consumer. The enterprises forming the value chain interact constantly – buying and selling products and services, exchanging information and cooperating to pursue shared interests. The enterprises are the core of a wider value chain community that consists of private associations, specialized service providers and industry-specific public organizations providing support (Springer-Heinze, 2018, p. 3).

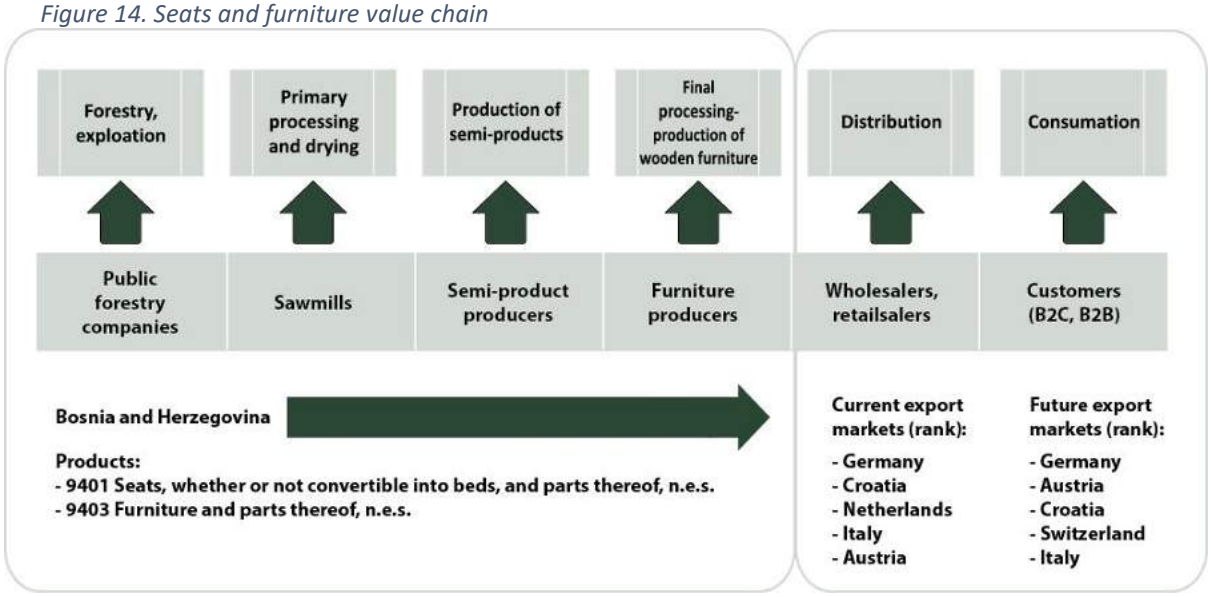
Value chains are technical, economic and social systems at the same time. They connect the spheres of production and consumption, therefore being classic fields of policymaking and regulation. The complexity of value chains implies that it is virtually impossible to capture the many intervening factors and establish clear cause-effect relations. Value chain development is the result of collective action and an open-ended process that never advances smoothly: While every contribution counts, no one is fully in charge. Value chain development is path-dependent, and one must be realistic about how much change is possible in a given time. Therefore, every value chain development initiative must choose its level of ambition carefully. The point is to make the right move in the given situation, even if it is only a small step and a partial solution (Springer-Heinze, 2018, p. 2, 6-7).

Conducting the value chain analysis is important because the competitiveness of a particular company - the manufacturer is largely determined by the competitiveness of its suppliers and customers, as well as relevant supporting institutions. Also, one should be aware that competition between enterprises implies (and involves) competition between their value chains. Competitors may copy a company's product relatively easily, but it is much more difficult to copy relations between its suppliers and customers.

The value chain of the most important export products, identified in the previous chapters, is presented below. When it comes to furniture (product groups 9401: Seats, whether or not convertible into beds, and parts thereof, n.e.s. and 9403: Furniture and parts thereof, n.e.s.), the chain begins with the exploitation of wood, primarily from public forestry enterprises. In addition to wood, upholstered furniture manufacturers import a significant part of the necessary inputs that are not produced in BiH (plywood, MDF). Oak is also imported since BiH does not have sufficient quantities of quality oak, while some quantities of beech are also imported[15]. The wood is dried, and then its primary processing is done in sawmills. Then the producers of semi-final products produce jointed boards, furniture panels etc., while furniture producers use their (as well as imported inputs) to produce the final products such as seats and different types of furniture. Furniture is bought by wholesalers and retailers and then sold to their B2C and B2B customers. Currently, key export markets are Germany, Croatia, Netherlands, Italy and Austria, while conducted export potential analysis showed that the most attractive export markets to focus on in the future are Germany, Austria, Croatia, Switzerland and Italy.

[15] In 2020, the imported value of particleboard wood was USD 38.8 million, the imported value of oak was USD 21.5 million and the imported value of beech was USD 6.5 million (International Trade Centre, 2021a).

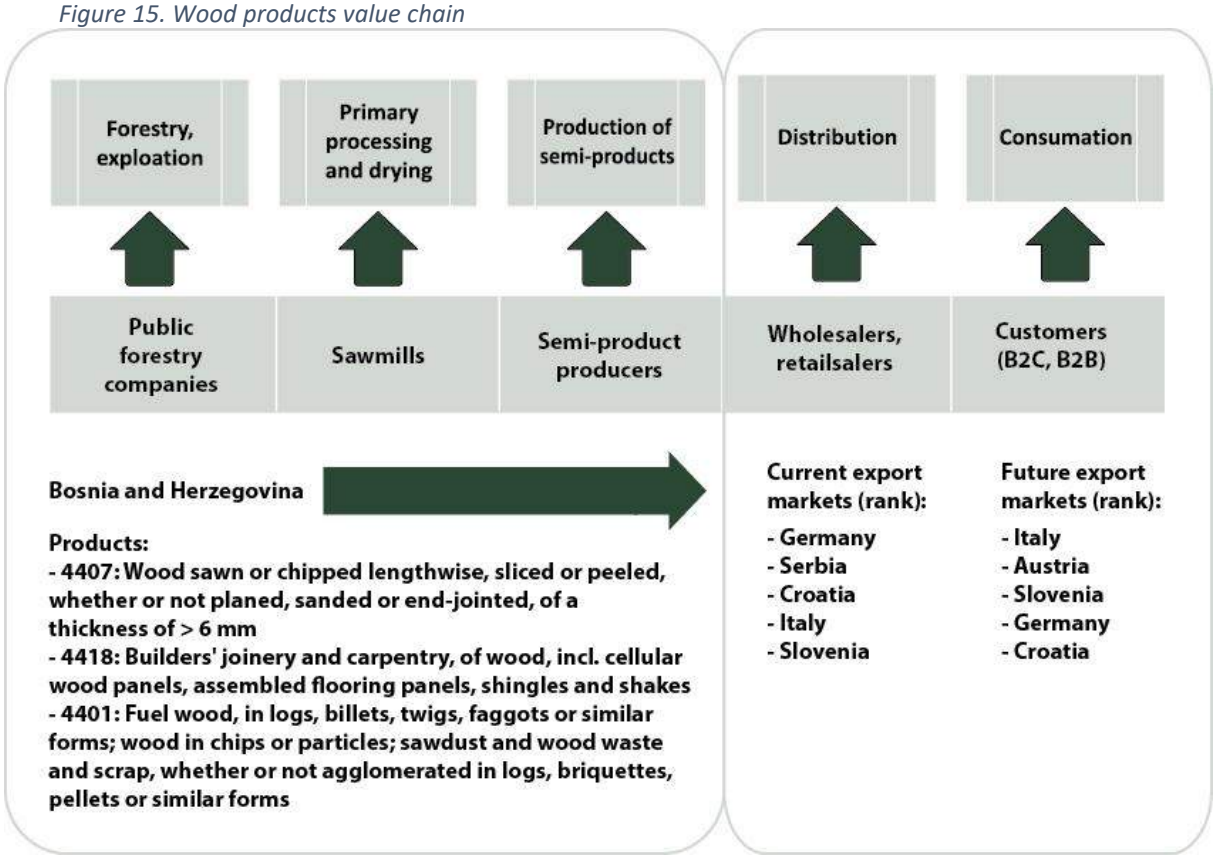
Figure 14. Seats and furniture value chain



Source: Author

Value chain of wood products (product groups *4407: Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of> 6 mm*, *4418: Builders' joinery and carpentry, of wood, cellular wood panels, assembled flooring panels, shingles and shakes, of wood*, and *4401: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms* is similar to the previously described value chain of furniture, except that it is shorter because there is no link related to the final processing of wood. In this case, sawmills and manufacturers of semifinal products export products to wholesalers and retailers and they sell these products further to their B2B and B2C customers. Currently, key export markets are Germany, Serbia, Croatia, Italy and Slovenia, while conducted export potential analysis showed that the most attractive export markets that should be focused on in the future are Italy, Austria, Slovenia, Germany and Croatia.

Figure 15. Wood products value chain



Source: Author

In the publication „Mapping of the Sustainable Development Goals (SDGs) against value chains in furniture and automotive parts sectors in Bosnia and Herzegovina" (UNDP, 2019) it was presented a value chain that begins with emerging companies acting as integrators, market research and placement agents with knowledge in design and trends in the furniture industry. As the furniture and wood value chain becomes more complex, a multitude of suppliers within the value chain were identified. Suppliers of solid wood still represent the most important part of the supply chain and its foundation. As many as 90% of these suppliers are government-owned forestry departments that represent a huge liability and hindrance for further development of businesses, depending on their outputs. This is mainly due to their inability to provide transparent and equitable distribution of wood to manufacturers. Next in the value chain are manufacturers who are in different segments and stages of development, predominantly contract manufacturing. There is still a small but growing number of companies that have embarked on a path towards building their own brand. Companies that provide servicing, engineering and maintenance services to the furniture and wood value chain are getting better as their role becomes more crucial in nowadays higher value-added manufacturing. After everything is manufactured and packaged, it is essential to provide timely and appropriate transport and general logistics. Once mostly done in-house, this role is now outsourced due to the required specialization. Finally, at the end of this value chain are buyers and consumers (recycling and furniture rental companies are not yet available in BiH) from small showrooms and individuals to large buying groups and retail chains - and they have the biggest influence on the dynamics and production in general. The BiH market is small, so the companies mainly focus on exports, mostly to EU countries. Many organizations affect the furniture and wood value chain, from policy makers such as the BiH Ministry of Foreign Trade and Economic Relations and other Entity and cantonal ministries that regulate, support and promote the industry in general to local authorities and various other bodies implementing these policies. The EU legislators and institutions are also very important due to the previously mentioned size of the BiH export to EU countries. Also, the important segment of the furniture and wood value chain is represented by numerous supporting institutions such as chambers

of commerce, various local and regional development agencies and projects, consulting companies, educational institutions and training centres, as well as transport, logistics and financial institutions (UNDP, 2019, p. 16-17).

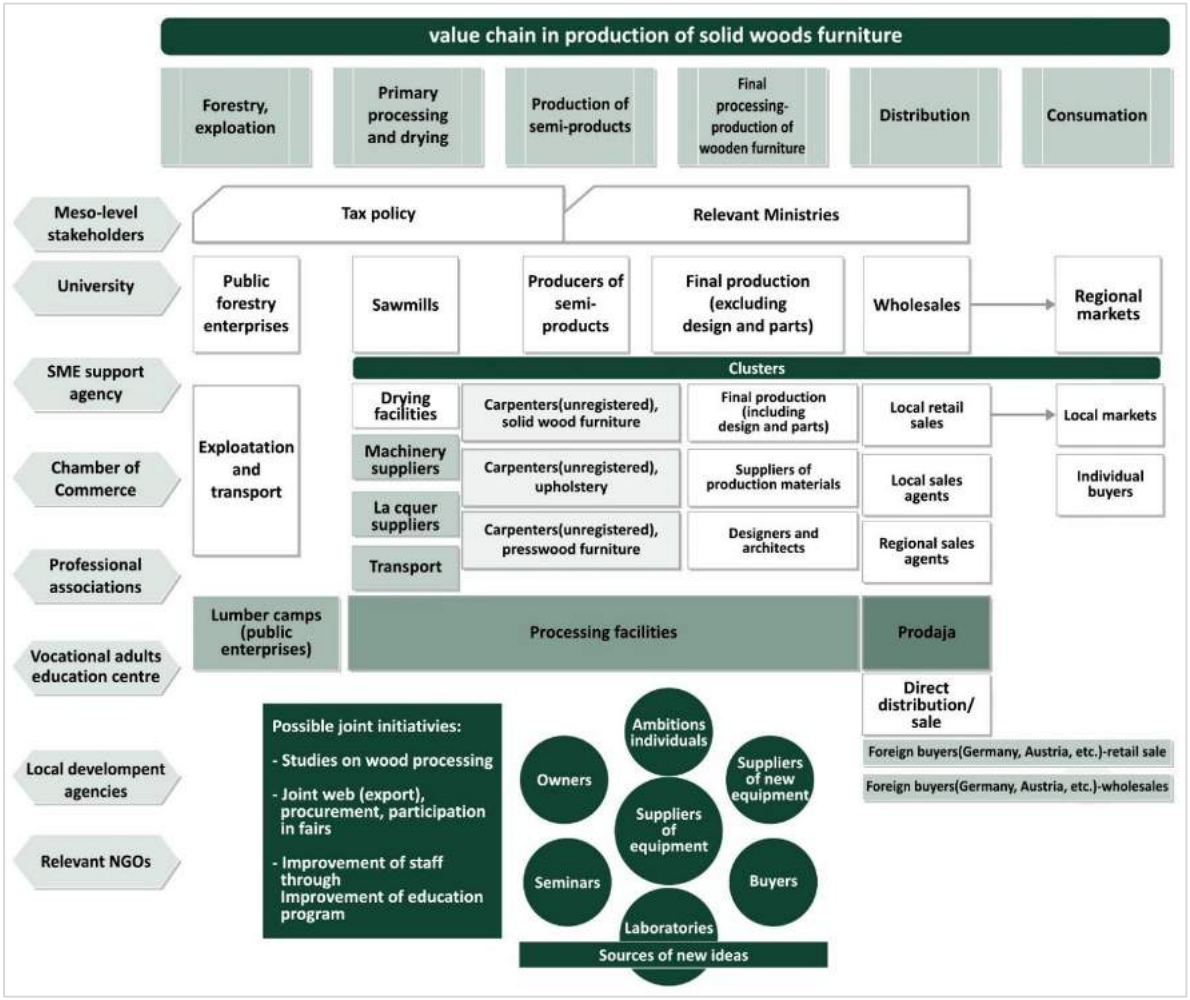
Figure 16. Furniture and wood value chain

Source: UNDP, 2019, p. 16

The value chain in the production of the solid wood furniture was conducted, within the project CREDO Krajina[16], when key phases of the production, as well as the relevant stakeholders, were identified and described.

[16] More information about the project CREDO Krajina is available at: https://edabl.org/credo/en/index.html

Figure 17. Value chain in the production of solid wood furniture



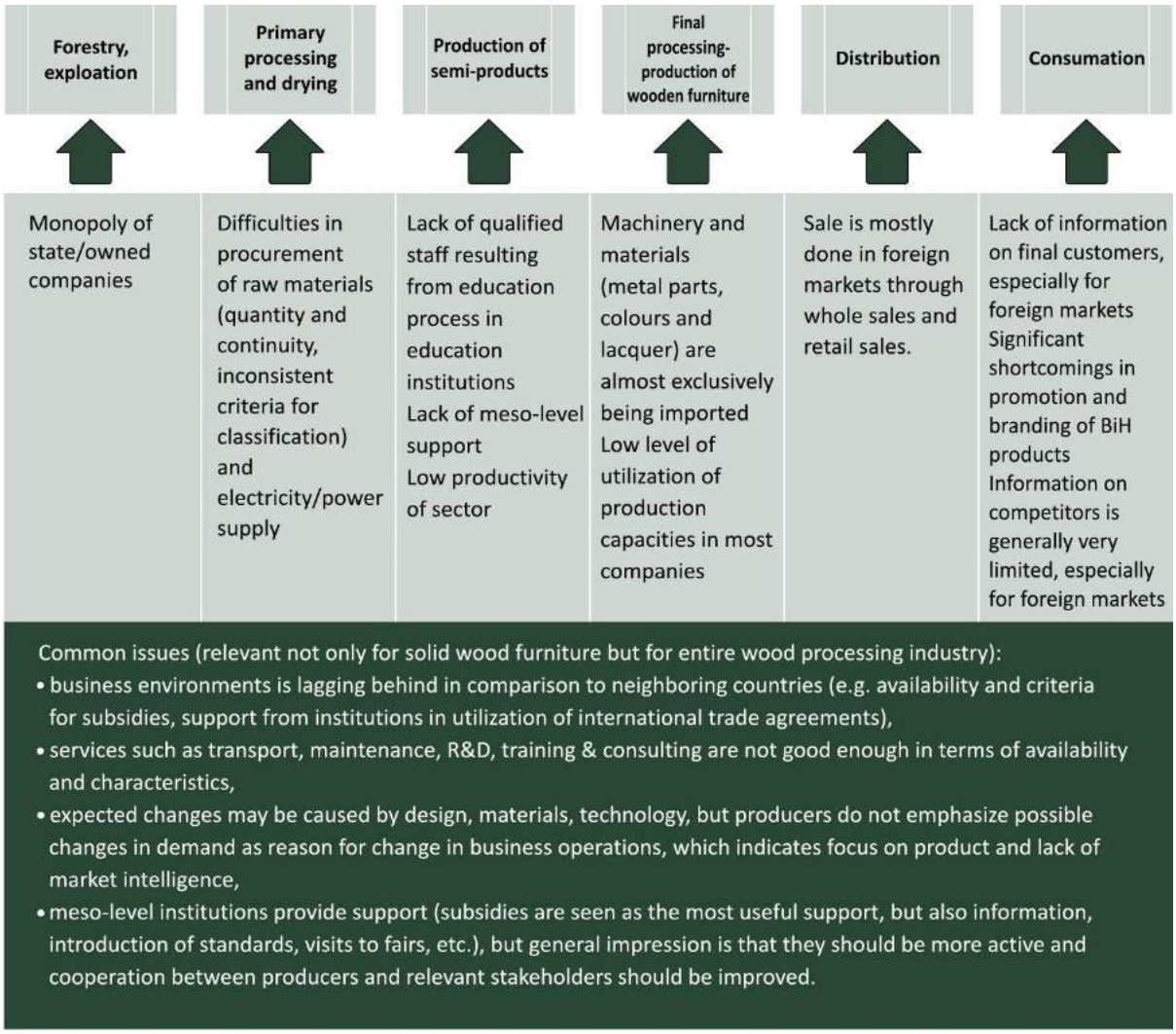
Source: Janković, 2014, p. 69

Since the chain is as strong as its weakest link, the value chain analysis is aimed at identifying the weakest points in the chain, which indicates areas for interventions. Improving these areas means filling the gap between the current and the desired state. As a result, all actors in the value chain have some benefits.

In each of the links of the value chain, certain gaps have been identified, with the following being identified as the most important gaps (Janković, 2014, p. 59):

- the gap between the producers and the foreign buyers, especially lack information on final consumers in foreign markets, despite quantities exported,
- the gap between labour produced by the education system and needs of the industry,
- the gap between the current level of technology and the latest technology used.

Figure 18. Gaps in the solid wood furniture value chain



Source: Janković, 2014, p. 61

From this time distance, it can be argued that **these findings are still relevant today**. This was confirmed by the findings of several studies and research conducted from 2014 to date.

Savić and Gackić (2016) argue, among other things, that there are significant **problems in the supply of domestic wood**. They state that domestic producers have problems related to the quantities of delivered wood, its quality and continuity of delivery, especially during the winter. Often traders get more wood (who export it, raw or slightly processed), than producers who process that wood and create added value and jobs. They also talk about the **lack of new, qualified staff**, which could replace older and experienced craftsmen, technologists and engineers, who currently "carry" the wood processing sector of BiH. A complete array of wood processing personnel is missing: from craftsmen, technicians, to production managers and especially engineers. This situation requires urgent intervention in the education system to adapt the educational process to the needs of the wood processing sector. **Cooperation between the economy and educational institutions** (universities, faculties, high schools) in BiH **is not at a satisfactory level**. The practical classes for students are not sufficiently developed. Cooperation between companies is at a low level. The equipment currently enables the achievement of the desired quality in production, but for further development, **it will be necessary to modernize the technology**, especially if we take into account the requirements of foreign customers in terms of constant, high-quality products. Most companies in wood processing have a

problem with the design and technical preparation of production, so they lag behind European competition in this area. There are **significant production capacities that are not used**. The reasons for this, among other things, are the problem of raw material supply, lack of qualified staff, insufficient knowledge of the foreign markets. **Buyers** from Germany and other EU countries still **do not have enough information about our producers and their capacities**. On the other hand, **producers do not have enough knowledge about foreign markets and sources of information for them**. Our manufacturers are mostly waiting for a foreign customer to find them, instead of actively looking for customers. Finding foreign buyers is more often the result of occasional contacts and acquaintances (usually through our diaspora) than it is the result of a systematic approach to market research (Savić and Gackić, p. 28-31, 33, 35-36, 92).

Novaković and Borojević (2020) also argue that the wood processing sector faces a **major shortcoming of a quality workforce**. The education of a highly qualified workforce is continuously carried out only at the Faculty of Mechanical Engineering in Sarajevo. In the Republic of Srpska, at the Faculty of Forestry in Banja Luka, the department of mechanical wood processing has been formed, but in the last three years no student has been enrolled (p. 47).

Targer (2021) conducted research that pointed out that the biggest challenges faced by wood processing companies are: **lack of raw materials** (70%), **delay of raw materials from suppliers** (60%), **lack of professional staff** (60%), **lack of funding sources (20%)**, and a sudden jump in raw material prices, delayed delivery to customers, unprofitable operations, lack of mechanical capacity (10% each).

Thus, it can be concluded that **weak links extend through the entire value chain. At the beginning of the chain, it is the supply of raw materials, in its middle it is the lack of professional staff, the need to improve production processes, better capacity utilization and improvement of production technologies, and at the end of the chain, it is the need for information on attractive export markets, potential buyers and current trends, with a proactive market presence**.

Summary of chapter 5.1.
Since the chain is as strong as its weakest link, the value chain analysis is aimed at identifying the weakest points in the chain, which indicates areas for interventions. Improving these areas means filling the gap between the current and the desired state. As a result, all actors in the value chain have some benefits. Conducted value chain analyses identified the following most important gaps: 1) gap between required and available quantities of wood as input for production, including the problem of transparency and equality of the distribution system, 2) gap between labour produced by the education system and needs of the industry, including the problem of labour emigration, 3) gap between the current level of technology and latest technology used, including the need for optimization of business processes, improving design and technical preparation of production (*lean* production) and 4) gap between the producers and the foreign buyers, especially lack information on final consumers in foreign markets, despite quantities exported.

5.2. Competitive advantages/disadvantages of BiH companies

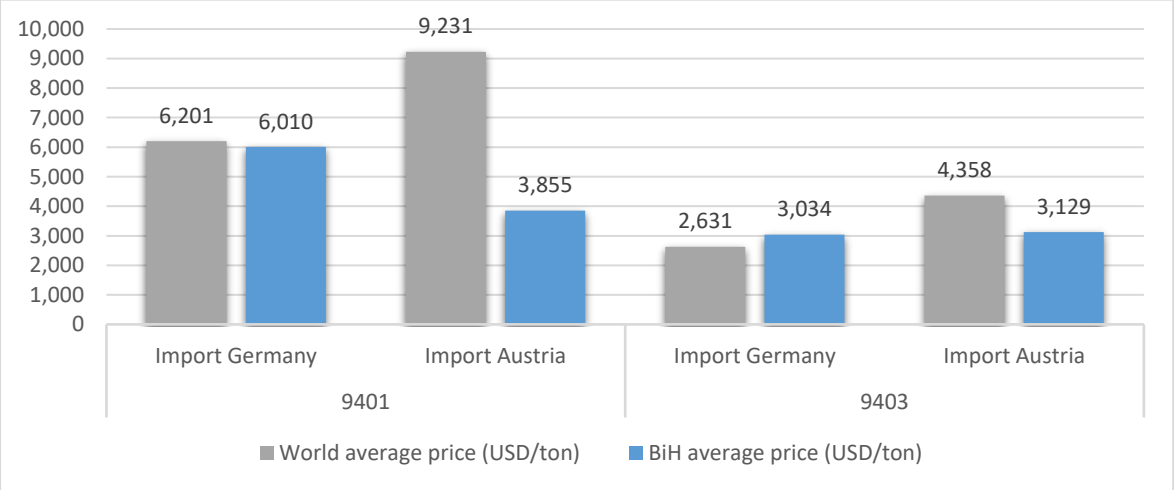
Michael Porter (1985) defined two types of competitive advantage: lower cost or differentiation relative to its rivals. Achieving competitive advantage results from a firm's ability to cope with the five forces better than its rivals. Achieving competitive advantage requires a firm to choose the type of competitive advantage it seeks to attain and the scope within which it will attain it. The two basic types of competitive advantage (differentiation and lower cost) combined with the scope of activities

for which a firm seeks to achieve them, lead to three generic strategies for achieving above-average performance in an industry: cost leadership, differentiation and focus. The focus strategy has two variants, cost focus and differentiation focus. In general:

- If a firm is targeting customers in most or all segments of an industry based on offering the lowest price, it is following a *cost leadership strategy*;
- If it targets customers in most or all segments based on attributes other than price (e.g., via higher product quality or service) to command a higher price, it is pursuing a *differentiation strategy*. It is attempting to differentiate itself along these dimensions favourably relative to its competition. It seeks to minimize costs in areas that do not differentiate it, to remain cost-competitive; or
- If it is focusing on one or a few segments, it is following a *focus strategy*. A firm may be attempting to offer a lower cost in that scope (cost focus) or differentiate itself in that scope (differentiation focus) (Porter, 1985, p 3, 11-16).

Data on average export prices of the most important export products in key export markets may indicate the strategy used by most wood processing companies in BiH. When it comes to the product group 9401 that are exported to Germany and Austria, it can be concluded that the average price of these products exported from BiH (6,010 USD / ton) is slightly lower than the average world price, i.e. average price of all countries exporting these products to Germany (6,201 USD / ton), and almost 2.5 times lower than the average world price of these products in Austria (9,231 USD / ton vs 3,855 USD / ton). When it comes to product group 9403, the average price of exported products from BiH (3,034 USD / ton) is slightly higher than the average world price of these products in Germany (2,631 USD / ton), while the average price of products from BiH (3,129 USD / ton) is significantly lower than the average world price of these products in Austria (4,358 USD / ton).

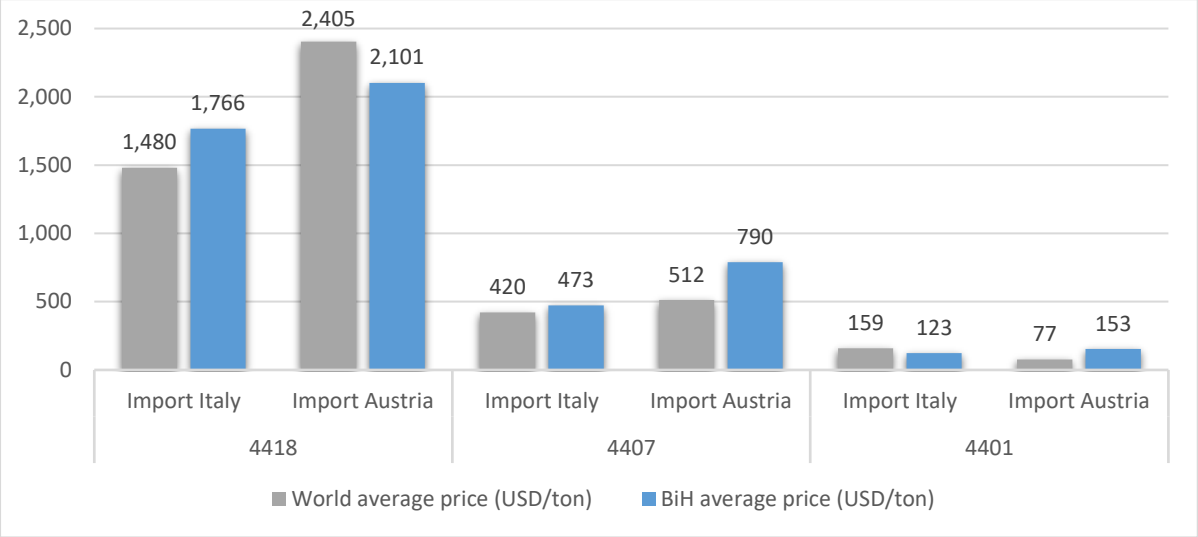
Figure 19. World average price vs BiH average price, for product groups 9401 and 9403 imported in Germany and Austria



Source: Author, based on the Trade map data (International Trade Centre, 2021a)

Regarding the product groups 4418, 4407 and 4401, the average prices of most of these products from BiH are slightly higher than the average world prices of these products in Italy and Austria as the most important export markets for these product groups. The exceptions are products 4418 in Austria and 4401 in Italy, whose average export price from BiH is lower than the average world price.

Figure 20. World average price vs BiH average price, for product groups 4418, 4407 and 4401 imported in Italy and Austria



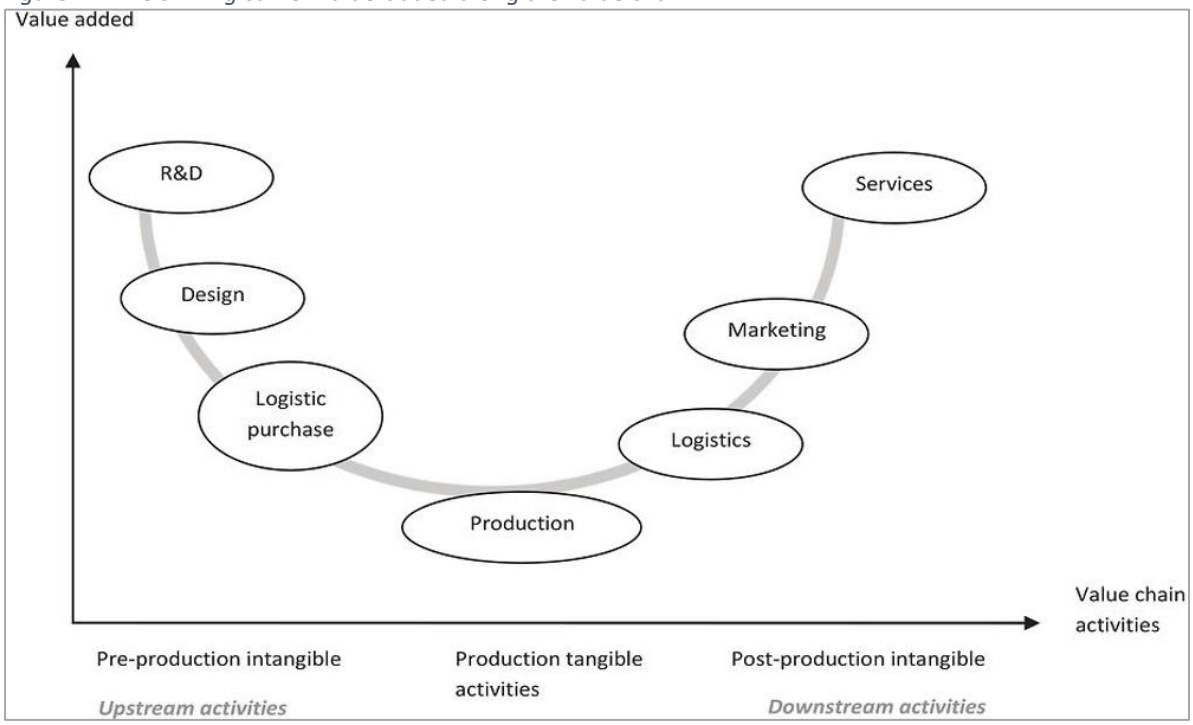
Source: Author, based on the Trade map data (International Trade Centre, 2021a)

Therefore, it may be assumed that BiH companies use the strategy of low prices when exporting products groups 9401 and 9403 to the markets of Germany and Austria, while when exporting product groups 4418, 44017 and 4401 to Italy and Austria they use the strategy of prices that are higher than average market prices.

Given that in the export structure of the wood processing industry product group 94 has a relatively higher share (compared to product group 44), where the strategy of low prices is dominant, the question arises how to increase product value and, accordingly, the price level.

The Smile Curve Theory argues that each stage in the production process has a different potential to add value. This difference is often presented as a “smiling curve”. According to the smiling curve, in many activities, the most value is typically added in either upstream activities, such as the development of a new concept, research and development (R&D) and the manufacturing of key components, or downstream activities, such as marketing, branding and customer service. In-between activities, such as product assembly, add the lowest share of value along the supply chain. These activities tend to be offshored to emerging and developing economies (OECD, 2017). On the other hand, R&D, marketing and branding as strategic and value-driven business functions are rarely offshored.

Figure 21. The smiling curve: Value-added along the value chain



Source: OECD, 2017

Conducted analyses (Pucar, 2014; Burks, Sipragic & Bogunovic, 2019), as well as project experiences, show that most wood processing companies are dominantly focused on production. There is a lack of financial and human capital to invest in pre-production and post-production functions and digitalization of production-related processes (market failure); there is a lack of interactions between business sectors and structures enabling innovations in pre-production, production and post-production activities (network failure) and there is lack of structures, policies and instruments to address and support innovations in industrial SMEs (government failure) (Eda - Enterprise development Agency, 2021).

Therefore, it may be argued that one of the key disadvantages of wood processing companies is the fact that other business functions that may support the creation of products with higher added value (e.g. market research, new products development, industrial design, marketing and branding, after-sales services, etc.) are underdeveloped or do not exist. Most wood processing companies perceive themselves (only) as product producers, and not as value creators. Often, they don't have information about the profile of the final consumers, their needs, wants, desires, lifestyle, problems, etc. and how their products/offer can become gain creators or pain relievers, thus creating a value proposition - as described in the publication *Value Proposition Design* (Osterwalder, Pigneur, Bernarda, Smith, 2014). Therefore, it is very difficult to create an offer (including product, services, communication, distribution channels, etc.) that will be perceived as highly valuable. The reasons for this situation can be found in the fact that on the one hand, many companies are still not aware of the importance of these functions in improving existing and creating new products of higher added value, and on the other hand, consultant services and human resources (as potential employees) in these areas are almost non-existent.

However, there are examples of companies that have developed these functions and whose business is more marketing than production-oriented, and which achieve excellent market results. Some of such companies and brands are Artisan, Gazzda, MS&Wood, Zanat and some others. Their experiences

can be an inspiration and guide to those companies that recognize the benefits of such a business model and are willing to work similarly.

So, if we as advantages/disadvantages perceive not only those factors that companies can influence but also those factors that are beyond their control (but they significantly affect their competitiveness), then they can be summarized as in the following table.

Table 14. Advantages and disadvantages of the wood processing companies

Advantages	Disadvantages
- **A long tradition of wood processing in Bosnia and Herzegovina** - inherited workforce with knowledge and experiences from large wood processing systems such as "Šipad" (holding company, which use to gather all the wood processing companies in BiH); - **Technical/production knowledge** - ability to produce high-quality furniture, at a price that is lower than that of the competition, for the same quality level; - **Flexibility** – in terms of the possibility of producing small and medium series, and adapting to changing customer requirements; - **Good quality and image of some types of wood originating from BiH (e.g. Bosnian beech)**; - **Recognizable design and quality of some furniture brands from BiH**, among others, thanks to the prestigious international design awards (e.g. Red Dot Award) for pieces of furniture produced by Artisan, Gazzda and others; - **Good image of wood processing companies from BiH** - thanks to the mentioned well-positioned companies and brands.	- **Insufficient and unreliable sources of wood supply** - producers have problems related to the quantities of delivered wood, its quality and continuity of deliveries, particularly during winter; - **Insufficient level of utilization of production capacities and equipment** - as a consequence of the insufficient volume of procured wood, which endangers business continuity and negatively affects liquidity; - **Lack of professional staff** - emigration of workers, wood processing engineers and technicians are not created by the education system (to the necessary extent), poor HRM practice and knowledge in companies, low level of employee satisfaction, leaving work, difficulties in attracting new employees; - **Business and production processes are not *lean*** - there is a space and need to make improvements concerning the organization of production, the flow of raw materials, improvement of certain business operations etc. That is a prerequisite for automation, digitalization and improvement of productivity; - **Relatively low level of finalization (added value)** - as a result of lack of knowledge and underdeveloped functions such as R&D, industrial design, marketing and branding, as well as an underdeveloped consulting market in the mentioned areas; - **Lack of communication and cooperation between companies, as well as between companies and relevant faculties;** - **Undeveloped quality infrastructure for the wood processing sector in BiH** - there is only one accredited body in the wood processing sector of BiH (Laboratory for safety testing of wood products in Zenica); - **Business models that are predominantly based on the provision of services to customers from abroad and the lack of own products**, make them relatively risky.

Source: Author

These findings are relatively similar to those of the project "Local Integrated Development"[17] which identified the following opportunities for growth of the wood industry of BiH: positive growth trends

[17] The project "Local Integrated Development" was funded by the European Union, and implemented by the United Nations Development Program (UNDP) in co-operation with 21 local communities in period 2016-2019.

in BiH and regional markets; proximity to EU market and flexibility of local producers; the excellent international reputation of BiH producers/companies; stronger import control in BiH with the use of EU rules and regulations; utilization of new technologies in wood. On the other hand, identified challenges for the sector are: lack of qualified and skilled workforce; lack of raw material- the inequitable system of distribution; illegal logging and increased use of low-value assortments; inadequate cooperation between BiH producers; lack of innovative/original products (UNDP, 2017).

As mentioned before, many of the mentioned disadvantages wood processing companies cannot solve themselves - the *Micro-level* of the Systemic Competitiveness Framework (Meyer-Stamer, 2005, p. 3), but they need support from the *Meso-level* (targeted policies and support instruments, relevant institutions, domestic and international organizations and projects) and Macro level (regarding raw material supply, quality infrastructure, education of wood processing engineers and technicians, etc.)

Summary of chapter 5.2.
There are three generic strategies (ways of competing on the market by companies): cost leadership, differentiation and focus. It may be assumed that BiH companies use the strategy of low prices - cost leadership when exporting products groups 9401 and 9403 to the markets of Germany and Austria, while when exporting product groups 4418, 44017 and 4401 to Italy and Austria they use the strategy of prices that are higher than average market prices. Some of the key **advantages** are a long tradition of wood processing in BiH; technical/production knowledge; flexibility; good quality and image of some types of wood originating from BiH (e.g. Bosnian beech); recognizable design and quality of some furniture brands from BiH, among others, thanks to the prestigious international design awards (e.g. Red Dot Award) for pieces of furniture produced by Artisan, Gazzda and others; good image of wood processing companies from BiH. Some of the key **disadvantages** of the wood processing companies/industry are: insufficient and unreliable sources of wood supply; insufficient level of utilization of production capacities and equipment; lack of professional staff; lack of communication and cooperation between companies, as well as between companies and relevant faculties; undeveloped quality infrastructure for the wood processing sector in BiH; business models that are predominantly based on the provision of services to customers from abroad and the lack of own products; relatively low level of finalization (added value); business and production processes are not *lean*.

5.3. Future forecasts of the changes in the supply chains expected by buyers

The economic interruptions caused by the Covid-19 crisis have exposed many vulnerabilities of the European supply chain design and raised doubts about current risk practices from a predominantly strategic perspective. Globalized supply chains, single-sourcing strategies, and dependence on sourcing from specific, remote geographical regions such as China have made it difficult for European companies, and consequently governments, to respond to market disruption with the magnitude of this pandemic. The consensus among supply chain risk professionals and academics holds that the resilience of supply chains on the one hand, and the competitiveness of their business – including cost efficiency - is the core interest of corporations. Past habits have shown that the concern of competitiveness and production costs have outweighed concerns for resilience (Nechev & Jelenka Kirchner, 2021, p. 12).

The pandemic has already had major impacts upon global foreign direct investment (FDI) flows, which plummeted by 44% in 2020 (OECD, 2021). Yet, the Western Balkan economies emerged less affected by this shock than other regions. Inflows of FDI to the Western Balkans grew by 20% in the first half of 2021, exceeding the level of two years ago. Most of this increase was an investment that was postponed during the early stages of the pandemic, but part of it may also be attributable to post-

pandemic near-shoring, especially in Bosnia and Herzegovina, Montenegro and Kosovo (Vienna Institute for International Economic Studies, 2021).

Demonstrated FDI resilience in several sectors, global value chain diversification, and potential nearshoring could contribute to the much-needed sustainable and inclusive growth in the region in the post-pandemic era. Manufacturing received the most FDI in Bosnia and Herzegovina, North Macedonia, and Serbia. Official FDI statistics for the entire region show a 28% contraction in manufacturing FDI in 2020 compared to the 2015–19 average (World Bank Group, 2021, p. 9).

European investors have long dominated FDI inflows in the Western Balkans region and continue to expand investment in many global value chain (GVC) intensive sectors. Prompted by accelerated technology adoption, economic governance realignment, the push for sustainability and resilience-oriented restructuring, and unprecedented global shipping delays, multinational firms are diversifying their global production networks and creating new opportunities for the Western Balkan region. Investors seek to reduce overdependence on single locations for production and make their global value chains more resistant to external shocks. New technologies have enabled firms to adopt new modes of business operations and embrace more flexible and agile value chains. Delivery delays, congestion, and soaring freight rates during and post-Covid-19 have also prompted firms to rethink their supply chains. All these factors could result in diversification, reshoring, and nearshoring. Given the Western Balkan economies' geographic and cultural proximity to EU member countries; its well-educated, young, and multilingual workforce; and relatively lower wages, the region is well-positioned to benefit from potential nearshoring (World Bank Group, 2021, p. 9).

Parallel to the agreements in the context of EU enlargement, the Western Balkans have joined the Pan-Euro-Mediterranean (PEM) Convention, a system which was established in 2013 and modernized in 2020 to allow for full cumulation of origin between several EU partner countries. This harmonizes production and supply chains between the EU and its partnering states such as the EFTA states or the Western Balkans because products or parts originating in one country are treated as if produced or manufactured in any other of the participating states (Nechev & Jelenka Kirchner, 2021, p. 15-16).

The Western Balkans are physically close to the EU. This proximity allows for easier inspection to guarantee compliance with European norms and standards. It also decreases the distance for shipments of final products or parts. The carbon footprint of globalized supply chains is immense and the trade practices of European economies are at odds with the EU's ambitious climate plans. Shorter distances for products to travel (on land) will help the EU meet its climate targets. In the Western Balkans, the EU has the unique chance to invest in the infrastructure and technology of tomorrow, almost from scratch. This will not only have a measurable impact on the carbon footprint of Europe as a continent but will also help champion the ambitious EU Green Deal (Nechev & Jelenka Kirchner, 2021, p. 15, 17).

Western Balkan economies can certainly benefit from possible changes in global production in the coming years. Nearshoring, i.e. moving of production from locations that are more distant from home to closer ones, is likely to occur in the coming years, at least for some European companies. A survey of 3,500 German companies operating abroad shows that 16% of them are considering changes in supply chains, and 12% are thinking about new locations. A survey of 2,400 German companies that work with companies from other countries indicates that 40% of them have supply-chain issues, and 68% of those with issues are thinking about changes. Even if just a small fraction of this is realised, it is still likely to be significant for the small Western Balkan economies. Western Balkan economies come as a natural choice for nearshoring – they are geographically close to Germany (and Western Europe in general), and they have the lowest production costs in the whole of Europe (Jovanović et al. 2021, p. 106).

However, to fully benefit from these likely developments, the analysis suggests that Western Balkans may need to change the narratives around their economies, from the destination which offers low costs for investors, to the destination which offers high quality. Wages turned out to be insignificant for FDI in these economies. This does not mean that labour costs are irrelevant for investors, but just that all these economies have sizeably lower wages than Western Europe, because of what the factor that gives an advantage to one country over another is not wages, but other things. The same holds for taxes, which appeared to be econometrically significant only in the long run, and were always rated towards the bottom of the list of the factors that are important to foreign investors in the surveys. No investor that was interviewed pointed out taxes or wages as an obstacle for investing in the Western Balkans, but many of them complained that the quality of the labour force was lower than expected, that institutions were weak, that education should be improved. Therefore, putting a focus on skilled labour, investment in education and training, and modernisation of the educational system would be beneficial for attracting investors in the time to come. Improving infrastructure and governance would be similarly important from the perspective of current and potential investors. (Jovanović et al. 2021, p. 5-6, 107).

Summary of chapter 5.3.
Near-shoring to countries and regions closer to Western Europe is likely to emerge after the pandemic. Even if it turns out to be on a smaller scale, it can still have a major impact on the Western Balkan economies due to their small sizes. Relevant surveys show that the Western Balkan economies appeal to Western European companies, not just because of their good geographical locations and competitive wage levels, but also because of 'soft' factors such as cultural proximity and the reputation of their workers as skilled and hard-working. To enhance their potential in the post-pandemic world, **Western Balkans should change the narrative from economies that offer low costs for investors, to the destination that offers high quality**. Therefore, further investments end efforts are needed in education and training, modernisation of the educational system, improving infrastructure and governance.

6. Trends and opportunities in identified markets

6.1. The effects of the Covid-19 in key export markets in the EU and its consequences

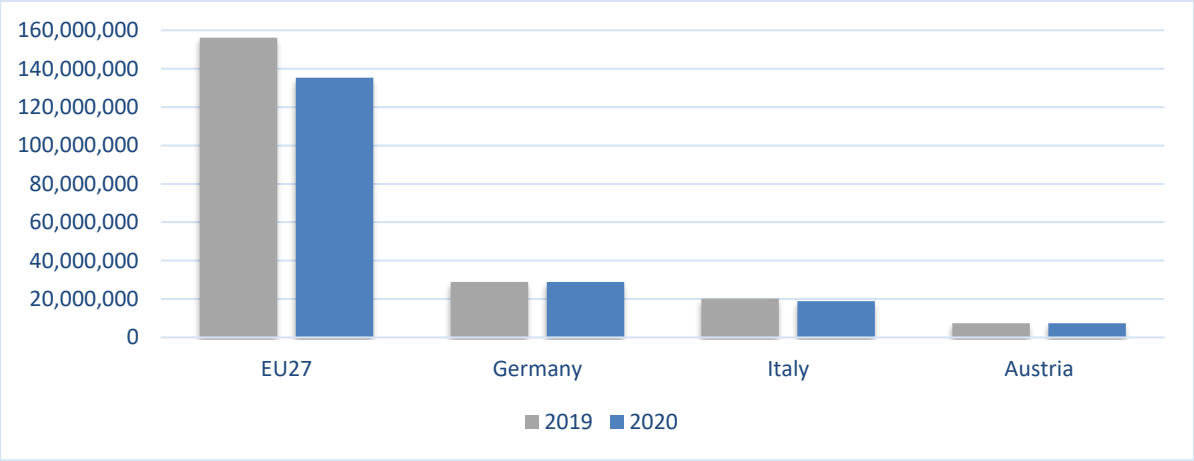
The Covid-19 crisis has had an abrupt impact on the EU27 economy. The real GDP is expected to reach pre-crisis levels by mid-2022 in both the EU and the euro area. The situation is more positive than the initial forecasts from the beginning of the crisis, but a return of the economic activity to the pre-crisis levels would still be slow growth for the EU industry as compared to other leading economies. Most manufacturing-based industries started recovering relatively quickly in Q3 2020, as confinement measures were increasingly lifted and as a result of various measures (e.g. the recognition of 'essential' sectors and their workers and green lanes to ensure transborder transport and supply chain functioning). However, there are remarkable differences in performance amongst but also within sectors. The sectoral and value chain analyses show that the pandemic acted as an accelerator of digitalization (de Vet et al., 2021, p. 65).

The pandemic and, consequently, the lockdown in most of the European Union member countries have led to a slowdown in the forestry industry and forest management activities across Europe. The outburst of Covid-19 poses a series of challenges for the forestry industry, and the wood-based products industry, causing a great impact on the whole forest value chain, from sustainable forests and plantation management to wood-based manufactured products and byproducts. One of the main

problems the industry is facing is a potential shortage in the workforce, especially in those countries that rely on the foreign workforce, due to travel restrictions. All these factors influenced the forest cyclic activities like forest management, planting or harvesting, which had an impact on the value chain. According to various sources, sawmills have been struck hard and some forest-based companies are adapting their production chain to produce fibre material for sanitary use (ProPopulus, 2021).

Statistics on the production of manufactured goods related to wood, wood products and furniture[18] in 2019 and 2020 show that at the EU level in 2020 there was a decrease in the value of relevant manufactured goods by about 13% compared to the previous year (before the Covid-19 pandemic). In Germany and Austria, the value of relevant manufactured goods in 2020 remained at almost the same level as in 2019, while the value of production of relevant manufactured goods in Italy decreased by about 7%. Although these data are not complete (some countries did not provide data for some product categories), this approximates and indicates the impact of the Covid-19 pandemic on wood, wood products and furniture production in 2020 (Eurostat, 2021).

Figure 22. Value of manufactured goods - wood, wood products and furniture in 2019 and 2020, in 000 EUR



Source: Author, based on the Eurostat data (Eurostat, 2021)

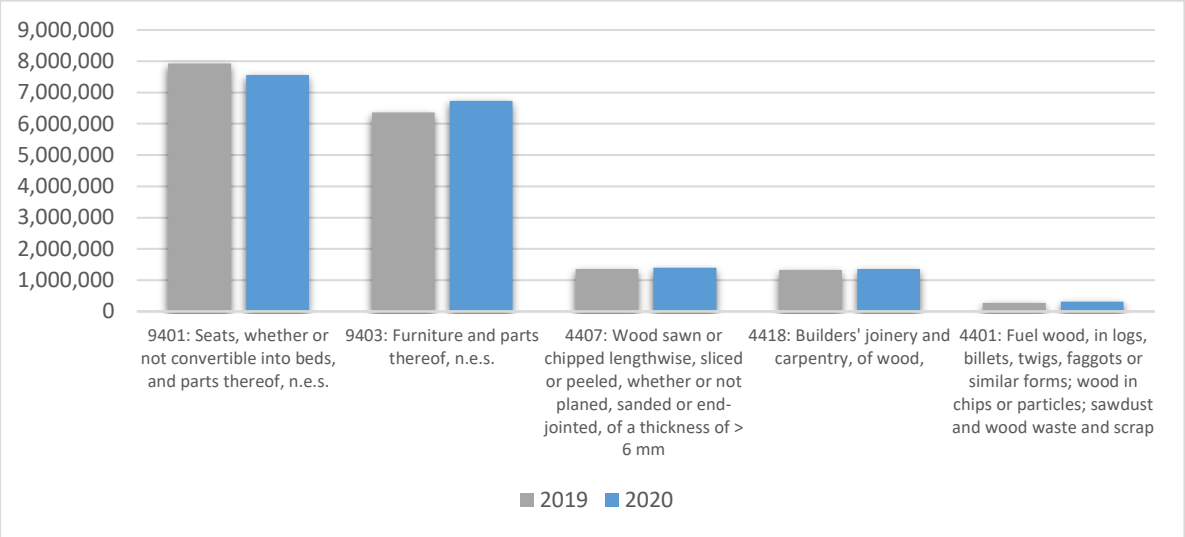
The impact of the Covid-19 pandemic on key export markets (Germany, Italy and Austria) can also be estimated based on their imports during 2019 and 2020. Thus, for example, a significant decrease in imports (from all over the world) may be related to a greater impact of Covid 19.

When looking at German imports of those products that are most important for BiH's exports[19], it can be concluded that in 2020 import of these products remained almost at the same level (USD 17.35 billion) as before the pandemic in 2019 (USD 17.25 billion). Imports of products *9401: Seats, whether or not convertible into beds, and parts thereof, n.e.s.* was decreased the most (by 4.63%), while the imports of products *4401: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap* was increased the most (by 14.25%) (International Trade Centre, 2021a).

[18] This statistics includes 72 product categories according to the Prodcom classification.

[19] These are: 9401: Seats, whether or not convertible into beds, and parts thereof, n.e.s., 9403: Furniture and parts thereof, n.e.s., 4407: Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm, 4418: Builders' joinery and carpentry, of wood and 4401: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap.

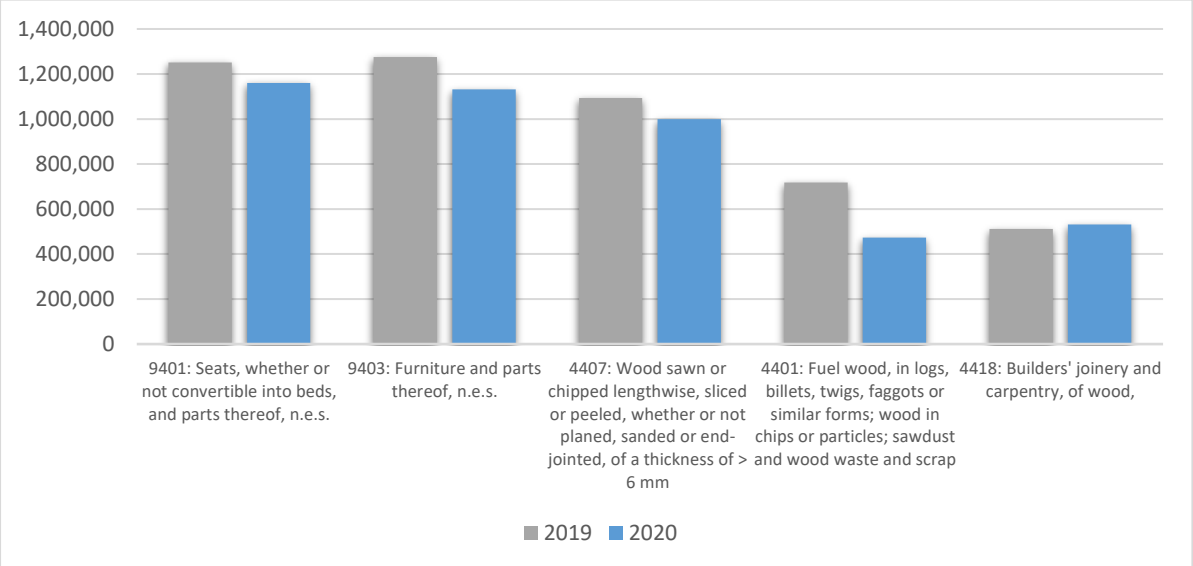
Figure 23. German import of key product groups in 2019 and 2020, in 000 USD



Source: Author, based on the Trade map data (International Trade Centre, 2021a)

Italian imports of relevant products in 2020 was decreased by 11.42% (from USD 4.85 billion in 2019 to USD 4.30 billion in 2020). Imports of product *4401: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap* was decreased the most (by 34.24%), followed by *9403: Furniture and parts thereof, n.e.s.* (decreased by 11.28%), etc. On the other hand, the product *4418: Builders' joinery and carpentry, of wood* was the only one which import was increased (by 4.10%) (International Trade Centre, 2021a).

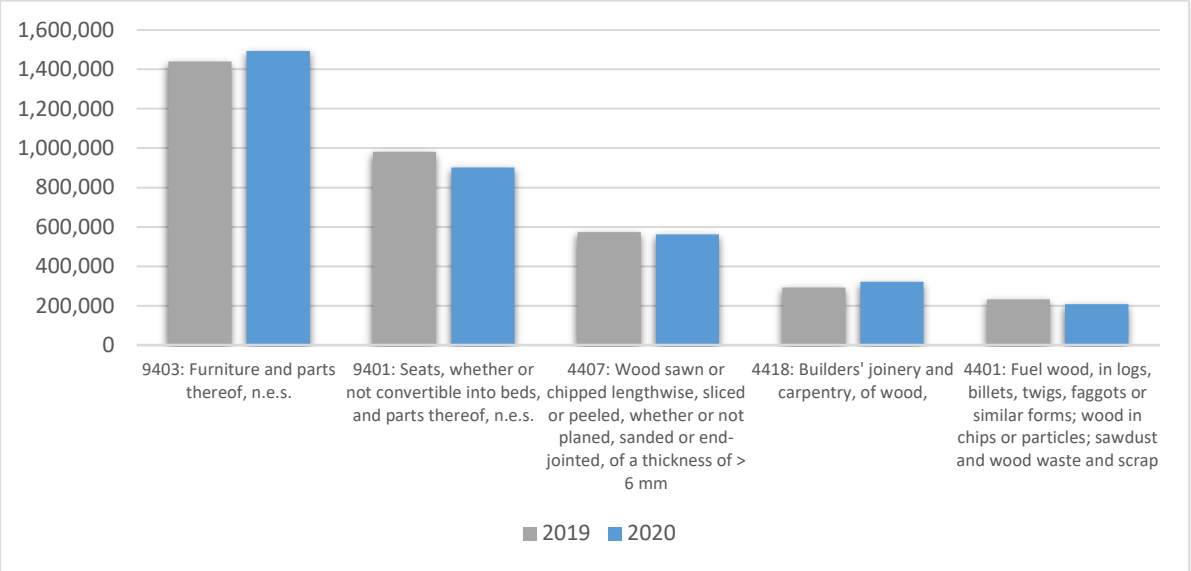
Figure 24. Italian import of key product groups in 2019 and 2020, in 000 USD



Source: Author, based on the Trade map data (International Trade Centre, 2021a)

Austrian imports of relevant products in 2020 remained almost at the same level (USD 3.49 billion) as before the pandemic in 2019 (USD 3.52 billion). Imports of products *4401: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap* was decreased the most (by 10.78%), while the imports of products *4418: Builders' joinery and carpentry, of wood*, was increased the most (by 9.84%) (International Trade Centre, 2021a).

Figure 25. Austrian import of key product groups in 2019 and 2020, in 000 USD



Source: Author, based on the Trade map data (International Trade Centre, 2021a)

Summary of chapter 6.1.

The Covid-19 pandemic in most of the EU countries has led to a slowdown in the forestry industry and forest management activities across Europe. The outburst of Covid-19 poses a series of challenges for the forestry industry, and the wood-based products industry, causing a great impact on the whole forest value chain, from sustainable forests and plantation management to wood-based manufactured products and byproducts. Having in mind both production and import data regarding the key export markets of BiH (Germany, Italy and Austria), it may be concluded that the **Covid-19 pandemic did not influence significantly German and Austrian markets**, since the production and import of relevant product groups remained at the almost same level as before the pandemic. On the other hand, **the impact of the Covid-19 on the Italian market was relatively strong since the value of production** of relevant manufactured goods in Italy **was decreased by about 7%** in 2020 compared to 2019, while Italian **import** of relevant wood products and furniture **was decreased by 11.76%**.

6.2. Current business and technological trends

Covid-19 forced nearly 60% of the world's population to stay at home, causing an explosion in working-from-home, home schooling, etc. The long months of lockdown, the closure of schools and businesses, as well as widespread working from home gave rise to new needs in terms of home decoration. **Working and living full-time at home, made it necessary to adapt living space and improve its comfort**. Spending more time at home pointed out the usefulness of having functional spaces for the whole family, possibly modular furniture also suitable for working from home. Thus, great attention has been put to the home office environment, but also to the kitchen. Consumers invested in improving their living spaces, often allocating to furniture substantial portions of income made available because of decreased expenditure for restaurants, vacations and other leisure activities. For this reason, the worldwide pandemic-induced contraction in furniture consumption was limited in size (-6% over 2019) (Lectra, 2020, Lectra, 2021, Pelizzari and Pisa, 2021, p. 11).

The lockdown caused a remarkable upturn in the residential furniture market in the summer of 2020. In the office furniture market, the recovery came later, weakening the financial results of certain manufacturers in the sector in the second quarter of 2020. The office furniture market had to meet

specific challenges during this crisis. The challenge was to create B2C products for employees who had to work from home, digitize catalogs, integrate PIM (Product Information Management) and ERP systems, create high quality but still affordable products. In these two markets, digitalization is strengthening the link between consumers and brands, which helps reduce lead times and develop smart stock management processes (Lectra, 2021).

The prolonged period at home is also influencing how consumers want to buy products. The months of global quarantine saw a 12% increase in first-time online buyers, boosting consumer comfort for purchasing products online. Furniture manufacturers seeking to reach this digitally connected consumer will have to increase their online presence and cater to the rising expectations for price transparency, speed of delivery and product quality. **The furniture consumer is online looking for unique styles that reflect their social values and improve the comfort and functionality of their home**. Companies seeking to position themselves for a successful rebound and meet the demands of the post-Covid consumer will need to strike the right balance of speed, convenience and competitive pricing of ecologically sound furniture (Lectra, 2020).

The pandemic is strengthening **consumer demand for socially active brands that share their values** and for **products that respect the environment**. In response to Covid-19's effect on personal health and its correlation to pollution and environmental habitat destruction, many consumers are shifting their behavior towards healthier lifestyle habits, thoughtful consumption and the betterment of society through self-improvement. For the furniture industry, the expanding market size of **eco-friendly furniture**, estimated to reach USD 59.8 billion by 2027, best exemplifies the rapid progression of these consumer trends (Lectra, 2020).

The concept of "**green furniture**" or "**ecological furniture**" may seem very broad, but it could be defined as **all those pieces of furniture that are composed of natural or recycled materials without any type of additive that alters them and manufactured in the most respectful conditions both for the environment and for people**. This type of furniture is often handmade. The woods used for the manufacture of ecological furniture are "eco-certified", called PEFF or FSC certified and do not contain volatile organic compounds. In the case of the coverings, they are mostly jute, wool, cotton, linen, always 100% natural and organic. In order to classify a piece of furniture as „eco-friendly", all phases of the product life cycle must be taken into account: conception and design, raw materials, the production process and the sale and distribution of the product (Pau&Latorre, 2021):

- Conception and design - when it comes to conceiving and designing ecological furniture, designers do so under a sustainable and ethical conception. They aim to manufacture durable, sustainable furniture with a friendly production based on the circular economy model, leaving aside the obsolescence that is assigned to many conventional furniture. It is also important that the furniture is easy to dismantle, especially so that it can be better recycled. This type of furniture will be manufactured trying to optimise the use of raw materials and energy resources as much as possible, as well as trying to minimise CO_2 emissions and reduce the environmental impact.
- Appropriate sourcing and use of raw materials - The materials from which eco-friendly furniture is made should be natural, recycled or organically and sustainably produced. For its production, the most commonly used raw material is wood, of which there are certifications that allow identifying if the wood comes from sustainably managed forests that promote replanting and not deforestation, as well as if it belongs to a species in danger of extinction. The most common wood certifications are FSC certification (Forest Stewardship Council)[20] and PEFC

[20] To become holders of FSC certification, organizations must meet the requirements of one or more reference standards defined by the FSC. After the organization's production processes are adjusted to the requirements of regulatory documents, the organization is evaluated (audited) to determine compliance with applicable standards. Responsibility for issuing certificates and conducting annual audits of issued certificates rests with

certification (Programme for the Endorsement of Forest Certification)[21]. Another type of material used in the manufacture of ecological furniture are fibres of vegetable origin that come from ecological plantations and that do not receive any type of chemical treatment during their processing. Some vegetable fibres, due to their hardness, are used to make the structure of the furniture, while others are used for filling and padding. These fibres are: cotton, bamboo, wicker, rattan or esparto grass, among others. Fibres of animal origin are also used which come from organic livestock farming and which, like vegetable fibres, do not receive any type of chemical additive during their treatment. These fibres are wool, silk or horsehair.

- Processing of the raw materials until they become furniture - Just as the design or sourcing of raw materials is very important when it comes to making green furniture, the production side must also be sustainable and environmentally friendly. Ecological furniture should be produced using environmentally friendly production systems, minimising energy consumption and gas emissions, and with minimum waste generation. In terms of finishing, traditional furniture often uses paints, adhesives, varnishes or solvents that are polluting and harmful to the environment and health. In this case, green furniture usually has alternative finishes that are not harmful to the health of the people who make it. These types of finishes can be water-based varnishes, natural beeswax, vegetable oils, for example.
- Distribution and sale of the product - As in all phases of the manufacture of eco-friendly furniture, it is essential that the distribution, transport and sale of the furniture have the minimum impact on the environment. Packaging must be sustainable and made from recycled materials. In terms of transport, it must be efficient not only in terms of space optimisation but also in the planning of the shipping route, saving energy and favouring efficiency.

Eco-friendly furniture is manufactured based on the concept of eco-design following a **circular economy model**. The circular economy is based on the concept of the 7Rs: recycle, redesign, reduce, reuse, repair, renew and recover. The circular economy tries to minimise the impact on the environment not only during the manufacturing process, but also during its use and at the time of disposal. The circular economy is a model based on the use of resources and the reduction of raw materials as an alternative to the linear economic model based on extraction, production, consumption and disposal[22]. The manufacturing process of goods and services involves an environmental cost not only at the time of production, but also at the end of its life cycle. In the case of the circular economy, there is a goal to optimise materials and waste to the maximum by extending their useful life. In this way, it is left aside the current system of "use and throw away" which was dominant in the past in favour of respect for the environment based on prevention, repair, reuse and recycling (Pau&Latorre, 2021).

As announced in its **Circular Economy Action Plan (CEAP)[23]** in March 2020, the European Commission aims to make products fit for a climate-neutral, resource-efficient and circular economy. The **Sustainable Products Initiative (SPI)[24]** will be an important instrument to support this renewed European approach towards product policy. As a legislative proposal, SPI intends to widen the scope

certification bodies that are impartial and independent of the FSC, and internationally accredited by Accreditation Services International (ASI). More information is available at: https://fsc.org/en/adria-balkan/bos

[21] Procedure for PEFC chain of custody certification is described here: https://www.pefc.org/for-business/supply-chain-companies/how-to-get-certified

[22] EFIC collection of circular economy best practices in the furniture industry is available here: https://www.efic.eu/best-practices

[23] The Plan is available here: https://eur-lex.europa.eu/resource.html?uri=cellar:9903b325-6388-11ea-b735-01aa75ed71a1.0017.02/DOC_1&format=PDF

[24] More information about the Initiative: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12567-Sustainable-products-initiative_en

of the **Ecodesign Directive** beyond energy-related products to make it applicable to the broadest possible range of products and make it deliver on sustainability, including circularity. **EFIC - the European Furniture Industry Confederation** has recently issued its position paper[25] that highlights the need of taking a value chain and ecosystem approach, as the success of the furniture industry in transitioning to a more circular economy, also depends on suppliers of components and materials, on consumer mindsets and behaviours, as well as on players involved in distribution and waste management, including new service providers that will appear on the market (Tracogna, 2021, p. 15). According to data collected from 12,000 participants of the research across 15 countries[26] in 2021, 86% of consumers, globally, try to avoid products that damage biodiversity and about seven out of ten (or 72%) want to choose products that do not contribute to climate change. As such, consumers pay attention to these factors when choosing wood-based products and packaging and expect companies to ensure their products do not harm the environment. When asked about influences on their purchases of wooden products, consumers reported that protecting animals and plants and sourcing from sustainably managed forests are among their biggest motivators. The opportunity for ecolabels in wooden furniture and other sectors is growing, highlighting the value brands can gain from partnering with trusted third-party certification systems, and becoming an important factor of choice along with quality and price (FSC - Forest Stewardship Council, 2021a, p. 31).

The recent boom of digital technology does not change the fact that, **in terms of furniture, consumers still prefer the touch and feel experience**. Consumers need to test the product, to touch it, to feel the material, but also to benefit from recommendations and support to be reassured in their choices. Still extremely popular, high-street shops and customer support provided by in-store sales teams allow consumers to visit attractive showrooms where products are at their best. **Digital technology is an added tool that complements brick and mortar retail channels**, which still account for a significant percentage of purchases. It does not, therefore, compete with these stores, but instead makes them a unique place to fully experience the brand (Lectra, 2021).

The impact of the Covid-19 crisis on consumer behavior and manufacturing trends has heightened the **importance of digitalization and automation for the furniture industry**. Online-savvy consumers seeking personalized shopping experiences and competitive prices are pushing furniture manufacturers to innovate on their existing workflows. Manufacturers are taking aggressive measures to protect themselves against the downturn. Many furniture companies are achieving cost savings by boosting their operational efficiency. Digital technology is enabling furniture executives to boost production capacity, fulfil last-minute orders, and prevent delays in delivery time without increasing labor costs. To meet consumer demand for faster delivery, furniture companies are shortening their production cycles. Enabled with cloud-based software that connects their IT system with the cutting room, manufacturers can automatically process customer orders and simultaneously generate cutting jobs with all the necessary information: material, marker, cutting parameters, offloading addresses and cutting line assignment. To combat the effect of Covid-19 on staffing levels, as marked by sudden absenteeism, lower employee performance, and higher employee turnover forward-thinking manufacturers are choosing networked production systems and smart factories to make it easier to get new employees up and running faster, retain top talent, and produce more products with fewer workers. The uptick in Industry 4.0 investments—smart sensors, optics and automation capabilities—to build out digitized and connected workflows is a trend that is likely to continue well after the pandemic subsides. To enable their operational processes to work better together many manufacturers are deepening their investments in automation technology. The market size forecast

[25] The Position paper is available here: https://9e2160bf-a0b5-460b-aec7-e9af818978ee.filesusr.com/ugd/a1d93b_42844d7f427b498e8ece1fe643ab5734.pdf

[26] Consumers were surveyed in Canada, Chile, Colombia, China, Germany, India, Italy, Mexico, Poland, South Africa, South Korea, Sweden, Turkey, UK and USA.

for smart manufacturing and the digitalization of industrial processes is USD 514.3 billion by 2027 (Lectra, 2020).

As the furniture industry had already started its digital transformation, well before Covid-19, it was able to respond to this massive increase in demand. Digital transformation has thus enabled manufacturers and brands to be more **agile** in adapting their production, sourcing, and logistics processes, notably through automation. Adapting to e-commerce processes is a challenge that involves a profound change in a company's value chain. Digitalizing one's production processes and services is not limited to simply listing products on an online platform and connecting to an efficient delivery service. The impact of e-commerce begins with the consumer's shopping cart, with automated order management, highly effective stock management and optimized logistics. Regarding manufacturers, **digitalization requires optimizing real-time order planning, production, and material management processes, as well as connecting with end customers who increasingly want to be able to personalize the products they buy** (Lectra, 2021).

The transformation of consumption patterns led by e-commerce, such as production models operated through more agile and flexible processes closer to consumer markets, will continue after the crisis and encourage other players to take the leap too. The opportunities offered by digital transformation are key elements to ensure success in the future (Lectra, 2021). **The furniture of the future must be eco-friendly, tailor-made and multifunctional**. The companies that will be able to produce and market this kind of product will be centred on creativity and research into materials, with a particular focus on sustainability, digitalisation of production and commercial processes and investments in training and human resources (CDP Group, 2020).

Given the trend of the circular economy and decarbonization, the **increasing use of wood in construction is evident**. In 2019, the market share of new timber buildings in Germany rose to 20.8% in the segments permitted single-family and two-family homes. Some 101,569 new single-family and two-family homes were permitted in 2019 in Germany. Out of that, 21,171 were prefabricated timber houses. In Baden-Württemberg, the market share of prefabricated timber houses is 36.9%. On the second position is Hessen with 30.6%, followed by Rhineland-Palatinate with 26.1% and Bavaria with 24.8%. In Bremen, Hamburg and Lower Saxony, only 5.5% - 8.1% of new houses were built in wood (Knaus, 2020). As a renewable raw material, wood has an excellent ecological balance, which already takes the top place among building materials in the manufacturing process. The production of wooden building components requires far less energy than the production of other building materials. This reduces the amount of construction-related greenhouse gases. In addition, no waste products are produced during the manufacturing process which would lead to additional environmental pollution. Anything that cannot be used as construction wood for the house remains in the natural material cycle or is recycled in an environmentally friendly manner. Short transport routes and efficient processing technologies keep emissions low and also help to protect the climate. Wood gives houses excellent energy properties, helping to reduce the amount of fuel needed for heating and hot water, enabling significant CO_2 savings. Wood as a naturally grown building material is extremely low in pollutants and does not pollute the environment during construction or the residents during later use - one of the reasons why wooden buildings are particularly appreciated by allergy sufferers. Even after their long life cycle, wooden building materials have a positive effect on the environment - they can be easily recycled or disposed of in an environmentally friendly manner and often parts of a wooden building can even be used in new buildings after it has been dismantled (HolzKann, 2022).

'Innovation' tells of an approach that treasures the lessons of the past and interprets the present with a vision towards the future. 'Sustainability' is a transversal concept widespread globally as the only possible development paradigm capable of driving the transition from a linear growth model to circular economy models. Recently, **a new concept is emerging**, which arises from the union of these

two key words to form a third one, which we will probably hear more and more often in the near future. '**Innovability**' is the synthesis that expresses the **ability to constantly innovate while respecting the values of which the sustainable model is the bearer**. The challenge now is to start a virtuous process in which all the actions that generate innovation are based on a conscious approach that takes into account the possible effects from an economic, social and environmental point of view. Doing business with a view to 'innovability' means integrating innovation and sustainability into a broader and more aware vision that affects the entire value chain (Govoni, 2021, p. 10).

Having in mind the previously described business and technological trends, whose impact on business will be growing in the coming period, it can be concluded that **it is especially important to support companies to become aware of these trends[27] and** on the other hand **to support them to become more agile in terms of adapting their products and business processes to new requirements** (sustainability, eco furniture, digitalization, etc.). In short, it is important to support companies to introduce innovations and adopt a business model that is based on sustainability thus becoming closer to implementation of the emerging concept of 'innovability'.

Summary of chapter 6.2.
Lockdown due to the Covid-19 pandemic forced people to work and study from home, thus creating a need to adapt living space and improve its comfort. Substantial portions of income were allocated to **the (online) purchase of furniture**. Consumers look for unique styles of furniture that reflect their social values, respect the environment and improve the comfort and functionality of their homes. The furniture of the future must be **eco-friendly, tailor-made and multifunctional**. Eco-friendly furniture means furniture that is composed of natural or recycled materials without any type of additive that alters them, and which is manufactured in the most respectful conditions both for the environment and for people. Eco-friendly furniture is manufactured based on the concept of eco-design following a **circular economy model** and concept of the 7Rs: recycle, redesign, reduce, reuse, repair, renew and recover. Given the trend of decarbonization, the **increasing use of wood in construction is evident**. The impact of the Covid-19 crisis on consumer behavior and manufacturing trends has heightened the importance of **digitalization and automation** for the furniture industry. Digitalization requires optimizing real-time order planning, production, and material management processes, as well as connecting with end customers who increasingly want to be able to personalize the products they buy. Having that in mind, producers will have to accept the emerging concept - **innovability** (integration of words innovation and sustainability) that expresses the ability to constantly innovate while respecting the values of which the sustainable model is the bearer.

6.3. Classification of different levels of sustainability/green standards in BiH companies

In recent years, greater attention has been paid to the origin of the raw materials and the communication of good practices in the European wooden furniture sectors - a commitment that goes along with the work that the European institutions are carrying out in terms of ensuring sustainable products and deforestation-free supply chains. Efforts of the European Commission are focused on defining tools and policies aimed at ensuring supply chains free from deforestation and illegality. Recent data from WWF show that 15-30% of all wood globally traded is supposed to be illegally harvested (FSC - Forest Stewardship Council, 2021b, p. 32-33). According to the EU Regulation

[27] For example through the work of existing associations at chambers of commerce, clusters of wood processors, possibly through some new web platforms aimed for information, education and cooperation of wood processors, study and fair visits etc.

No 995/2010 of the European Parliament and of the Council of 20 October 2010 laying down the obligations of operators who place timber and timber products on the market[28], all manufacturers of wood products that want to export in the EU must provide complete product information along with evidence that the wood does not originate from illegal sources.

The research conducted by Globescan on behalf of FSC International, reports that 86 percent of consumers try to avoid products that damage biodiversity and about seven in ten want to choose products that do not contribute to climate change. As such, consumers pay attention to these factors when choosing wood-based products and packaging and expect companies to ensure their products do not harm the environment. When asked about influences on their purchases of wooden products, protecting animals and plants and sourcing from sustainably managed forests were among consumers' biggest motivators – nearly on par with product quality (Globescan, 2021).

The **FSC - Forest Stewardship Council Certification** is an international level certification, the purpose of which is to promote the correct management of forest resources, by monitoring the production processes of forest products (woody and non-woody). The FSC is an international non-governmental, independent and non-profit organization, whose goal is to protect the entire forest system through the definition of credible production standards, recognized and accepted by both the industrial and the environmental world. Among the supporting groups of the FSC are included some of the best-known names in the field of environmental responsibility and in the field of industrial production, among them: Greenpeace, WWF, Tetra Pak, Tembec, Suzano, Stora Enso, SCA, Sappi, IKEA, Hewlett-Packard Company (HP), CEPI (Belgium), B&Q (UK), ASDI, Arauco. The FSC protocols require every producer who wants to obtain the relative certification to find the resources useful for its manufacturing process from forests managed according to the FSC standards (Brera Interni, 2022).

Bosnia and Herzegovina is endowed with good forest cover that is spread evenly between the two Entities (FBiH has 48% and RS has 52%) and is well managed. Over 50% of forests in BiH are certified by Forest Stewardship Council (FSC) for sustainable forest management. Nearly 80% of the forest is publicly owned by the two Entities with the remaining 20% belonging to private owners. The public enterprises in RS (Šume RS) and Cantonal Forest Management Companies (CFMCs) in the FBiH are responsible for managing the public forests (World Bank, 2020, p. 5). As of May 2020, **over 1,88 million hectares - i.e. about 83% of state-owned forests in Bosnia and Herzegovina, are FSC certified**. This is a great accomplishment for Bosnia and Herzegovina as it brings this forest-rich country even closer to other countries in the Adria-Balkan area like Croatia, Serbia and Slovenia where over 95% of state-owned forests are already certified (FSC Adria Balkan, 2022).

The FSC, one of the largest and most credible certification schemes active in the wood, paper and forest products supply chains, launched during the first quarter of 2021 qualitative research on the European furniture sector. The survey involved companies based in Italy, Poland, Germany, Austria, the United Kingdom and the Balkans area. According to the results that emerged from the survey, **companies decide to get FSC certification following specific market requests or to access new markets**. Secondly, FSC is perceived as a strategic tool for creating strong and coherent corporate social responsibility policies - an aspect that confirms the desire to go beyond production chains and implement 'extended' product solutions. Most companies say they base their sustainable wood source from national retailers or neighboring countries, especially Italy, Germany, the United Kingdom and the Balkans; processing and production take place at the national level and, if exported, in countries such as Eastern Europe and China. Surprisingly, many of the survey participants admitted they did not yet actively promote certified products or even planned to do so (FSC - Forest Stewardship Council, 2021b, p. 32-33).

[28] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02010R0995-20200101

FSC certification is used as a strategic and competitive advantage for organizations that want to access the green segment of the market by differentiating their offer, and as a tool for implementing corporate social responsibility policy. To become holders of the FSC certificate, organizations must comply with the requirements of one or more reference standards defined by the FSC. After the organization's production processes are adjusted to the requirements of regulatory documents, the organization is evaluated (audited) to determine compliance with applicable standards. After a positive audit result, a certificate valid for 5 years is issued. Furthermore, certified organizations must undergo annual supervisory audits and, at the end of the five years, an audit to renew the certificate. Responsibility for issuing certificates and conducting annual audits of issued certificates rests with certification bodies that are impartial and independent of the FSC and internationally accredited by the Accreditation Services International – ASI[29] (FSC Adria Balkan, 2022).

Bosnia and Herzegovina, Croatia, Slovenia and Serbia are recognized as strategic areas for FSC, with significant forest resources (more than half of the total forest area is FSC certified) and with over 1100 Chain of Custody (CoC) certificates issued (FSC Adria Balkan, 2022). FSC chain of custody certification provides a credible assurance that products that are sold with an FSC claim originate from well-managed forests, controlled sources, or reclaimed materials. FSC chain of custody certification verifies that FSC-certified material has been identified and separated from ineligible and unacceptable material as it makes its way along the supply chain from the forest to the market. **In Bosnia and Herzegovina, there are 328 holders of the CoC and 8 holders of the Forest management certificate in 2022[30]** (FSC - Forest Stewardship Council, 2022). Also, there are **7 holders (companies) of the PEFC certificate** from BiH[31].

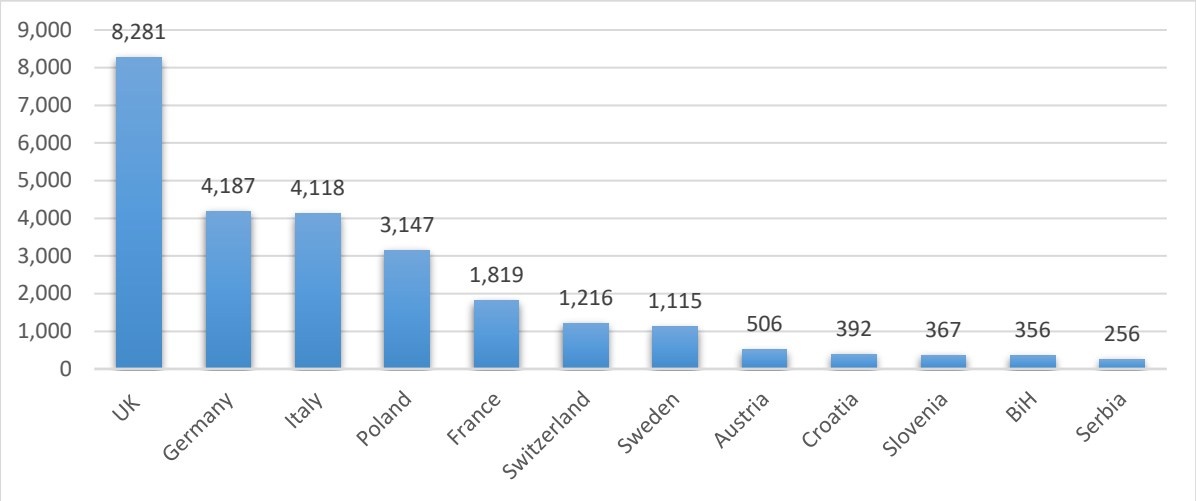
The European countries with the largest number of FSC-certified companies are the UK (8,281), Germany (4,187), Italy (4,118) and Poland (3,147). There are 356 companies in BiH with the FSC certificate, which is slightly less than Slovenia (367) and significantly more than Serbia (256) (FSC - Forest Stewardship Council, 2022).

[29] Detailed information on the procedure, available consultants, certification bodies, as well as downloadable standards are available at: https://fsc.org/en/adria-balkan/bos and https://fsc.org/en/adria-balkan/pr

[30] Holders of the Forest Management Chain of Custody - CoC standards on 14.2.2022 are: 1) Public Forestry Enterprise “Forests of the Republic of Srpska" JSC Sokolac, 2) Forestry Company “Una-Sana Forests” LLC Bosanska Krupa, 3) Forestry Company “Hercegbosanske šume” LLC Kupres, 4) Public Enterprise “Forests of the Tuzla Canton" LLC Kladanj, 5) Cantonal Public Enterprise for the State Forest Management “Sarajevo Forests” LLC, 6) Public Enterprise Forestry Company of the Zenica-Doboj Canton LLC Zavidovići, 7) Public Enterprise “Bosnian Podrinje Forests” LLC Goražde, 8) Forestry Enterprise “Forests of Central Bosnia” LLC. Holders of the COC for wood and wood products can be found in the FSC database: https://app.powerbi.com/view?r=eyJrIjoiN2U3NGMyNWEtZTAxNS00MzVhLWExNmMtOThhZjdiYjQ4MWNkIiwidCI6IjEyNGU2OWRiLWVmNjUtNDk2Yi05NmE5LTVkNTZiZWMxZDI5MSIsImMiOjI9

[31] Holders of the PEFC certificate on 14.2.2022 are: GOD d.o.o., Prevent Home d.o.o., Lockwood Bh d.o.o., Graviton d.o.o., Standard Furniture Factory d.d., ISOWOOD d.o.o. and Xylon Corporation d.o.o. Holders of the PEFC certificate can be found in the PEFC database: https://www.pefc.org/find-certified

Figure 26. Companies with the FSC certificate by countries



Source: Author, based on the FSC public certificate search data (FSC - Forest Stewardship Council, 2022) on 15.1.2022

In line with the trend of doing business according to the circular economy model and the growing demand for eco products, it is important to mention the **EU Ecolabel certificate**. That is a **voluntary environmental performance certificate** that is awarded to products and services. These products and services have to meet specific, identified criteria depending on the product groups, which reduce overall environmental impact. The EU Ecolabel is voluntary, based on multiple criteria, where a third party awards the use of the label to indicate overall environmental preferability within a particular product category based on life cycle assessment. **The EU Ecolabel logo is a guarantee to consumers that the product they are considering for purchase has a lower environmental impact in comparison to similar products on the market**. As of September 2021, 2,057 licences have been awarded for 83,590 products (goods and services) in the EU market. **The EU Ecolabel covers a wide range of product groups, among other furniture and wooden floor coverings**. EU Ecolabel products available in each country, together with the information on the licence holders, can be found on the E-Catalogue[32] (European Commission, 2022a). SMEs from BiH interested in getting the certificate should apply to a Competent Body in the European Economic Area Member State[33] in which the product is (or is about to be) placed on sale, which assesses the applications. An application for an EU Ecolabel can cover a single product or a range of products, regardless of how many different names or brands are used for that product(s). The applicant is responsible for compiling the application and obtaining all the necessary supporting evidence, which may include tests, etc. In addition, the applicant must pay an application fee, and an annual licence fee where this is asked for by the Competent Body[34]. The applicant is responsible for ensuring that the product(s) or service(s) once awarded the EU Ecolabel, always remain in compliance with the EU Ecolabel criteria[35] (European Commission, 2016, p. 10).

[32] EU Ecolabel furniture products are available at: http://ec.europa.eu/ecat/category/en/34/furniture, while EU Ecolabel wooden floor coverings are available at http://ec.europa.eu/ecat/category/en/33/wood---cork--and-bamboo-b

[33] List of the Competent Bodies is available here: https://ec.europa.eu/environment/ecolabel/competent-bodies.html

[34] EU Ecolabel fees are available here: https://ec.europa.eu/environment/ecolabel/documents/eu-ecolabel_fees.pdf

[35] Detailed information and instructions for furniture producers are available here: https://ec.europa.eu/environment/ecolabel/documents/Furniture_UM_parts_A_B_C_D_E.pdf

But it should be emphasized that the EU Ecolabel is not only such a certificate. In order to communicate to consumers how much "green" an item of furniture is, the following labels are also used: 1) **FSC** - stands for wood from responsibly managed forests, 2) **the Blue Angel (Der Blaue Engel)** which is perhaps the best-known eco-label in Germany and takes the complete life cycle of a product into account[36] and 3) the **DGM label** awarded by the Deutsche Gütegemeinschaft Möbel e.V. (German Furniture Quality Assurance Association), which is based on the product's carbon footprint and factors in both direct and indirect emissions[37]. However, for many furniture retailers, the motto may well be "a label doesn't make a buyer." And with good reason: A survey by the market research institute Dr. Grieger & Cie. revealed that 80 percent of respondents do not trust the information provided on sustainable furniture. This could be due to bad experiences in other sectors, such as the scandals in Germany concerning the fraudulent sale of conventional eggs as free-range or organic. But in any case, it is a clear signal that consumers' trust can be won back only by making sustainability criteria as transparent as possible (imm Cologne, 2022).

It is also important to mention here that the **situation in the field of quality infrastructure for wood processing in BiH is bad** which is identified in previously conducted research. Savić and Gackić (2016, p. 32) argue that:

- The structure of accredited bodies (testing and calibration laboratories, certification and inspection bodies) is unfavorable;
- Dynamics of transposition of relevant EU directives/regulations in BiH technical legislation for industrial products is unsatisfactory;
- Implementation of technical regulations related to industrial products, including conformity assessment and market surveillance, is at a low level;
- Legal regulations at the level of BiH are not harmonised;
- A significant number of products testing and certification must be done in the EU countries to which the products are imported.

As an example, they refer to the compliance with the Regulation CPR 305/2011, which is one of the most complicated and expensive procedures for manufacturers of construction carpentry, given the lack of relevant laboratories for testing and certification of products in BiH. Companies that export construction carpentry to the EU, must allocate a larger amount of money (approximately KM 20,000 per product) for the testing process outside Bosnia and Herzegovina to place the CE mark on the product (Savić, Gackić, 2016, p. 41).

Novaković and Borojević (2020, p. 47) also argue that the situation in the field of quality infrastructure in the wood processing sector of BiH is very bad because there is only one accredited body in this sector. This is the Laboratory for testing the safety of wooden products – LIND in Zenica which provides services of testing of wood products and equipment for children's playgrounds[38]. Although LIND has a significant number of accredited methods for testing wood products, it does not have a large enough area of accreditation. That is why many producers use testing services of other accredited laboratories outside BiH (most often in Croatia).

The situation in this area in the surrounding countries is also not much better. Several reasons lead to this situation, and the most important is that furniture (tables, chairs, beds, kitchens, cabinets, upholstered furniture, etc.), whose share in the wood processing sector is relatively high, is not

[36] More information about the Blue Angel certification is available here: https://www.blauer-engel.de/en
[37] More information about DGM label is available here: https://www.dgm-moebel.de/en/quality-community/the-golden-m
[38] More information: https://zeda.ba/laboratorija-za-testiranje-sigurnosti-proizvoda-lind/

regulated by European directives that require mandatory CE marking. This fact excludes two types of accredited bodies according to the standards EN ISO 17024 and EN ISO 17065 for furniture. Control of wood products is not clearly prescribed by relevant acts and standards, so there is a modest need for accredited inspection bodies according to EN ISO 17020. For furniture, there is only a need for accredited product testing bodies according to EN ISO 17025. Of course, for construction and construction products made of wood, which are covered by the Regulation on Construction Products (305/2011/EC) there is a need for accredited bodies EN ISO 17025 and EN ISO 17065. This indicates that the profitability of private accredited bodies in the field of the wood processing sector may be questionable. That illustrates the case of one of the leading (privately owned) laboratories for testing construction products made of wood and furniture in Croatia which was closed in 2018. Also, it should be mentioned that the lack of clear legal regulations in the field of quality infrastructure related to the control of the safety of wood products, prevents market surveillance to perform its activities efficiently. It is strange that there is no controlling body for wooden toys, although this is fully regulated by the European Toy Safety Directive 2009/48/EC. Also, the lack of bodies for testing upholstered furniture according to EN ISO 17025 forces manufacturers in BiH to use relevant services from the appropriate bodies in Croatia. The above-mentioned facts, along with insufficiently educated consumers in the field of their security, have influenced the condition of the quality infrastructure in BiH to be at a very low level (Novaković and Borojević, 2020, p. 47-48).

Among the identified organisations that have the potential to become accredited bodies in the field of wood processing in the future are Artisan, Tešanj (for mechanical testing of wood products) and the Faculty of Mechanical Engineering in Sarajevo which has significant potential for accreditation of numerous of test methods in the field of wood products (furniture and construction products of wood) (Novaković and Borojević, 2020, p. 53-54).

To increase the availability of priority technical standards for wood processing companies, six new standards were translated in 2020. The standards are related to: windows and doors (nsBAS EN ISO 14351-2: 2020), shutters and external blinds (nsBAS EN ISO 13659: 2020), wooden floors and parquet (nsBAS EN ISO 14342: 2020; nsBAS EN ISO 13226: 2020 and nsBAS EN ISO 13489: 2020) and products for infants and children (nsBAS EN ISO 12221-1 + A1: 2020) (Eda - Enterprise Development Agency, 2020).[39]

Summary of chapter 6.3.

In recent years, greater attention has been paid to the origin of raw materials and the communication of good practices in the European wooden furniture sectors. Efforts of the European Commission are focused on defining tools and policies aimed at **ensuring supply chains free from deforestation and illegality**. The FSC is an international non-governmental, independent and non-profit organization, whose goal is to protect the entire forest system through the definition of credible production standards, recognized and accepted by both the industrial and the environmental world. As of May 2020, over 1,88 million hectares - i.e. about **83% of state-owned forests in Bosnia and Herzegovina, are FSC certified.** FSC certification is used as a strategic and competitive advantage for organizations that want to access the green segment of the market by differentiating their offer, and as a tool for implementing corporate social responsibility policy. **There are 328 holders of the CoC and 8 holders of the Forest management certificate in 2022**. Also, there are **7 holders (companies) of the PEFC certificate** from BiH. It is important to mention

[39] Priority technical standards for wood and metal processing industry are available on the website of the Institute for Standardization of BiH: https://isbih.gov.ba/uploads/dokumenti/Razno/eda-sba-spisak-prevedenih-standarda.pdf. Also, there is a catalog of searchable and available standards: https://isbih.gov.ba/p/katalog.

the **EU Ecolabel -** a voluntary environmental performance certificate that is awarded to products and services which must meet specific, identified criteria that reduce overall environmental impact. The **situation in the field of quality infrastructure for wood processing in BiH is relatively bad** because there is only one accredited body in the wood processing sector. Some companies (e.g. Artisan, Tešanj) and faculties (e.g. the Faculty of Mechanical Engineering in Sarajevo) have the potential to become accredited bodies in the field of wood processing in the future.

6.4. Ability to add value to wood products and related services through innovation and the support needs in this context for the sustainable wood industry

The third edition of the Oslo Handbook defines innovation as "the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations" (OECD/Eurostat, 2005, p. 46). This definition captures the following four types of innovation and is used for measurement purposes (OECD, 2010, p. 20):

- Product innovation: the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user-friendliness or other functional characteristics.
- Process innovation: the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.
- Marketing innovation: the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.
- Organisational innovation: the implementation of a new organisational method in the firm's business practices, workplace organisation or external relations.

As mentioned in previous chapters, there is a need to improve all four forms of innovation in wood processing companies.

When it comes to **product innovation**, it includes improving existing and creating new products following the new concept of "ecological" or sustainable furniture, development of new products with attractive and recognizable industrial design, the ability to adapt products to individual customer preferences, meet relevant requirements and regulations related to product quality and safety, preparation of appropriate technical documentation for production, etc. These activities are related to the product and affect directly its performance and added value. Previous analyses and research have shown that companies lack knowledge and capacity in the field of industrial design, new product development (not based on ready-made technical drawings they receive from customers but based on their own designs and prototypes), while adjustments following the concept of "ecological" or sustainable furniture is a new challenge that companies face with.

Process and organisational innovations are also very important because optimising production and other business processes (procurement, storage, sales, transportation, finance, etc.) can open up significant time savings, with increased efficiency, cost reduction, better organisation and increased employee satisfaction. Lean production and optimised business processes are a prerequisite for their automation and digitalization, as well as better management of the company. Most companies have the space to significantly improve their organisation and business processes, which could also improve their competitiveness.

Marketing innovations, in strategic terms, include decisions on product-market combinations (which markets to focus on with which products) and the appropriate strategy (high value vs. low price), while at the tactical level decisions are made on the necessary adaptation of individual products, distribution channels and forms of promotion. It turned out that a large number of wood processing companies do not have enough information about potential markets, customers, competition, etc. (marketing intelligence), so they are relatively passive - waiting for potential customers to find them, instead of being proactive.

In the context of creating added value, we emphasize the previously mentioned concept of the Smile curve and the fact that the most value is added in either upstream activities (development of a new concept, research and development) or downstream activities (marketing, branding and customer service), and these are precisely those functions that are insufficiently developed or do not exist in most wood processing companies. The management structures of these companies have technical/production knowledge, but not enough knowledge in areas such as **industrial design, research and development, marketing and branding**. Many of them **are not even aware of the importance of these functions in creating added value, and those who are aware of this face difficulty in obtaining support and services in these areas**. The supply of services in these areas is limited, and the demand is relatively low (therefore, the consulting market in these areas is underdeveloped). Of course, there are successful companies that use these services or have developed their own capacities in the mentioned areas, but these are exceptional individuals - outliers who point the way that may be followed. These companies use a strategy of developing their own, highly differentiated, high-value products (i.e. brands), as opposed to a business model based on service production for other companies (lohn), where profit is relatively low and there is always a risk that someone else will show up who will be able to offer the same service at a lower price.

Companies need **both professional and financial support to introduce innovations**. Most of them have very limited resources for investments, while their capacities are occupied by meeting the requirements of customers who demand low prices and short delivery times.

The need for various forms of support for wood processing companies is also emphasized by (Pucar, Pepić, 2019). Regarding the **market**, they state the following: 1) support for the use of available market information (current customer requirements, trends at important fairs, internet, etc.) for the improvement of existing and development of new products; 2) support for establishing and strengthening cooperation with the EU companies, as well as exports to the EU; 3) support for direct connection and promotion of companies with EU partners; 4) support companies in introducing standards and product certification. The needs of SMEs active in the wood processing regarding **human resources** are the following: 1) initiating cooperation and support for joint activities of mechanical and technological faculties and companies; 2) initiating cooperation and supporting joint activities of secondary vocational schools and companies; 3) initiating cooperation and supporting joint activities of centres for adult's education and businesses; 4) open the possibility for consulting in human resource management; 5) support for the training of engineers and technicians (CAD/CAPP/CAM SolidWorks and other technologies). **Technology** is also an important area for improving competitiveness and innovation of the wood processing and furniture production industries, so the following needs were identified in this area: 1) support for the procurement of key equipment; 2) training and consulting on the topic of obtaining investment capital; 3) support to the procurement of equipment for development and technical preparation of production; 4) support to strengthen cooperation between faculties and companies; 5) training and consulting in organizing production (Lean, Kaizen, etc.); 6) training and consulting in organizing production in specific areas (e.g. varnishing); 7) training and consulting on selected topics (according to the requirements of companies). The needs of SMEs active in the wood processing regarding **digitalisation** are the

following: 1) support for product design software tools - CAD/CAPP/CM, SolidWorks; 2) support for ICT solutions for product development (rapid prototyping, 3D equipment, etc.); 3) support in automation of production processes; 4) support in the use of online marketing channels to sell products (Pucar, Pepić, 2019, p. 60-61).

Summary of chapter 6.4.
Innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations. There is a need to improve all four forms of innovation in wood processing companies. The concept of the Smile curve suggests that **the most value is added in** either upstream activities (development of a new concept, research and development) or downstream activities (marketing, branding and customer service), and these are precisely those **functions that are insufficiently developed or do not exist in most wood processing companies**. The management structures of these companies have technical/production knowledge, but not enough knowledge in areas such as industrial design, research and development, marketing and branding. Many of them are **not even aware of the importance of these functions in creating added value, and those who are aware of this face difficulty in obtaining support and services in these areas**. The supply of services in these areas is limited, and the demand is relatively low so the consulting market in these areas is underdeveloped. Of course, there are very successful companies that use these services or have developed their own capacities in the mentioned areas, but these are exceptional individuals - outliers who point the way that may be followed. **Companies need both professional and financial support to introduce innovations**.

6.4.1. Potential for utilization and expansion of local know-how for corresponding business innovation and technological advancements

Innovations are important for the survival and development of SMEs, but their introduction is very demanding because of the limited capacity of wood processing companies. Companies are focused on meeting the demands of customers who require low prices and short delivery times, so in most cases, they do not have enough knowledge, financial resources and time to invest in innovation.

On the other hand, external capacities that could support the introduction of innovation in enterprises are also limited. Although the wood processing industry is among the most important sectors in BiH, wood processing engineers (without whom is difficult to implement significant innovations in companies) are deficient in the labour market because they were educated only at the Faculties of Mechanical Engineering in Sarajevo and Zenica and the Technical Faculty in Bihac.

At **the Faculty of Mechanical Engineering in Sarajevo, at the Department of Wood Technology**, within teaching and scientific-research activities, the following topics are studied: structure and characteristics of wood and wood composites, modern technologies for wood processing and production of wood composites, design and construction of wood products, management of production processes and quality control of wood products. Apart from teaching, scientific and research work, the Department is also engaged in project activities, starting from the study, i.e., pre-projects, through investment programs, to executive technological projects in the wood industry. The Department of Wood Technology has the following laboratories: a laboratory for mechanical testing of materials, a laboratory for hydrothermal treatment of wood, a laboratory for gluing and surface treatment of wood, as well as a laboratory for construction and control of wood products (Faculty of Mechanical Engineering Sarajevo, 2022a). In addition to the regular teaching process, the Faculty of Mechanical Engineering in Sarajevo, in cooperation with USAID WHAM and the Federal Employment

Agency, implemented a project "Development and Education Center for Modern Technologies in the Wood Industry - RECDI". The focus of the project is special education, i.e., professional training aimed at training and retraining unemployed persons, and workers employed in the wood sector who need additional training or retraining in certain technological processes in the wood industry. The training consisted of professional and practical classes realized through modules, while the participants at the end of the training had the opportunity to present themselves to wood processing companies in order to employ them (Faculty of Mechanical Engineering Sarajevo, 2022b).

From the academic year 2019/20 at the **Faculty of Mechanical Engineering, University of Zenica**, a **study department entitled "Design and Technology in Wood Processing**" began working. The development of this study program lasted several years in cooperation with reputable universities in Europe such as Rosenheim, Biel, Ostwestfalen-Lippe, Trieste, Belgrade and Sarajevo. The planned curriculum provides the most useful knowledge, skills and competencies needed by future wood processing engineers (Faculty of Mechanical Engineering Zenica, 2022). In addition to the Faculty of Mechanical Engineering in Zenica, Department of "Design and Technology in Wood Processing", it is important to also mention the Laboratory for testing the safety of wooden products - LIND in Zenica. As the only accredited body in the wood processing sector in BiH, LIND provides testing services of chairs, tables, baby beds, children's playgrounds, school and outdoor furniture. Test results conducted in the LIND laboratory are valid in all EU countries and beyond (Zeda - Zenica Development Agency, 2022).

At the **Technical Faculty in Bihac**, since 2017, there is active the **Wood Industry Department** with three specializations: design and construction, technology as well as forestry and wood industry (Technical Faculty Bihac, 2022).

As mentioned before, in the Republic of Srpska, at the **Faculty of Forestry in Banja Luka**, the wood processing department has been formed (Faculty of Forestry Banja Luka, 2022), but in the last three years, **no student has been enrolled** (Novaković and Borojević, 2020, p. 47).

Given the lack of staff for the wood processing industry generated by the education system, various organizations, most often with the support of international projects in BiH, conduct training in this area. Thus, for example, within the project "Strengthening the competitiveness of the wood processing sector in Herzegovina" which is supported by the EU4Business project, Wood Cluster Herzegovina, in cooperation with partners - INTERA Technology Park and the Chamber of Commerce of the Federation of BiH and Hera d.o.o. Mostar, is preparing intensive practical training for technical preparation of furniture production using Corpus tool, which will be held in the period from 7.2. to 12.3.2022 (Wood cluster Herzegovina, 2022b). Similarly, at the end of 2021, a study on the topic "Optimization of production and logistics" was realized. In the Republic of Srpska, non-formal practical adult education in the wood (and metal) processing sector is conducted by WMTA - Institution for Vocational Adult Education, Banja Luka. The focus is on practical and verified training of unemployed and future workers in the wood and metal sector. All programs have been developed and adapted to the needs and requirements for deficient staff. WMTA currently offers training and adult education in over 20 formal and informal training programs in the wood and metal processing sectors as well as other sectors as required by companies and/or other stakeholders (WMTA Banja Luka, 2022).

Faculties are generally focused on the teaching process, while communication and (institutional) [40] cooperation with companies is underdeveloped. In this way, the equipment that faculties have and that should be used for providing services to companies, remains partially unused. Nevertheless, there are some positive examples and developments in this area. One of the most recent examples is from December 2021, when the Sarajevo Regional Development Agency and the Faculty of Mechanical Engineering, University of Sarajevo, within the project "Establishment of a laboratory for analysis of surface treatment in the wood and metal industry", announced a public call for SMEs for a free analysis of the surface treatment of semi-finished and products from wood and metal. Within the project, a laboratory is being established that will provide a free service of surface treatment analysis of semi-finished products and products from wood and metals for the first 60 companies (Faculty of Mechanical Engineering Sarajevo, 2021).

Of particular importance in the construction of (furniture) added value is industrial design, and one of the most important local centers of knowledge in this area is the **Academy of Fine Arts in Sarajevo, Department of Product Design**. Through specific projects during the study, efforts are made to establish cooperation with industry and crafts, thus preparing students for professional practice (Academy of Fine Arts Sarajevo, 2022). Professor Salih Teskeredžić from this department is one of the founders of the Gazzda brand - a creative platform that combines design, development, production, promotion and distribution of furniture. With its products, the Gazzda brand has won prestigious international awards such as Red Dot, IF Design Award, Interior Innovation Award, etc. (Šipragić, Janković, 2020, p. 41). Given the importance of this brand and its business model, and the lessons that can be learned from it, the Gazzda brand will be presented in the next chapter.

At the Academy of Fine Arts in Banja Luka, industrial design is being studied in the fourth year of study, and there is an encouraging fact that activities are underway to establish a new course for Industrial Design, with a focus on interior and furniture, at the Faculty of Architecture, Civil Engineering and Geodesy at the University of Banja Luka. Therefore, it can be expected that in the coming period there will be more young people who will be able to provide services in this area to interested companies.

When it comes to the **consulting market, it is well developed primarily in the areas of introducing appropriate standards (FSC, ISO, etc.), because companies are forced to have them**. On the other hand, **in those areas that are not mandatory, which affect the creation of added value, performance and competitiveness of companies (product research and development, industrial design, marketing, branding, process improvement, etc.), the offer of consulting services is much smaller**. Therefore, it is important to stimulate and develop the consulting market in these areas (e.g., by subsidizing consulting services).

Businesses often do not know where to find information about potential consultants and see their references. Therefore, it would be desirable to collect and organise such data in one place and make them available to representatives of wood processing companies. The EBRD in BiH has been working on the development of the local consulting market for many years and has over 6,000 consultants in its database (EBRD, 2022), but these data are not publicly available. One of the good sources of information about industrial design consultants is the Arhiproducts website, where it is possible to search for designers by country and their specialties (e.g. design of tables, chairs, beds, cabinets, etc.)[41]. Among the designers from BiH, the following were presented: Salih Teskeredžić, Avdo Avdagić, Nataša Perković, Mustafa Čohadžić, Lovorika Banović and the "Filter" studio (Arhiproducts, 2022).

[40] We distinguish institutional cooperation of faculties and cooperation of individual faculty professors with companies, because it is relatively common for individual professors to cooperate with companies as consultants, while institutional cooperation with companies takes place to a much lesser extent.

[41] Database of industrial designers is available at: https://www.archiproducts.com/en/designers

In order to obtain information that is an important input for the work of industrial designers, market information is needed - what products are in demand, what is in trend, what is the profile of buyers and users of these products, what are their expectations of the product/offer in general, what are the habits in purchasing and using these products, which information channels are used when making a purchase decision, what is the offer of the competition, etc. This information is important both in the design phase of the product itself - its appearance and functionality (industrial design) and after production, in the phase of its distribution and promotion. This information should be provided by market research organizations as an essential part of marketing. The situation in this regard is aggravated by the fact that there is a very small number of market research agencies in BiH, and given that the target markets are foreign, it is not recommended that local agencies conduct foreign market research. First, because it would be difficult to organize and implement, the costs of such research would be high, and the results may be unreliable due to intercultural differences and interpretations of the results obtained. Therefore, the engagement of research agencies from countries that represent target markets is a better option[42]. Unlike domestic agencies, such agencies know the local context well, have good contacts and capacity to organize and conduct research, understand the local market well, and therefore will not fall into the trap of misinterpreting the results obtained.

Marketing agencies in BiH mainly deal with promotion, so in public, and with company directors, marketing is often mistaken for promotion (and most often advertising as one segment of the promotion), and this promotion is mainly focused on the local market and final consumers (B2C market). **Woodworkers who want to develop their own products and build their own brands need agencies that provide not only promotion services, but (even more) strategic marketing services** (segmentation, targeting, positioning, branding), **and consulting for other elements of the marketing mix** (products, distribution, pricing strategy, etc.) **for the foreign market, including the B2B and B2C segment. Marketing and consulting agencies that offer such services are rare, so these decisions are mostly made by directors of companies that are mostly technical professions, so they do not have enough knowledge from the mentioned areas, and often are not aware that they lack such knowledge**. Those companies who would possibly ask for external support, cannot get it easily, because it is very limited. On the other hand, those companies that do not develop their products but work according to the model of contract manufacturing (lohn business) and fulfil the orders given to them by foreign customers, must not have the mentioned marketing knowledge and information, because customers have them instead. Because in the value chain these customers are closer to the final consumer and offer higher value, they take relatively higher earnings than the producers themselves. Lack of market (marketing) knowledge is one of the main reasons why most companies are passive and operate according to the contract manufacturing/lohn model (fulfil customer orders) and why few companies produce products with relatively higher added value. To this should be also added a tendency to (in the short term) avoid the risk of doing business with a new, more complex model that entails developing own products and investing in developing own brand, which requires vision, consistency, perseverance and investment of significant resources, while the effects can be expected in the relatively long term. Although this may seem impossible or perhaps unprofitable, there are examples of companies in BiH that confirm that it is still feasible and cost-effective. These examples will be presented in the next chapter.

Process improvement and organizational innovation are of great importance because well-organized companies with lean production are a prerequisite for their successful digitalization, and digitalization is becoming an increasingly important factor in their competitiveness. Many wood processing companies have the opportunity and need to improve production and business processes, which could improve their efficiency and achieve significant savings in time and money. **Knowledge centers in the field of lean production in BiH are a small number of consulting organizations with**

[42] Market research agencies can be found on the Esomar website: https://directory.esomar.org/

significant experience and references in this field (e.g. Adizes SEE BiH, Targer Sarajevo, etc.), **as well as mechanical engineering faculties within which curriculum this methodology is studied**. Also, it is worth mentioning that the "Center for Competence in Lean Management" at the Faculty of Mechanical Engineering, Computing and Electrical Engineering, University of Mostar was established with the support of GIZ (Faculty of Mechanical Engineering, Computing and Electrical Engineering Mostar, 2017). When it comes to **digitalisation** that is complementary to process improvement and lean production, the first experiences are gained through projects that support this area. One of them is being implemented with the support of GIZ and refers to the establishment of the Center for Digital Transformation, which operates within the Chamber of Commerce of the Republic of Srpska (RS Chamber of Commerce, 2022). As part of efforts to improve the situation in this area, the eCommerce Association in Bosnia and Herzegovina was recently established with the aim to create new jobs through education of buyers and sellers (companies) about eCommerce benefits and challenges. Through education, customers will learn how to make safe online purchases, and retailers how to sell efficiently and safely in an online environment (eCommerce Association in Bosnia and Herzegovina, 2022). In developed European countries, a significant impetus to the digitalization process is provided by **Digital Innovation Hubs** (DIH) which act as one-stop-shops that help companies become more competitive regarding their business/production processes, products or services using digital technologies. They are based upon technology infrastructure and provide access to the latest knowledge, expertise and technology to support their customers with piloting, testing and experimenting with digital innovations. DIHs also provide business and financing support to implement these innovations, if needed across the value chain. As proximity is considered crucial, they act as a first regional point of contact, a doorway, and strengthen the innovation ecosystem. A DIH is regional multi-partner cooperation (including organizations like RTOs, universities, industry associations, chambers of commerce, incubator/accelerators, regional development agencies and even governments) and can also have strong linkages with service providers outside their region supporting companies with access to their services. In the Digital Innovation Hubs catalogue, there are four such organizations in BiH, two of which are in the process of being established, and two are operational (Intera from Mostar and LabHub from Sarajevo). For comparison, in Serbia, there are 14 such organizations, in Croatia 17, and in Germany 64 (European Commission, 2022a). These figures indicate the current capacity of individual countries to support the digitalization process and the relative position of BiH. Therefore, there is a need for capacity building in this area, and especially for networking of all those actors who can provide support in certain segments of the digitalization process. In January 2022, a public call for the establishment of the digital innovation hubs was published within the EU4DigitalSME project implemented by GIZ (EU4DigitalSME, 2022), so their development can be expected to intensify in the coming period.

At the end of this chapter, we would like to **point out the importance of another discipline that is of great importance for the introduction and managing of innovations, which is not sufficiently developed among wood processing companies. It is human resources management (HRM)**. Whether the ideas for innovation come from someone outside the company or from employees, those who work in the company are the ones who implement them. Therefore, it is important to establish mechanisms for examining employee satisfaction and, based on the information obtained, to maximise it. In a situation when many of the working-age population (and especially experts) are leaving BiH and going to the West in the quest for better working and living conditions, and in time when not enough young people are enrolling in appropriate woodworking courses in high schools and colleges (because work in industry/wood processing does not seem attractive enough), ensuring employee satisfaction becomes a key task. It is a way not only to keep existing ones but also to attract future employees. In addition to an adequate salary (which will be easier to provide for those who produce products with higher added value than those who do lohn jobs), it is important to provide appropriate working conditions, with clear and well-established internal communication and creating a positive work and collegial atmosphere. This is the task of the HRM function, supported by a director.

In that sense, it is important to strengthen this function as well and educate company directors on this topic.

Summary of chapter 6.4.1.
Innovations are important for the existence and development of SMEs, but their introduction is very demanding given the limited capacity of enterprises. On the other hand, external capacities that could support the introduction of innovations in enterprises are limited. Although the wood processing industry is among the most important sectors in BiH, **wood processing engineers, without whom it is difficult to develop and implement significant innovations in companies, are deficient in the labour market** because they are educated only at the Faculties of Mechanical Engineering in Sarajevo and Zenica. Given the lack of staff for the wood processing industry generated by the education system, various organizations, most often with the support of international projects in BiH, conduct training in this area. **Faculties are generally focused on the teaching process, while communication and institutional cooperation with companies are underdeveloped**. In this way, the **equipment available to the faculties** that could be used for providing services to companies **remains partially unused**. Of particular importance in the construction of (furniture) added value is industrial design, and one of the most important local centers of knowledge in this area is the Academy of Fine Arts in Sarajevo, Department of Product Design. When it comes to the consulting market, it is well developed primarily in the areas of introducing appropriate standards (FSC, ISO, etc.), because companies are forced to have them. On the other hand, **in those areas that are not mandatory but affect the creation of added value, performance and competitiveness of companies (product research and development, industrial design, marketing, branding, process improvement, etc.), the offer of consulting services is much smaller**. Therefore, it is important to stimulate and develop the consulting market in these areas (e.g., by subsidizing consulting services). Finally, we **emphasize the importance of the human resource management (HRM) function for the introduction and management of innovations, which is not sufficiently developed among wood processing companies**. In a situation when we are facing emigration of the working-age population, and when not enough young people are enrolled in appropriate woodworking courses in high schools and colleges due to the bad image of these occupations, ensuring employee satisfaction, strengthening this function and educating company directors on this topic are becoming more and more important.

6.4.2. Possibilities for cooperation with relevant local/regional/international partnerships and platforms for this purpose

Innovation rarely occurs in isolation; it is a highly interactive and multidisciplinary process and increasingly involves collaboration by a growing and diverse network of stakeholders, institutions and users (OECD, 2010, p. 10).

The conducted research shows that there are interactions in the process of introducing innovations between companies, but the cooperation is at a modest level, sporadic and short-lived (it lasts only until some current problem is solved). Companies help each other with advice, often without financial interest and on a friendly basis. Company directors are ready to share their experiences on product or process improvement, primarily with like-minded people, correct partners, customers, as well as with non-competitive companies. Reasons for cooperation are a simplification of own production, savings that can be achieved, or providing support to suppliers or customers. Companies are partially ready to cooperate based on free technological capacities. Bottlenecks in the production process are usually solved by purchasing new equipment, while some companies are ready to offer possible free capacities to others for use on a commercial basis (services providing). One of the important preconditions for cooperation on this basis is the exchange of accurate and verified information on

technologies and capacities that individual companies have, i.e. on the services they provide. In this sense, it is necessary to work on establishing a database for the exchange of information between companies[43]. Some companies cite the "Croatian Wood Cluster" as an example of good cooperation between companies. Leading companies are not ready to provide production services due to the protection of their own technological solutions, capacity utilization and orientation towards the production of their own products, but they can offer product development services for a limited period. Most companies had experience in the field of experimenting with other companies for the joint introduction of a new product or the realization of some large business. A positive example is the cooperation of two companies that introduced jointly the entire range of products for a well-known French customer. These are products that are a combination of solid and plate materials. Parts of solid wood furniture were produced by one company, while segments of panel furniture were produced by another, a partner company. Also, there are examples of successful cooperation of companies engaged in the upholstery of various types of chairs, while their partners produce metal parts of chairs, wooden chair constructions, as well as multilayer plate segments of moldings (which serve as a basis for upholstery with the sponge, textile or leather) (Borojević, Miovčić, Šipragić, Janković, 2018, p. 23-26).

Factors that hinder cooperation between companies are people's mentality, lack of trust, as well as previous bad experiences during cooperation. Bad experiences during the cooperation were mainly related to non-compliance with the agreed deadlines and non-fulfillment of the required product quality by the companies with which the attempt to establish cooperation was made. Fear of competition and customer takeover is also one of the factors that make it difficult to establish cooperation. Cooperation usually has no continuity and is based on finding solutions to specific *ad hoc* problems which occur in production. The problem also arises in the different perceptions of the role and importance of the part of the work that a company is doing in the overall realization of the agreed work. Namely, some directors perceive their part of work or operations as the most important part in the overall realization of work, while that part of work has relatively little importance and value in the overall realisation of work, which leads to disagreements and problems (Borojević, Miovčić, Šipragić, Janković, 2018, p. 24).

The following **associations relevant to the wood industry and forestry** operate within the Chambers of Commerce in BiH:

- Association of Wood Industry and Forestry at the Foreign Trade Chamber of BiH,
- Group of Forestry and Wood Industry at the Chamber of Commerce of the Federation of BiH,
- Association of Forestry and Wood Processing at the Chamber of Commerce of the Republic of Srpska.

In addition, there are several **wood clusters** in BiH, the most important of which are:

- Wood Cluster, Banja Luka - whose goal is to connect, educate and exchange information to improve the business of companies engaged in the production of furniture. The cluster has 33 members, which in cooperation with the cluster strive for more economical business and better positioning in the BiH and other markets (Cidea, 2016).
- Wood Cluster - PD, Prijedor - an organization whose primary task is business networking, education, information exchange, and improving the business of companies and entrepreneurs who perform their business activities within the wood and furniture industry. The cluster brings together companies in the field of wood processing and furniture production, but also those associates and partners who can contribute to the development of the sector. It was established to improve the conditions of wood processing, production of wood products and furniture, monitoring of technical and technological achievements in this

[43] The first activities on the establishment of such a database were launched within the project KRIN - creating a regional innovation network, and the database is available at: https://krin.edabl.org/

field, harmonization and representation of common interests. The cluster brings together 19 companies (Wood Cluster - PD, 2022).

- Association of Wood Cluster Herzegovina DKH - was founded to strengthen the competitiveness of domestic companies in the wood industry, establish and ensure cooperation, networking and creating opportunities for knowledge exchange, support for education and training, joint marketing, buying and selling as well as targeted communication, thus creating the common advantage. The cluster has 26 members - companies (Wood Cluster Herzegovina, 2022a).

Savić and Gackić (2016, p. 33) argue that cluster members generally find that cluster membership is useful, but that there is room for improvement.

The Gazzda brand, which is presented below, has special importance, both in terms of the achieved market results and in terms of the business model.

Gazzda - A platform for networking manufacturers and professionals

Gazzda is a platform that combines design, development, production, promotion and distribution of furniture. It provides the opportunity to experts from different fields to improve their professional skills and place their results on the international market. Mr. Salih Teskeredžić, one of the founders of the Gazzda brand and a professor at the Product Design Department of the Academy of Fine Arts in Sarajevo, explains that today there are fragmented manufacturers who are focused on production, have significant flexibility and ability to act quickly on customer requirements, but unlike the large systems we used to have, they do not have the complete infrastructure needed - design, marketing, sales, etc. That is why Gazzda was established as a creative platform that will unite all these segments and work directly with manufacturers. It is easier for producers that way because they are only engaged in production, while product development, marketing and sales are left to experts. In this way, control and coordination of all important functions, on which the success of products on the market depends, is achieved: design, development, production, promotion and distribution. About 35 people work in the development of the Gazzda brand, which is organized into product design and product development departments; marketing; production organization, operational part, which includes controlling and distribution. The furniture is produced in some 15 companies from BiH, and the goal is to increase that number in the coming period. Professor Teskeredžić states that a large number of manufacturers recognize the value of design and the fact that creating their own original product is an easier way to reach the global market than doing it with a semi-finished product. He believes that we still have wood as raw material, but this should not be emphasized as an advantage. The advantage is in skills, knowledge and creativity, and the connection between education, faculty and economy, the transfer of knowledge and creativity to production facilities is something that gives hope and promise. Gazzda furniture is mostly exported to the West, and new customers are reached mainly through the presentation of products at fairs. Gazzda furniture is intended for the middle class in the rich western market. These are younger people who strive for personalization when choosing and decorating the interior and are looking for products that will not be unified. Gazzda brand products are represented in over 40 countries, most notably in Germany, the Benelux countries, Scandinavia, Israel, the United States and Australia. The Gazzda brand has won prestigious international awards with its products, the most important of which is Red Dot. "These awards are important both because of the affirmation of design as a discipline, and because of the message that we in BiH can be successful and recognisable in the international market" says professor Teskeredzic. He hopes that his vision of Bosnia and Herzegovina as a country of design will become a reality.

Source: Šipragić, Janković, 2020, p. 42-45.

Figure 27. Dedo - lounge chair

Figure 28. Muna chair

It can be concluded that Gazzda has developed and combined exactly those functions and competencies that most wood processors do not have (design, development, promotion and distribution of furniture), while production is done by those companies that have free capacities and technical prerequisites for production according to defined designs and requirements. In that sense, **it is a network of companies and experts who are mutually complementary in terms of knowledge and capacity**.

The lack of competencies, i.e. the passivity of a large number of wood processors in the field of marketing has been recognized by some local marketing agencies that are trying to compensate and use it by creating an online platform for promoting and selling furniture from Bosnia and Herzegovina - Furniture shop[44].

Of the other **domestic platforms for cooperation and connecting stakeholders in wood processing**, it is important to point out **conferences**. The Association of Forestry and Wood Processing INTERFOB from Banja Luka organizes annual professional conferences on wood processing, forestry, ecology, energy efficiency and interiors "People, wood, furniture". The last, 13th conference was held on 26-27.11.2021 in Banja Luka. The conference "The future of forestry and wood processing in BiH - Kupres 2021" was held on 8.10.2021 in Kupres. The conference was organized by the Chamber of Commerce of the Federation of BiH and the Wood Cluster of Herzegovina with partners within the project "Boosting competitiveness of wood processing sector in Herzegovina", funded by the European Union and the Federal Republic of Germany within the EU4Business project.

In addition to professional conferences, for information exchange, networking and cooperation, it is important to mention several **online fairs of the furniture and wood sector** in BiH. The first of them is “Match & Furnish 2020” [45] as the first online fair for wood processing in BiH, which gathered 99 participants from 19 countries. Over 90 pre-scheduled meetings were held during the two days scheduled for virtual B2B meetings (October 21 and 22, 2020). The online fair and B2B meetings were organized by the Foreign Trade Chamber of BiH and Enterprise Europe Network - EEN, with the support of the project “SBA in BiH” implemented by Eda - Enterprise Development Agency Banja Luka, while the media partner of the event was Verlag Strohmaier KG - interior magazine Wohnkultur from Vienna, Austria. In the period 15-20 May 2021, the mentioned platform Furniture Shop also organized an online furniture fair, and it is planned that the “Interio Fair”, which will be held in Skenderija - Sarajevo in March 2022, will be also held online in the same time.

[44] The platform is available at: https://namjestaj.shop/

[45] The webpage of the event is available at: https://match-furnish-2020.b2match.io/

When it comes to **foreign knowledge centers** in the area that are important for strengthening the competencies of educational institutions, organizations and consultants in the field of wood processing, **the universities in Rosenheim and Bern are certainly among the most important**. **Rosenheim University of Applied Sciences - Faculty of Wood Technology and Construction** is the service provider for education, further training, research and development and the transfer of expertise in trades and industry. The focus of the faculty is on the fields of wood technology, interior engineering and wood building. At the faculty, there are 48 professors and assistants who work in 22 state-of-the-art laboratories. They have strong industrial links with regional partners and institutes in the wood industry network Holzcluster Rosenheim (LHK, IFT, IFZ, PTE, etc.) and the federal state of Bavaria (Bavarian Forestry and Wood Cluster, Bayern Innovativ) (Technical high school Rosenheim, 2022). A referent institution is also the **Bern University of Applied Sciences - School of Architecture, Wood and Civil Engineering**. The study for Bachelor of Science in Wood Technology provides knowledge in the areas of timber house construction, interior furnishing, cladding, timber construction engineering, process and production engineering, product development and industrial management. Also, it offers specializations in Timber Structures and Technology (TST) and Process and Product Management (PPM) (Bern University of Applied Sciences, 2022). Cooperation with these faculties should be established and developed through international projects, exchange of professors and students, as well as study visits for representatives of clusters and companies from BiH, to be informed about new trends, technologies, and achievements.

In addition to universities, **important organizations for networking and cooperation are various associations of wood processors, clusters and other organizations active in the field of wood processing**. It is important to establish contact with such organizations, exchange information, organize a study visit with company directors and assess opportunities for cooperation. Such activities may be implemented by associations of wood processors at chambers of commerce or clusters of wood processing companies in BiH, as part of their regular activities or projects they implement. Some of the relevant organizations are listed in the following table.

Table 15. Relevant organizations in target markets

Germany	Austria	Italy
The Main Association of the German Wood Industry Flutgraben 2 53604 Bad Honnef https://www.holzindustrie.de	**Association of the Austrian wood industry** Schwarzenbergplatz 4 1030 Vienna http://www.holzindustrie.at	**Italian Woodworkers Association (FederlegnoArredo)** Foro Buonaparte 65 20121 Milano https://www.federlegnoarredo.it
The Association of the German Furniture Industry Flutgraben 2 53604 Bad Honnef https://www.moebelindustrie.de	**pro:Holz Austria Association of the Austrian timber industry** Am Heumarkt 12 A-1030 Wien https://www.proholz.at	**Cluster Legno Arredo Casa FVG** Via Stretta, 20 33044 Manzano (UD) https://clusterarredo.com
German Sawmill and Timber Industry Federal Association Dorotheenstraße 54 D-10117 Berlin https://www.saegeindustrie.de	**Holz Forschung Austria** Franz Grill-Straße 7 1030 Wien https://www.holzforschung.at	**CATAS – Testing and analysis laboratory for the wood and furniture industry** Via Antica, 24 33048 San Giovanni al Natisone (UD) https://catas.com
Bavarian Forestry and Wood Cluster Obere Hauptstraße 36 D-85354 Freising	**Holzinnovationszentrum** Holzinnovationszentrum 1a 8740 Zeltweg http://www.hiz.at/index.php	**CSIL Centre for Industrial Studies** Corso Monforte 15 20122 Milano https://www.csilmilano.com

https://www.cluster-forstholzbayern.de		https://www.worldfurnitureonline.com

In the context of presenting products and establishing contact with potential customers, exhibiting at fairs (or at least visiting them with prior arrangement of B2B meetings) is of great importance. Some of the most important **fairs** in the target markets are listed in the following table.

Table 16. Relevant fairs in target markets

Germany	Austria	Italy
Koelnmesse Messeplatz 1 50679 Köln http://www.koelnmesse.de - imm Cologne (16-21.1.2023), https://www.imm-cologne.com - Zow (Bad Salzuflen, 3-5.5.2022), http://www.zow.de - Interzum (Köln, 9.-12.05.2023), http://www.interzum.de	**Klagenfurter Messe** Betriebsgesellschaft mbH Messeplatz 1 A-9020 Klagenfurt am Wörthersee https://www.kaerntnermessen.at - Internationale Holzmesse (31.8.-3.09.2022) - Holz&Bau (31.8.-3.9.2022)	**Piemmeti S.p.A.** Via San Marco 11/c 35129 Padova https://www.piemmetispa.com - Progetto Fuoco (Verona, 4-7 May 2022), http://www.progettofuoco.com - Wood Experience (Verona, 27-30.10.2021), https://wood-experience.com
NürnbergMesse Exhibition Centre 90471 Nürnberg - HOLZ-HANDWERK (Nürnberg, 12-15.7.2022), https://www.holz-handwerk.de	**Reed Messe Wien** Messeplatz 11021 Vienna https://www.messe.at - WOHNEN & INTERIEUR (Vienna, 16-20.3.2022), https://www.wohnen-interieur.at	**Federlegno Arredo Eventi spa** Foro Buonaparte 65 20121 Milan https://www.salonemilano.it - Salone Internazionale del Mobile (Milan, 7-12.6.2022.) **EXPOSICAM SRL** Via Carducci 12 20123 Milan - SICAM (Pordenone, 18-21.10.2022), www.exposicam.it

In addition to traditional fairs that have also their online form (arranging B2B meetings, live coverage of important events within the fair, etc.), there are also completely virtual fairs that seek to position themselves in the market of exhibitors[46]. Similar to them are specialized B2B platforms, some of which are more focused on sales, and some are more focused on promotion, information exchange and matchmaking. One of the largest **B2B platforms for selling wood products is Fordaq**[47]. Fordaq has more than 290,000 members (log producers, sawmills, veneer mills, panel producers, importers and large industrial users) worldwide and it is present in 191 countries. On the Fordaq there is more than 3,500,000 m^3 of wood on offer or demand. There are more than 1,500,000 visits to Fordaq per month. All contacts between member companies happen directly without any intermediaries. Fordaq only lives from subscriptions fees paid by its members. At the moment, there are 865 companies from BiH registered on the Fordaq (Fordaq, 2022). When it comes to online furniture sellers, there are many given the growing trend of online shopping, and some of the biggest are Kare in Germany[48], Kika in

[46] One such virtual trade fair is the Design Expo EU available at: https://design-expo.eu/
[47] Available on the website: https://www.fordaq.com
[48] Available on the website: https://www.kare.de

Austria[49], Diotti in Italy[50] and others. Given the large volume of turnover they generate, these sales channels may be suitable primarily for furniture manufacturers with relatively large production and sales capacity, whose earnings are relatively small (e.g. furniture manufacturers from China and Poland).

One of the **platforms for the promotion, exchange of information, match-making and cooperation**, whose potentials should be explored and exploited **is the Enterprise Europe Network - EEN**. It is the world's largest support network for small and medium-sized enterprises (SMEs) with international ambitions. The Network offers advisory services and innovation support. Enterprise Europe Network experts provide SMEs with the advice they need to grow and expand into international markets. The Enterprise Europe Network can help SMEs to find the right international partners to grow and expand abroad. The Network manages Europe's largest online database of business opportunities. It contains thousands of business, technology and research cooperation requests and offers from companies and research and development institutions. The database is accessible for free. Individual businesses can't become Network members, but they can enjoy the many services offered (Enterprise Europe Network, 2022). The Business Cooperation Bulletin issued by the European Entrepreneurship Network of Republika Srpska, as one of the current inquiries - opportunities for cooperation, states a company from Romania that is looking for furniture manufacturers for cooperation under a commercial or distribution agreement. It is stated that the Romanian company is interested in cooperation with manufacturers of modern furniture, primarily sofas, which will be sold online and within the company's own stores. The company estimates that the monthly order will be between 150-250 sofas, with an average purchase price of between EUR 500-1,200. Delivery time should not exceed 6 weeks. Ideally, sofas should not be sold by other retailers, especially in Romania (EUNORS, 2022, p. 3).

Important platforms for information exchange and networking are **B2B social networks such as LinkedIn and Xing**. That is why it is important to create a personal profile and company page on these platforms and present the company's activities, its offer, references, and other useful and interesting information. It is especially important to present what is the comparative advantage of a company and how it differs from similar companies - the competition (Unique Selling Proposition - USP). It is also advisable to research and join relevant groups and be active in them[51].

Summary of chapter 6.4.1.

Conducted research shows that interactions in the process of introducing innovations between companies exist, but cooperation is at a modest level, sporadic and short-lived. Factors that hinder cooperation between companies are people's mentality, lack of trust, as well as previous bad experiences during cooperation. Of particular importance, both in terms of achieved market results and in terms of the business model is the **Gazzda brand as a creative platform, i.e. a network of companies and experts** who are mutually complementary in terms of knowledge and capacity. **Gazzda has developed and combined exactly those functions and competencies that most wood processors do not have (design, development, promotion and distribution of furniture)**, while production is done by those companies that have free capacities and technical prerequisites for production according to defined designs and requirements. Out of the other domestic platforms for cooperation and networking of stakeholders in wood processing, it is important to mention conferences, as well as several online fairs of furniture and wood sector in BiH. When it comes to

[49] Available on the website: https://www.kika.at

[50] Available on the website: https://www.diotti.com

[51] Some of such groups are: Association Of Furniture Sales Professionals (https://www.linkedin.com/groups/1725207/), Timber & Forest & Construction & Furniture | Holz & Forst & Bau & Möbel | HCN HolzNewsletter (https://www.linkedin.com/groups/1807974/), Architektur Holzbau und Brandschutz (https://www.linkedin.com/groups/5155877/) etc.

foreign knowledge centers that are important for strengthening the competencies of educational institutions, organizations and consultants in the field of wood processing, the **Universities in Rosenheim and Bern** are among the most important ones. In addition to universities, important organizations for networking and cooperation are various **associations of wood processors, clusters and other organizations active in the field of wood processing in target markets**. Of particular importance for the promotion and establishment of contacts with potential buyers and partners is the presentation at **fairs** (or at least their visits). From online platforms, it is important to assess and take advantage of the opportunities offered by **B2B platforms** Fordaq and Enterprise Europe Network - EEN, as well as **B2B social networks** LinkedIn and Xing.

7. Market entry/penetration and long-term sustainability strategies

The analyses and research presented in previous chapters of the study indicate that **the most promising export markets in the coming period, both for wood products and wood, may be Germany, Italy and Austria**. Therefore, it is recommended to focus marketing efforts on these markets in the forthcoming period.

Based on the comparison of average export prices of BiH producers with average export prices of producers from other countries, it may be assumed that **most BiH companies use the strategy of low prices when exporting furniture and parts thereof** (products groups 9401 and 9403) to the markets of Germany and Austria, while when exporting wood and wood products (product groups 4418, 44017 and 4401) to Italy and Austria they mostly use the strategy of prices that are higher than average market prices.

Given that in the export structure of the wood processing industry product group 94 has a relatively higher share (compared to product group 44), where the strategy of low prices is dominant, **it is necessary to work on creating products with higher added value, and accordingly, the price level. In other words, it is necessary to support companies to gradually reorient from the strategy of low prices to the strategy of (focused) differentiation**. This means that for a relatively small market segment (market niche) a product is created that is largely adapted to the needs, desires and requirements of the target group and as such differs significantly from competitors' furniture. This also means that such furniture is produced in small series, while in extreme cases it can be an individualized product that is produced based on wishes, requirements and information inputs of the individual customer. Such products have a relatively high value, and accordingly a relatively high price. This is the way brands are developed. Artisan and its brands prove that BiH companies can also build brands that are recognizable and successful on a global market.

Artisan - from cooperation with designers to a global brand

The Artisan company originated from the traditional carpentry Ćostović located in Tešanj, which poured all its love for wood and 50 years of experience in its processing into the company. Fifteen years ago, they decided to transform their love towards the wood into a serious business. Their plan sounded crazy to many at the time - they decided to produce expensive designer furniture in the middle of Bosnia and sell it on foreign markets. "People were amazed at this as if we were planning to launch a rocket into space", commented Mirza Costovic, CEO of Artisan. In the early 2000s, a Dutch company came to Tešanj and moved its production there. Artisan started working with them and very quickly gained experience in producing furniture.

"Artisan is specialized in the manual production of high-quality solid wood furniture, and insistence on handmade, artisan work is what distinguishes us from others", says Mr. Ćostović. After a piece

of wood comes out of machining, everything is done by hand. "Our craftsmen glue and join the parts by hand, and then the final processing begins, that is, fine sanding and finally oiling", says Mr. Ćostović and adds that Artisan is one of the few companies in Europe that controls the entire production process itself. "We are recognizable by round shapes that are soft to the touch, and we often tell our customers that they need to feel our furniture with their hands."

With the introduction of modern machinery, this type of furniture has become an affordable luxury. They use European walnut, oak, elm, cherry, maple and ash wood, and procure them from Bosnia, Serbia and Croatia. They also make furniture from American walnut, which they order from the USA. Artisan offers chairs, tables, chests of drawers, cabinets, beds, lamps and other solid wood furniture.

"Cooperation with renowned designers is the result of Artisan's philosophy to become a brand that is recognizable by the design of its products. If you want to be recognizable in the world market, then it is important to cooperate with names like Karim Rashid. He made about twenty concepts for us, and we developed 11 prototypes from them, which started mass production", explains Mr. Ćostović. Today, Artisan cooperates with many designers from BiH, Croatia and the world. Through contacts with designers, they saw the potential for developing their own collections. So far, they have collaborated with about forty designers from all over the world, and today they have reached the stage where designers from all over the world contact them and send their ideas and suggestions.

The round lines, by which they are recognizable today, they first met in 2009. Then they started collaborating with Professor Salih Teskeredžić from the Academy of Fine Arts in Sarajevo. His Latus table is still one of Artisan's best-selling products today. When they receive specific proposals from the designer in the form of a render, they all sit down together at a table and assess whether they can technically perform the proposed design. If it is possible, developers create a program for machines and cut the boards into organic forms. So, based on the design proposal, Artisan is developing a construction-technology solution. This is the basis for production, followed by the launch of the product on the market, in which a major role is played by the presentation at international fairs. Among the most important fairs, the Artisan was attended are IMM Cologne, Maison & Object in Paris, Salone Internazionale del Mobile in Milan, Clerkenwell Design Week in London and Design District in the Netherlands. “Winning the Red Dot Award at the IMM Cologne International Interior Design Fair is one of our greatest successes. We received this prestigious award in 2016 for the Neva armchair”, says Mr. Ćostović. This collection was developed in 2012, and the design is signed by the Regular Company from Zagreb. In addition to this award, Artisan has received many other awards.

"In the first stages of business development, we realized that we had the technology, but we lacked the right distribution channels. Today, we have over 300 outlets in 41 countries”, says Mr. Ćostović. Artisan has worked on furnishing projects in the United States, Australia, China, and many other places. "A kind of recognition and an important reference is the cooperation with the well-known company Starbucks. When Starbucks opened its store in Paris, in one of the most prestigious locations in the city, they chose Neva chairs, as an important part of the interior. Also, Artisan, with its furniture and interior, participated in furnishing the Starbucks store in Milan”, says Mr. Ćostović. Today, they equip the sales facilities of Hermès and Louis Vuitton, and Artisan's furniture can be found in a dozen Michelin-starred restaurants in Cologne, Paris, St. Petersburg, and other places.

Initially, there were even proposals to open the Artisan office in Milan to sell the furniture as Italian. "But the owners didn't even want to hear about it. It was a brave decision, I would say visionary", says Mr. Ćostović. "Our customers come to visit the factory and get to know Bosnia and Herzegovina along the way. Two years ago, clients from Hong Kong came to us. They wanted to celebrate the New Year right here, so we took them to Sarajevo after visiting the factory. A guy from Zagreb decided to propose to his girlfriend and instead of a ring he decided to give her our table in which she fell in love, and since he had no more money left, he asked us to make him a symbolic wooden ring. And of course, we fulfilled that wish."

In ten years, Mr. Ćostović sees Artisan as one of the most important manufacturers of solid wood furniture in the world. “There are few factories in the world that can offer this level of quality, and many of them have given up working with solid wood, so we have already become a threat to many. We are constantly investing and reinvesting everything our company earns in new halls, wood and machinery. Our passion is to build a brand, to remain recognizable and that keeps us from falling into the existing success", concludes Mr. Ćostović.
Sources: Šipragić, Janković, 2020, p. 37-41; Smoljak, 2021.

Figure 29. Neva chair

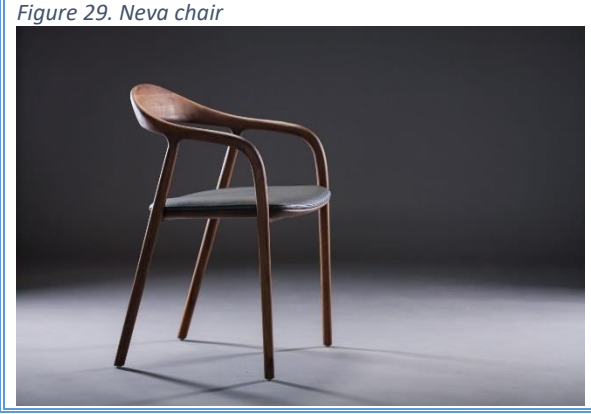


Figure 30. Latus table

Having in mind the example of Artisan as a very successful business model, **it is important on the one hand to work on promoting the benefits of such business models and strategies based on creating high value-added products (brands), and on the other hand to create a stimulating environment and support instruments so that as many companies as possible start taking the first steps, probing and experimenting in this direction**. Of course, all companies cannot follow this model and create high-end designer furniture, but it is important to enable and facilitate companies to take the first next step in the direction of producing higher value-added products. Thus, for example, it is important to enable and stimulate some sawmills to try to produce edge-glued panels, those who produce panels to try to produce furniture parts, those who produce furniture parts to try to make the first piece of standard furniture, those who produce standard furniture to work on improving its design and unique style.

Therefore, **it is necessary to use the strengths that our wood processing industry already have** (technical/production knowledge, good value for money, flexibility in production, proximity to target markets, good image of beech from BiH and some manufacturers - Artisan, Gazzda, etc.), **but also to minimize its weaknesses**. In this context, it is especially important to **support the development of the consulting market in those areas that are now a "bottleneck“, and which mostly add value to the products and contribute to brand creation** (e.g. industrial design, preparation of technical documentation, creating prototypes, marketing, research, etc.). Ideally, it would be desirable to **support the establishment of a center for research, development and design of products** that would provide such services to interested companies. It does not have to be exclusively one organization with capacities in all the mentioned areas, but it can also be a network of faculties, laboratories, companies and consultants, while each of them has capacities in some of these areas that they offer (or can offer) as services. In that way, those functions that Gazzda does for himself would be available to all companies that are interested in using them. Thus, a larger number of companies could use these services and take the first steps in the development of higher value-added products.

At the same time, **the products and the entire offer must be in line with new trends in the target markets**. One of the most important trends is the circular economy that tries to minimize the impact on the environment not only during the manufacturing process but also during its use and at the time

of disposal. There is increasing demand for eco-friendly furniture that is manufactured based on the concept of eco-design following a circular economy model. Therefore, **it is necessary to support the introduction of appropriate standards (e.g., FSC, ISO 14001) and certification of export products (e.g., certificates related to the safety of certain types of products, EU Ecolabel certificate, etc.).** As explained above in the context of the FSC certification, in order to get a relevant standard, an organization must meet defined requirements. After the organization's production processes and/or products are adjusted to the requirements of regulatory documents, the organization is evaluated (audited) to determine compliance with applicable standards. The mentioned adjustments of production processes/products are often made with the support of relevant consultants since companies often don't have enough capacities to do that on their own[52].

Having an attractive product is not enough to succeed in the market. It is necessary to ensure that information about such a product reaches potential customers and partners. That is why it is important a **proactive market approach with a well-designed and targeted promotion** that should be based on exhibiting (or at least visiting) well-known fairs and other B2B events, organizing presentations and similar events on the wood industry of BiH as a part of a fair program (in agreement with the fair organizer), PR activities - publishing articles about wood processing industry and some representative companies from B&H in specialized media on target markets[53], networking and advertising on B2B social networks (LinkedIn and Xing) and advertising on Google - search and display campaigns related to nearshoring, new suppliers, (design) and solid wood furniture, etc. Promotion activities should be planned, organised and conducted for the wood industry of BiH in general (with some cases as an example), while promotional efforts of individual companies should also be supported. It may be a good idea to create a special website, as a kind of platform where the wood processing industry of BiH would be presented. Such a website should be created for potential B2B buyers and partners in target markets[54].

One of the factors that indirectly contribute to the successful entry into new markets, i.e. the achievement of appropriate sales results, is increasing efficiency and productivity. That is why it is **important to support projects to improve production and business processes in wood processing companies**. This can save significant time and money and improve competitiveness. Also, it should be borne in mind that efficient processes and *lean* production are the first steps and a prerequisite for the digitalization of business, which is becoming more and more important. Of course, **the introduction of relevant digital solutions should also be supported.**

Since most companies don't have enough know-how and financial resources to introduce the aforementioned (product, process, organisational and marketing) innovations and get necessary standards and certificates, they need both professional and financial support.

Summary of chapter 7

Since most BiH producers of furniture and parts thereof use the strategy of low prices when exporting them to foreign markets, it is necessary to work on creating **higher added-value products**, and accordingly, the price level. In other words, it is necessary to **support companies to gradually reorient from the strategy of low prices to the strategy of (focused) differentiation**. Artisan proves

[52] An example of a public call to support the introduction of standards for SMEs through the financing of consultancy costs is available here: https://www.ekapija.com/dokumenti/Poziv%20za%20MSP.pdf. Similar public calls may be designed to support introducing FSC or some other technical standards.

[53] Some of them are Möbelmarkt (https://www.moebelmarkt.de/), dds - das Magazin für Möbel und Ausbau (https://www.dds-online.de/), Holzmagazin (https://www.holzmagazin.com/), Bauen mit Holz (https://www.bauenmitholz.de/), Möbel kultur (https://www.moebelkultur.de/), Wohn Design (https://www.wohndesign.de/), etc.

[54] A good example of such a platform for Polish companies can be found here: https://www.poland-furniture.com/en

that BiH companies can also build brands that are recognizable and successful on a global market. Therefore, **it is important on the one hand to work on promoting the benefits of such business models and strategies based on creating high value-added products (brands), and on the other hand to create a stimulating environment and support instruments so that as many companies as possible start taking the first steps, probing and experimenting in this direction.**

Besides using the strengths that our wood processing industry already has, it is important to minimize weaknesses by supporting the development of the consulting market in those areas that are now a "bottleneck", and which mostly add value to the products and contribute to brand creation (e.g. industrial design, preparation of technical documentation, creating prototypes, marketing, research, etc.). Ideally, it would be desirable to **support the establishment of a center for research, development and design of products** that would provide such services to interested companies. It may be a network of faculties, laboratories, companies and consultants which can provide relevant services.

Since products and the entire offer must be in line with new trends in the target markets, it is necessary to **support the introduction of appropriate standards** (e.g., FSC, ISO 14001) and **certification of export products** (e.g., certificates related to the safety of certain types of products, EU Ecolabel certificate, etc.). Also, it is important to support projects aimed to **improve production and business processes, introduce digital solutions as well as conduct well-designed and targeted promotional activities.**

Since most companies don't have enough know-how and financial resources to introduce the aforementioned (product, process, organisational and marketing) innovations and get necessary standards and certificates, **they need both professional and financial support.**

8. Findings

The most important finding of the study can be summarised as follows:

- The wood processing industry of BiH consists of 1,348 companies that are active in 10 business sectors and employ more than 25,000 workers in 2020.
- The structure of the wood processing industry of BiH is relatively unfavourable since there is the largest number of those companies that generate relatively small GVA (e.g., sawmills);
- The total sales value of all product categories in 2020 was EUR 1.03 billion, while the total export value was EUR 576 million.
- Key export product groups in 2020 were: *9401: Seats, whether or not convertible into beds, and parts thereof, n.e.s.* - USD 298 million; *9403: Furniture and parts thereof, n.e.s*. - USD 208 million; *4407: Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm* - USD 191 million; *4418: Builders' joinery and carpentry, of wood, incl. cellular wood panels, assembled flooring panels, shingles and shakes, of wood* - USD 63 million and *4401: Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms* - USD 61 million;
- The top 5 export markets for BiH in 2020 were Germany, Croatia, Italy, Serbia and Slovenia.
- Having in mind the Export Potential Map's projections for both wood products and wood, the most promising export markets in the forthcoming period may be Germany, Italy and Austria.
- The most important competitors for seats, furniture, and parts thereof (product groups 9401 and 9403) in key export markets come from Poland, China, Germany and Italy. The most important competitors in key export markets for wood and wood products (product groups 4407, 4418, 4401) come from Austria, Germany, Poland and Italy.

- Value chain analysis showed that weak links extend through the entire value chain. At the beginning of the chain, it is the supply of raw materials, in its middle it is the lack of professional staff, the need to improve production processes, better capacity utilization and improvement of production technologies, and at the end of the chain, it is the need for information on attractive export markets, potential buyers and current trends, with a proactive market presence.
- Some of the key advantages of the wood processing companies/industry BiH are: a long tradition; technical/production knowledge; flexibility; good quality and image of some types of wood originating from BiH (e.g. Bosnian beech); recognizable design and quality of some furniture brands from BiH; good image of wood processing companies from BiH. Some of the key disadvantages of the wood processing companies/industry are: insufficient and unreliable sources of wood supply; insufficient level of utilization of production capacities and equipment; lack of professional staff; lack of communication and cooperation between companies, as well as between companies and relevant faculties; undeveloped quality infrastructure for the wood processing sector in BiH; business models that are predominantly based on contract manufacturing for international customers and the lack of own products; relatively low level of finalization (added value); business and production processes are not *lean*.
- Near-shoring to countries and regions closer to Western Europe is likely to emerge after the pandemic. Therefore, Western Balkans should change the position and narrative from economies that offer low costs for investors, to the destination that offers high quality.
- Covid-19 pandemic did not influence significantly German and Austrian markets, since the production and import of relevant product groups remained at the almost same level as before the pandemic. On the other hand, the impact of the Covid-19 on the Italian market was relatively strong since the value of production of relevant manufactured goods in Italy was decreased by about 7% in 2020 compared to 2019, while Italian import of relevant wood products and furniture was decreased by 11.76%.
- The furniture of the future must be eco-friendly, tailor-made and multifunctional. Eco-friendly furniture is manufactured based on the concept of eco-design following a circular economy model and concept of the 7Rs (recycle, redesign, reduce, reuse, repair, renew and recover). Given the trend of decarbonization, the increasing use of wood in construction is evident and it is likely to be more widespread. Producers will have to accept the emerging concept - *innovability* that expresses the ability to constantly innovate while respecting the values of which the sustainable model is the bearer.
- As of May 2020, over 1,88 million hectares - i.e., about 83% of state-owned forests in Bosnia and Herzegovina, are FSC certified. There are 328 holders of the CoC and 8 holders of the Forest management certificate in 2022. Also, there are 7 holders (companies) of the PEFC certificate from BiH. In the context of sustainability and ecology trends, the EU Ecolabel (voluntary environmental performance certificate) may become more important.
- The situation in the field of quality infrastructure for wood processing in BiH is bad because there is only one accredited body in the wood processing sector.
- The concept of the Smile curve suggests that the most value is added in either upstream activities (development of a new concept, research and development) or downstream activities (marketing, branding and customer service), and these are precisely those functions that are insufficiently developed or do not exist in most wood processing companies.
- In those areas that are not mandatory but affect the creation of added value, performance and competitiveness of companies (product research and development, industrial design, marketing, branding, process improvement, etc.), the offer of consulting services is relatively small.

- Wood processing engineers, without whom it is difficult to develop and implement significant innovations in companies, are deficient in the labour market. Human resources management - HRM function is not sufficiently developed among wood processing companies.
- Faculties are generally focused on the teaching process, while communication and institutional cooperation with companies are underdeveloped.
- When it comes to foreign knowledge centers that are important for strengthening the competencies of educational institutions, organizations and consultants in the field of wood processing, the Universities in Rosenheim and Bern are among the most important ones.
- Of particular importance, both in terms of achieved market results and in terms of the business model, are Gazzda and Artisan. Gazzda, as a creative platform, has developed and combined exactly those functions and competencies that most wood processors do not have on the needed level (industrial design, development, promotion and distribution of furniture). Artisan shows that even local companies with strong marketing orientation can create successful global brands.

9. Conclusion and recommendations

In order to make the best use of the limited forest resources available to BiH, to satisfy demanding customers in the target markets (Germany, Austria and Italy), and to adapt to new market trends (sustainability, eco-friendly products, etc.), it is necessary to support companies to gradually reorient:

- from the business model/strategy of contract manufacturing (lohn), to the business model/strategy of development own products, and
- from the business model/strategy of low prices (based on low value-added products), to the business model/strategy of focused differentiation (based on high value-added products aimed at specific, small, market niche).

Although doing business according to this business model/strategy is demanding, it is not impossible. This was shown and proven by companies such as Artisan, Gazzda, MS & Wood, Rukotvorine and others who have created not only their own products but also brands that are recognizable in the European and global market.

In order to have as many companies in BiH as possible that would take that path, it is needed to work on promoting the benefits of such business models and strategies based on creating high value-added products (brands) on the one hand and to create a stimulating environment and support instruments so that as many companies as possible start taking the first steps, probing and experimenting in this direction, on the other hand. Of course, it is not realistic that all or even most companies create high value-added products (e.g., high-end designer furniture), but it is important to enable and facilitate companies to take the first next step in the direction of producing higher value-added products (e.g., to enable and stimulate some sawmills to try to produce edge-glued panels, those who produce panels to try to produce furniture parts, those who produce furniture parts to try to make the first piece of standard furniture, those who produce standard furniture to work on improving its design and unique style). The way of doing business, as well as the products themselves, should be as adapted as possible to the circular economy model, ecological requirements and decarbonization trends.

The question is how to reach that goal? Having in mind the research findings, the following interventions, structured in accordance with the Systemic competitiveness framework (Meyer-Stamer, 2005), may be recommended:

Macro level

- Support in design and implementation of a relevant legal and strategic framework, including engagement on the alignment of relevant strategic documents (strategies, action plans, etc.).

Meso level

- Support the process of creating and adopting appropriate policies that would discourage the export of raw materials (timber) and to some extent also semi-raw materials (sawn timber), given that domestic producers of final products (i.e. higher value-added products) do not have enough raw materials, which limits the volume and endangers the continuity of their production.
- Evaluate the possibilities and cost-effectiveness of particleboard production in BiH, to replace (part of) import with domestic production.[55]
- Support promotional activities aimed at strengthening interest in woodworking occupations. In cooperation with local government units, wood clusters and companies as well as relevant faculties/high schools, introduce scholarships for students of woodworking occupations. Along with the growth of interest in these occupations, the enrollment policy in schools and faculties should be adapted (establishing appropriate curricula and enabling the enrollment of a larger number of students).
- Improve the competencies of knowledge centers (Faculties of Mechanical Engineering in Sarajevo and Zenica, Technical Faculty in Bihac and Faculty of Forestry in Banja Luka – relevant wood processing departments, wood clusters and companies) with international reference institutions (e.g., Universities of Applied Sciences in Rosenheim and Bern). Teaching staff in secondary schools should be educated at the appropriate faculties in BiH.
- Facilitation of networking, communication, and cooperation between faculties, clusters, LIND and companies. This may improve the utilization of equipment and encourage the exchange of information and know-how.
- Strengthen the consulting market (especially the offer) in those areas that especially contribute to the creation of higher added-value products, that are underdeveloped in wood processing companies (e.g., research and development, industrial design, marketing, branding, process improvement, etc.). This may be achieved by the education of students on these topics (in the long run) and co-financing of these consulting services and their promotion to potential beneficiaries (in the short run). Ideally, it would be desirable to support the establishment of a center for research, development and design of products that would provide such services to interested companies. It may be a network of faculties, laboratories, companies and consultants which can provide relevant services.
- Improving the quality infrastructure for the wood processing industry. That may include support to establishing accredited examination bodies, accreditation of new methods etc.
- Support the promotion of the wood processing industry of BiH in the target markets (Germany, Austria and Italy) at the specialized fairs and B2B events, via the internet (own website, Google ads and B2B social networks – LinkedIn and Xing), as well as via PR activities – articles in specialized professional magazines and portals.

[55] Production of particle board used to be in factories in Bosanska Krupa, Sanski Most, Glamoč and Sokolac, production of MDF used to be in Busovača, while production of HDF used to be in Blažuj near Sarajevo.

Micro level

- Raising awareness and education of directors of companies on benefits of gradual reorientation from the business model/strategy of contract manufacturing (lohn), to the business model/strategy of development own products, as well as from the business model/strategy of low prices (based on low value-added products), to the business model/strategy of focused differentiation (based on high value-added products aimed at specific market niche). In parallel, raising awareness and education on the importance of non-production functions in creating added value (e.g., research, industrial design, marketing, branding) and in doing business in general (e.g., HRM - human resources management). Within that process, it is important to use case studies of local companies who use that model successfully (e.g. Artisan, Gazzda, MS&Wood, Rukotvorine, etc.).
- Providing both professional and financial support to introduce a product, process, marketing and organisational innovations, as well as appropriate standards related to requirements of relevant European directives and/or EN standards, CE mark, FSC, EU Ecolabel certificate, etc.
- Enabling financial support for SMEs (e.g., grants) for:
  1. new, energy-efficient machines that can contribute to improving product quality, increasing production efficiency and reducing the company's carbon footprint.
  2. introduction of IT - digitalization solutions and equipment.
  3. (individual) promotion activities - exhibiting at a specialized fair in target markets, creating a new or redesigning an existing website, creating promotional tools (company profile, product catalog, etc.), opening and running pages on B2B social networks, etc.

It is important to emphasize that recommended interventions are related to all gaps and weak links identified in the value chain analysis. It is important to have in mind that very often the desired interventions tackle two levels simultaneously, especially the micro and the meso level. For example, there may be a nexus between the lack of interest in woodworking occupations among youth and the poor image of woodworking (industrial) companies as employers, due to the underdeveloped function of HRM and their passive/inadequate presentation in the education and labour market. In other words, it may be assumed that improving the HRM function would increase employee satisfaction (micro level), which would contribute to improving the attractiveness of woodworking occupations and more people who would be educated and trained for these occupations (meso level). Therefore, communication and coordination between actors on the micro and the meso level should be improved.

10. Appendices

10.1. Actions/initiatives that may have a positive influence on the wood sector in BIH

Although the previous chapters present proposals whose implementation may contribute to improving the situation in the wood processing sector, here these proposals will be described and explained in more detail. It should be borne in mind that this area is characterized by a high level of complexity, and in complex situations, cause-and-effect relationships cannot be predicted in advance due to the number, complexity and instability of interactions and lack of knowledge and experience. Therefore, in such situations, emerging practices are monitored, and several different solutions are tested at the same time to discover patterns of behaviour that can be managed and solutions in which it is worth investing more resources. Therefore, an approach based on the continuous loop that

consists of probing, adjustment and learning, should be taken[56]. Having that in mind, the following activities/initiatives may be supported:

1) **Preparation, discussion, advocacy and adoption of appropriate policies to discourage the export of raw materials (timber) and to some extent also semi-raw materials (sawn timber)** – Forest resources should be used in the best way - by creating and exporting products with as much added value as possible. A large number of wood processing companies, including those that produce products with relatively high added value, face the problem of lack of raw materials, which leads to lower production volumes. By reducing the export of timber and sawn timber, the supply of domestic producers should be improved. Appropriate policies and mechanisms to discourage raw material exports should therefore be developed (e.g., by introducing appropriate taxes for the export of timber and sawn timber). On the other hand, given that particleboard is the most imported input for the needs of the wood processing industry[57], review the possibilities and cost-effectiveness of particleboard production in BiH, to replace (part of) its import with domestic production.

2) **Promotional activities and scholarships aimed at strengthening interest in woodworking occupations** – In cooperation and coordination with relevant stakeholders (e.g., ministries in charge of education, employment offices, relevant faculties and high schools, wood clusters, companies, etc.), it is necessary to design, organize and implement promotional activities that target: 1) students to improve the image of woodworking occupations and enroll in woodworking departments in high schools and faculties and 2) adults with the aim of additional training and retraining for the most demanded occupations in wood processing (e.g., carpenters, upholsterers, CNC wood operators, etc.). In cooperation with local government units, wood clusters and companies as well as relevant faculties/high schools, introduce scholarships for students of woodworking occupations. Increased demand for woodworking occupations, over time, should be base for establishing and developing new (wood processing) departments in high schools and faculties, especially on those locations with developed wood processing industry.

3) **Establishing and improving institutional cooperation with international reference institutions** – In order to strengthen the competencies of domestic knowledge centers and establish a mechanism for continuous exchange of knowledge and information, explore the conditions and opportunities for international cooperation between relevant faculties in BiH (e.g. Faculties of Mechanical Engineering in Sarajevo and Zenica, Technical Faculty in Bihac and Faculty of Forestry in Banja Luka – relevant wood processing departments, wood clusters and companies) and referent faculties such as the Rosenheim University of Applied Sciences - Faculty of Wood Technology and Construction[58], the Bern University of Applied Sciences - School of Architecture, Wood and Civil Engineering[59]. It may be through international exchange programmes, organized visits of professors, etc. Similarly, wood clusters from BiH may organise study visits of their

[56] In complex situations, right answers can't be ferreted out. In this domain, we can understand why things happen only in retrospect. Instructive patterns, however, can emerge if the leader conducts experiments that are safe to fail. That is why they need to probe first, then sense, and then respond. Therefore, the only way to understand the system is to interact (Snowden, D. J., Boone M. E., 2007).

[57] In 2020, the imported value of particleboard wood was USD 38.8 million.

[58] The list of universities with which cooperation has been established is available here: https://www.th-rosenheim.de/fileadmin/user_upload/Fakultaeten_und_Abteilungen/International_Office/Dokumente/THRO_Partner_Universities_Web_aktuell.pdf

[59] More information on internalization activities are available at: https://www.bfh.ch/en/about-bfh/management-organisation/committees/

members and other interested companies to similar wood clusters and associations in Germany (e.g., Main Association of the German Wood Industry, Association of the German Furniture Industry, Bavarian Forestry and Wood Cluster, etc.)[60], Austria (Holzinnovationszentrum, Holz Forschung Austria, Association of the Austrian wood industry, pro:Holz Austria Association of the Austrian timber industry, etc.) and Italy (Italian Woodworkers Association (FederlegnoArredo), Cluster Legno Arredo Casa FVG, CATAS – Testing and analysis laboratory for the wood and furniture industry, CSIL - Centre for Industrial Studies, etc.).

4) **Facilitation of networking, communication, and cooperation between faculties, clusters, LIND and companies** – Given that company directors of companies and wood clusters are not sufficiently familiar with the capacities and equipment available to the faculties (so the level of utilization of this equipment is relatively small), it is necessary to design and implement appropriate promotional activities. This may include a more detailed presentation of the relevant laboratories and the equipment, the services provided on that basis, their prices, contact persons that can provide more information, etc. Suitable media for this are the Internet, (electronic or printed) promotional materials that would be distributed to (physical or e-mail) addresses of company directors, as well as events in the form of open days or organized presentations/demonstrations of equipment for representatives of companies and clusters. In order to strengthen the cooperation between companies and faculties, it is desirable to include interested companies in the practical classes (exercises) of students, e.g. through visits of companies directors' who could nominate problems to be solved by students through diploma/master's theses or the organization of competitions (e.g., ideatons, makertons) where students could give their ideas and proposals, while the best solutions may be awarded[61]. Also, through clusters and associations of woodworking and metalworking companies or appropriate web platforms, enable and facilitate the exchange of information between woodworking and metalworking companies on the needs and opportunities for cooperation (e.g., production of equipment and tools for woodworking, conveyors, machinery parts, servicing and maintenance of equipment, etc.).

5) **Establishment of a center for research, development and design of products** that would provide such services to interested companies. – It may be a network of faculties, laboratories, companies and consultants which can provide relevant services. Their individual capacities and services should be gathered and promoted within "umbrella" of the Center for research, development and design of products. After some time, after assessment of the level of demand for the Center's services, quality of communication and cooperation between those who provide certain services within the Center and the level of clients' satisfaction, it may be considered significant investments and greater formalization of relations among the Center's members.

6) **Improving the quality infrastructure for the wood processing industry** – Having in mind that the quality infrastructure for the wood processing industry in BiH is poor (e.g., there is only one accredited body in the wood processing sector of BiH), it is recommendable to provide support to improve it. It may be done by supporting those organisations that have the potential to become

[60] More information and contacts of relevant associations in Germany are available here: https://www.holzindustrie.de/hdh/netzwerk/index.html#fachverbaende

[61] Such an activity was recently organized within the project NOVALIS. More information: https://edabl.org/invitation-to-students-to-submit-ideas-for-enterprise-innovation/ and https://edabl.org/a-presentation-for-students-aimed-at-gathering-ideas-for-innovation-in-smes-held/

accredited examination bodies (e.g., relevant faculties and other organisations with relevant equipment and staff) to achieve it. Also, accreditation of new methods may be supported.

7) **Support the promotion of the wood processing industry of BiH by:**
   - **Joint fair exhibitions and presentations at specialized fairs** in Germany (e.g., imm Cologne, Zow - the supplier fair for the furniture industry and interior design, Interzum, Holz-Handwerk), Austria (e.g., Internationale Holzmesse, Holz&Bau, Wohnen & Interieur) and Italy (Salone Internazionale del Mobile, Progetto Fuoco, Wood Experience, SICAM);
   - **Establishing an online platform (website) to present the wood processing industry of BiH**, company profiles (products, services, capacities, standards, references, what they offer / demand, etc.)[62], with relevant catalogues and video materials and their active promotion via Google (search and display ads), as well as networking and promotion on B2B social networks (Linkedin and Xing). Advertising should initially be conducted with a relatively small budget and precise analytics, to determine which ads and communication channels are cost-effective and which are not, which is the basis for their further adjustment and optimization;
   - **PR activities** – e.g., publishing articles on the wood processing industry of BiH and its representative companies in specialized professional magazines and portals on target markets (e.g., Möbelmarkt, dds - das Magazin für Möbel und Ausbau, Holzmagazin, Bauen mit Holz, Möbel kultur, Wohn Design, etc.);
   - **Organizing (virtual) promotional events and B2B meetings with the support of diplomatic and consular missions of BiH in target markets** to present the wood processing industry of BiH, networking and establishing contacts with potential buyers.

8) **Raising awareness and education of directors of companies on**:
   - **Benefits of gradual reorientation** from the business model/strategy of contract manufacturing (lohn), **to the business model/strategy of development own products**, as well as from the business model/strategy of low prices (based on low value-added products), **to the business model/strategy of focused differentiation (based on high value-added products** aimed at specific market niche);
   - **Importance of non-production functions in creating high added-value products (e.g., research, industrial design, marketing, branding)**. Within that process, it is recommendable to use case studies of local companies who use that model successfully (e.g., Artisan, Gazzda, MS&Wood, Rukotvorine, etc.);
   - **Importance of HRM (human resources management) in retaining existing and attracting new employees**;
   - **Benefits of optimisation of production and business processes** (e.g., using 5S, Kaizen, Six Sigma, etc**.) followed by** introducing appropriate digital solutions – **digitalisation**;
   - **New trends on target export markets** (e.g., circular economy and sustainability, increasing demand for eco-friendly products and use of wood in building, decarbonisation, etc.) and how to adapt products and businesses to them.

     It may be done by creating and publishing appropriate content on webpages of wood clusters as well as wood industry and forestry associations (that operate within the Chambers of Commerce in BiH), or it may be created a new website to inform and educate representatives of wood processing companies in BiH on actual trends, concepts, training, public calls, etc. Also, it is important to organise training on the aforementioned topics, as well as study visits

[62] Such a platform is made for Polish furniture manufacturers: https://www.poland-furniture.com/en.

to selected companies in the region and EU countries which may represent good practice in some business areas (e.g., lean production, digitalisation, industrial design, etc.)

9) **Strengthen the consulting market in those areas that especially contribute to the creation of higher added-value products, and that are underdeveloped in wood processing companies** (e.g., research and development, industrial design, marketing, branding, process improvement, etc.). It may be a good approach to use a voucher scheme for that[63].

10) **Providing both professional and financial support (e.g. grants) to companies to introduce:**
   - **Product innovations** (e.g., improving existing and developing new products, including preparing technical documentation, industrial design, making prototype, etc.);
   - **Process innovations** (e.g., 5S, Kaizen, Six Sigma, etc.);
   - **Marketing innovations** (e.g., market research, market segmentation, targeting and positioning, digital and social media marketing, participation in fairs and B2B events, preparing promotion materials, etc.);
   - **Organisational innovations** (e.g., redefining organizational structure, introducing new business functions and organization methods, (re)organization of workplaces or external relations);
   - **Appropriate standards** (e.g., technical standards related to requirements of relevant European directives and/or EN standards, CE mark, FSC, EU Ecolabel certificate, etc.);
   - **New technologies and energy-efficient machines** that can contribute to improving product quality, increasing production efficiency and reducing the company's carbon footprint;
   - **IT - digitalization solutions and equipment** (e.g., RFID, appropriate ERP systems and software, etc.);
   - **Energy efficiency management systems** (e.g., conducting energy audits, preparing proposals for improvement of energy efficiency and implementation of recommended proposals), etc.

10.2. Interviews with representatives of target markets

In order to verify conclusions from desk research and gather opinions and attitudes on the perception of the wood industry of BiH and possibilities to improve cooperation in the coming period, interviews with representatives of target markets (Germany, Austria and Italia) were conducted. Relevant institutions, organisations and companies on target markets were identified, and e-mails[64] with the most important findings of the conducted desk research were sent with the kind request to participate

[63] A good example in this area is the recently implemented voucher program for the introduction of innovations in SMEs implemented by Eda - Enterprise Development Agency within the project "SBA in BiH" through which 8 SMEs from Zenica and 9 SMEs from Banja Luka were supported. As a part of this voucher program, 4 companies developed new products, 8 companies improved existing business processes, 1 company introduced a new business process, and 4 companies introduced innovations in the field of marketing. More information is available in the publication "How to improve the implementation of SME development strategies and plans? Mechanism, results, experiences and recommendations" (Miovčić et al., 2021, p. 12).

[64] Internet has been increasingly used not only for surveys, but also for interviews. The most commonly used approach to date has been through e-mail. E-mail interviews can be conducted in a variety of ways. The simplest is appropriate for structured survey-type questionnaires and involves a full set of questions being posted in a single e-mail to which a participant responds when they find it convenient. Source: Robson, C. & Mc Cartan, K. (2016). *Real Word Research*. Wiley & Sons Ltd., p. 295-296

in the survey and submit their answers via Google form or in the Word questionnaire which contained the following questions:

1) Germany/Austria/Italy is one of the most important trade partners of Bosnia and Herzegovina regarding wood and wood products (the research findings are available here[65]). What may be done to further improve cooperation in this area (e.g. improve the exchange of information, simplify foreign trade procedures and eliminate non-tariff barriers, support participation in specialized fairs and similar B2B events, etc.)?
2) What would be new opportunities for the wood processing sector of Bosnia and Herzegovina that arise as a consequence of the pandemic and how to use them in the best way?
3) In the context of optimizing supply chains, what could be the interest of wood processing companies from Germany/Austria/Italy in Bosnia and Herzegovina in the coming period in this context (e.g. interest in Bosnia and Herzegovina may be increased/decreased/remain unchanged - at the same level as before)?
4) How would you assess the competitiveness of wood processing companies from Bosnia and Herzegovina? What are companies good at, and what is poor (should be improved) (e.g. product quality, industrial design, promotion, price, meeting deadlines, flexibility)?
5) What trends are present in the German/Austrian/Italian market and how should wood processing companies from Bosnia and Herzegovina respond to them?
6) What would be your message - advice for companies from the wood processing sector of Bosnia and Herzegovina, to improve their competitiveness and market position in the German/Austrian/Italian market?
7) If there is something that you find important on this topic and I did not ask you, please write it here.

In the period 18.1.-9.2.2022. representatives of the following institutions, organisations and companies provided their answers:

- Germany - Germany Trade & Invest - GTAI (Western Balkan Office), Representative Office of the German Economy in Bosnia and Herzegovina – AHK BiH, Cluster Forst Holz Bavaria, INNOTECH Holztechnologien GmbH, ProConTech GmbH and ClassiCon GmbH.
- Austria - Austrian Embassy Sarajevo (Commercial Department), Holzcluster Steiermark GmbH, Klagenfurter Messe, Holzforschung Austria, Möbel Putz.
- Italy - Cluster Legno Arredo Sistema Casa FVG, FederlegnoArredo, Unioncamere, Piemmeti Spa Veronafiere, Centro Veneto del Mobile.

Findings of interviews with representatives of the German market

When it comes to opinions and attitudes related to the question of what may be done to further improve cooperation and foreign trade between Germany and BiH, most respondents find that participation in specialized fairs and similar B2B events is important and therefore should be supported, as well as that exchange of information should be improved (e.g., through online databases on wood processing companies, their capacities, supply, and demand, etc.). In addition to promotion in the German market, it is also very important to provide state-of-the-art products (sustainable, eco-friendly and certified). Therefore, it is also important to support certification processes and organize

[65] The research findings relevant for Germany are available here https://bit.ly/3GdOaeC, the research findings relevant for Austria are available here https://bit.ly/31L1B6S and the research findings relevant for Italy are available here https://bit.ly/334JBoC.

export training. Wood processing companies should adapt their technologies and offer according to the market trends, customer needs and the changing value system, such as:

- Construction industry - ecological trends, e.g., house building with wood, taking into account resource-saving concepts, modular construction, energy efficiency, $C0_2$ reduction and climate protection;
- Furniture - individualisation of production - the aim is to produce single items and small batches with the same costs as big batches. For this, digitalization is a must.

In general, it is important to gain more market know-how - about customers' needs and individualisation of products and services. Fewer respondents believe that foreign trade procedures should be simplified and that potential non-tariff barriers should be eliminated.

The second question was related to new opportunities for the wood processing sector of Bosnia and Herzegovina that arise as a consequence of the pandemic and how to use them in the best way. Prices for timber construction products have risen strongly in 2021 and material is hardly available. Companies that don't have their own resources have problems fulfilling their orders in that way that all costs are covered. International customers are looking for alternatives in nearshoring and cooperation with new suppliers. This is an opportunity for companies from BiH. Therefore, it is important to position BiH as a supplier on the doorstep of the EU that can deliver products at competitive prices and at the same time meet demands for sustainability, eco-friendliness, etc. Some respondents think that it is also important to develop digital channels for products with virtual presentation and digital product data organized on a platform where interested and registered users could use them.

The third question was related to expectations on the interest of wood processing companies from Germany in Bosnia and Herzegovina in the coming period in the context of optimizing supply chains and nearshoring. Most respondents think that interest in Bosnia and Herzegovina in the coming period may be increased, while some of them add the condition - "if political issues do not further damage the reputation of the country". One respondent thinks that interest in BiH may remain unchanged - at the same level as before. The comment of one of the respondents is particularly interesting: "BiH is easy to reach, and it is not far away from the core markets in Europe. Most of the European customers are looking for low-cost and secure procurement sources. To build up and stabilize a new market position it is necessary to build an image and a regional brand for the BiH Wood industry. From a strategic point of view, it is not enough only to rely on the image of a low-cost sourcing country. Wood industry must increase the production of more valuable products to establish product preferences."

The competitiveness of wood processing companies from Bosnia and Herzegovina was assessed as relatively good. Most respondents perceive product quality and industrial design as good. Price and meeting deadlines were assessed as a medium, while promotion and flexibility were perceived as poor. One of the respondents describes the competitiveness of wood processing companies this way: "Most of the BiH wood companies are producing standard products with a low USP[66]. Many companies rely on their cheap labour costs. For the future, the companies need to produce more valuable products. An important aspect is a trend towards more individual products and services. But there are also some very advanced BiH wood companies (e.g. Artisan) with a clear marketing strategy (e.g. entering the high-price furniture market). This example proves, that it is also possible for BiH companies to successfully implement a preference strategy."

[66] USP - Unique Selling Proposition

Regarding trends that are present in the German market, respondents mention the following:

- Broadening of supplier structures (as opposed to single sourcing), to ensure secure procurement,
- Individualisation of products and services and
- Sustainability / ecological trends / climate and nature protection.

Having that in mind, the following should be done:

- More international visibility of BiH wood companies (maybe including the development of an umbrella brand to improve the international image),
- Digitalization of production process,
- Intensify possibilities in digital marketing and online selling (e.g., virtual fairs/platforms where solid wood furniture with individual or special design may be presented with showing the "history" of the products and storytelling),
- Providing offers (furniture, construction-related products, etc.) in line with sustainability - ecological trends and development of the image of ecological products and services.

In order to improve the competitiveness and market position of wood processing companies from Bosnia and Herzegovina in the German market, most respondents have the message - advice related to appropriate and more intensive promotion. It is especially important and recommendable to regularly use the existing promotion channels for experts (specialized print and online media), as well as social media. Promotion activities should disseminate a very clear message about the product advantage. As a prerequisite for effective promotion, it is important to increase market knowledge and knowledge about current market trends as well as to develop products according to customer needs and requirements (i.e., to increase customer orientation). Therefore, language skills (also in German) should be improved. One of the options may also be establishing a representative office or sales representative in Germany.

The lack of information about companies from BiH and interest in them is also shown in the comment of one of the respondents (a company that sells designer furniture) that they are interested in getting more information on wood processing companies in BiH in the segment of top quality and low quantity furniture.[67]

Findings of interviews with representatives of the Austrian market

In order to improve cooperation and foreign trade between Austria and BiH, most respondents find that exchange of information should be improved (e.g., through an online directory of suppliers - database on wood processing companies, their capacities, supply and demand) and that participation in specialized fairs and similar B2B events should be supported. Some of the participants also find that foreign trade procedures should be simplified and potential non-tariff barriers should be eliminated.

Regrading new opportunities for the wood processing sector of Bosnia and Herzegovina that arise as a consequence of the pandemic and possibilities to use them in the best way, respondents comment that there is high demand and limited supply of wood/timber in the Austrian market and that fact offers more than enough opportunities to enter the Austrian market and increase market share. Also, there is an increasing trend of building with wood in Austria so wood and wood products for the construction industry is also a market segment that may be attractive and creates an opportunity for producers from Bosnia and Herzegovina.

[67] The author recommended and provided contacts to Artisan, Gazzda, MS&Wood, and Rukotvorine.

In the context of optimizing supply chains, the interest of wood processing companies from Austria in Bosnia and Herzegovina in the coming period may be increased or at least stay on the same level.

Regarding competitiveness assessment, respondents from Austra find that prices of companies from Bosnia and Herzegovina are competitive. Product quality, industrial design and flexibility were assessed as a medium, while promotion and meeting deadlines - delivery dates were assessed as relatively poor.

When asked about trends in the Austrian market, respondents commented that there is a high demand for wood and wooden products, therefore an increase in production would be useful. Many companies search for new suppliers and that may be an opportunity for companies from Bosnia and Herzegovina. Also, there is a trend of sustainable building and the use of wood as a construction material. Companies are oriented towards energy efficiency and reduction of CO_2.

In order to improve competitiveness and market position in the Austrian market, respondents think that companies from Bosnia and Herzegovina must have high-quality products and be precise regarding delivery at the agreed date. Innovations are very important to meet new market trends. Also, it is recommendable development and delivery of high value-added products. Promotion should be more intensive, including visits and participation in specialised fairs. Wood processing companies must be prepared for international business, i.e. language skills (English or German), certificates, customs procedures, etc.

Findings of interviews with representatives of the Italian market

Participation in specialized fairs and similar B2B events as well as simplification of foreign trade procedures and elimination of potential non-tariff barriers are the most important factors that may contribute to improving cooperation and foreign trade between Italia and BiH. Also, the exchange of information should be improved (e.g. through online databases on wood processing companies, their capacities, supply and demand).

The second question was related to new opportunities for the wood processing sector of Bosnia and Herzegovina that arise as a consequence of the pandemic and how to use them in the best way. Respondents think that the pandemic could create new opportunities by developing new networks between companies that are based on short supply chains. In addition to that, local supply may also be increased. There is an increasing demand for wood products, so it also creates an opportunity for companies from Bosnia and Herzegovina.

The interest of wood processing companies from Italy in Bosnia and Herzegovina in the coming period, in the context of optimizing supply chains, may remain unchanged - at the same level as before or it may be increased.

Regarding the fourth question - competitiveness of companies from Bosnia and Herzegovina, respondents from Italia find that prices and product quality is good, while flexibility and meeting deadlines were assessed as medium. On the other hand, industrial design and promotion were assessed as relatively poor.

The main trends in the Italian market at the moment are sustainability, digitalisation and circular economy. Therefore, Bosnia and Herzegovina should invest in these fields that would be key elements also in the future.

To improve competitiveness and market position in the Italian market, respondents advise companies from Bosnia and Herzegovina to adapt their business and offer according to new trends, improve

design and promotion. It is also important to work on the image and style of the company, putting effort into communication and branding strategies.

In the end, some respondents commented that due to COVID-19 business relations between Italy and Bosnia and Herzegovina have been slowed down and at the moment they are quite complicated.

10.3. Interviews with representatives of wood processing companies from BiH

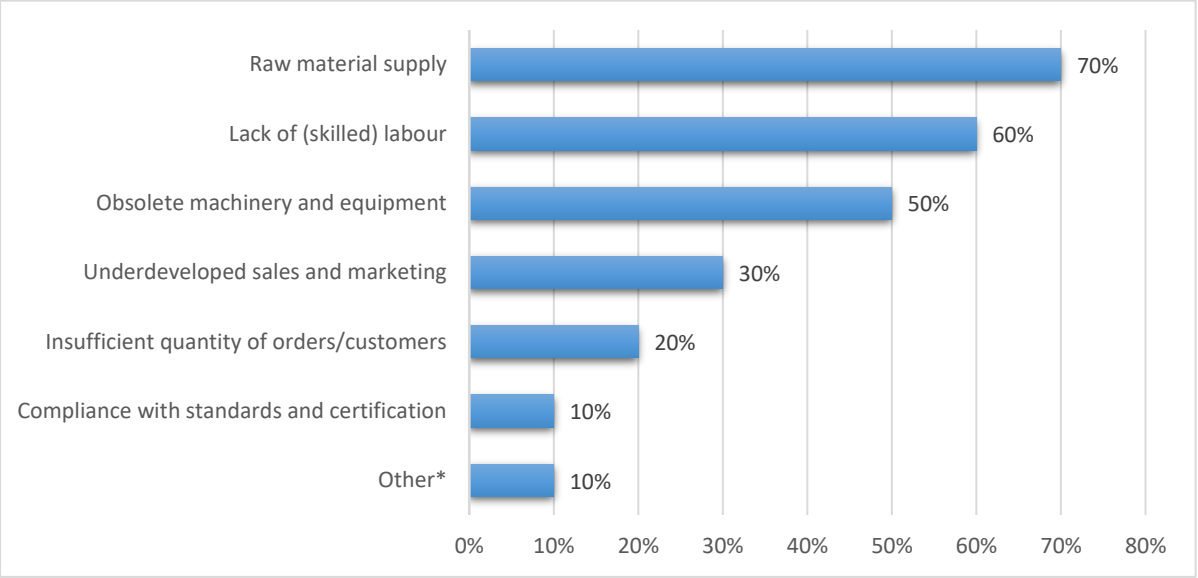
In order to verify recommendations, interviews with representatives of the wood processing companies were conducted. E-mails were sent to directors/owners of companies with the kind request to participate in the survey and submit their answers via Google form or in the Word questionnaire which contained the questions related to the biggest problems/limitations that hinder the development of their business, ideas/initiatives that may be most useful for improving the situation in the wood processing industry, topics for education that may be most useful for them, as well as areas in which consulting and financial support would be the most valuable for them to improve their business.

In the period 7.-11.3.2022. representatives of 20 following companies provided their answers: Yield d.o.o. Sarajevo, Standard Furniture Factory d.d. Sarajevo, Nova Ambienta d.o.o. Sarajevo, Ećo company d.o.o. Sarajevo, Wood Team d.o.o. Ilijaš, Fagus Haus d.o.o. Banja Luka, Milinković d.o.o. Banja Luka, Masterwood d.o.o. Prijedor, Karpenteri Vitorog d.o.o. Prijedor, Naš Dom MB d.o.o. Gradiška, Delfin Trgotrans d.o.o. Čelinac, Drvo-Ingrat d.o.o. Gračanica, Dunya Gradačac, Tamex d.o.o. Busovača, Bosnian Beech Board d.o.o. Visoko, EL company d.o.o. Visoko, Glovis d.o.o. Zenica, Roccaforte d.o.o. Vitez, Winer d.o.o. Livno, Promo d.o.o. Donji Vakuf.

Findings of interviews

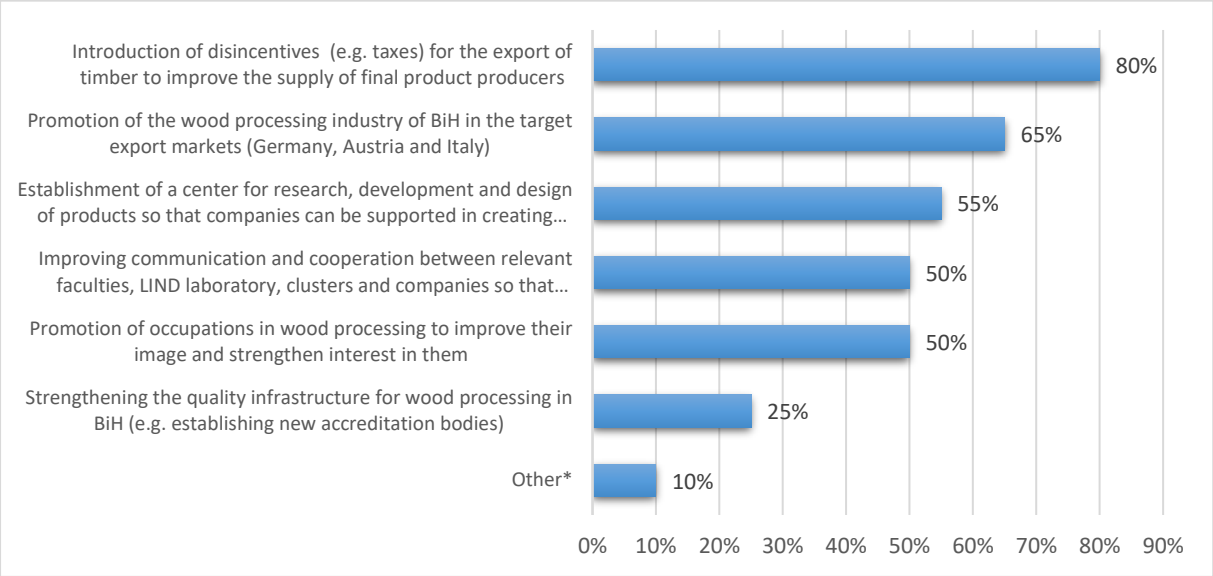
The biggest problems/limitations that hinder the business development of most wood producers are raw material supply - insufficient quantities of timber (70% respondents), lack of (skilled) labor (60% respondents), as well as obsolete machinery and equipment (50% respondents). To a much lesser extent, the problem/limitation is also underdeveloped sales and marketing (30% respondents), as well as insufficient quantity of orders/customers (20% respondents). Only 10% of respondents have problems/limitations regarding compliance with standards and certification. Some companies also pointed out other problems/limitations such as uncertain business environment, lack of support in investment financing, small BiH market and the need for exports, opening cooperation with new reliable customers, and lack of staff to work on modern equipment (which the company already has).

Figure 31. What are the biggest problems/limitations that hinder your business development?



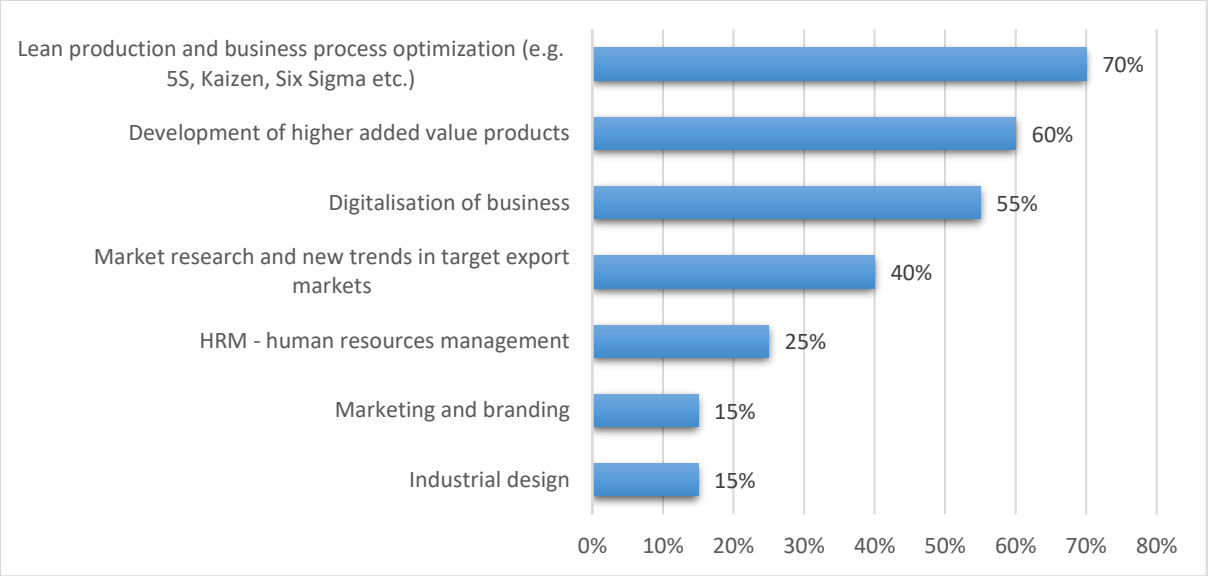
Most wood processing companies (to be precise 80% respondents) think that an idea/initiative that may be the most useful for improving the situation in the wood processing industry is the introduction of disincentives (e.g. taxes) for the export of timber, to improve the supply of final product producers. A large number of wood processors also find useful and support the following ideas/initiatives: promotion of the wood processing industry of BiH in the target export markets - Germany, Austria and Italy (65% respondents); establishment of a center for research, development and design of products so that companies can be supported in creating products with higher added value (55% respondents); improving communication and cooperation between relevant faculties, LIND laboratory, clusters and companies so that wood processors can make better use of available equipment, knowledge and experiences (50% respondents), as well as promotion of occupations in wood processing to improve their image and strengthen interest in them (50% respondents). A relatively small number of wood processing companies (25% respondents) find that it is important to strengthen the quality infrastructure for wood processing in BiH. Some wood processors also mentioned other ideas/initiatives that may be also useful for improving the situation in the wood processing industry, such as: facilitating the process of importing labor from abroad, strengthening cooperation between high schools, colleges and companies, and fighting the black market (wood centers are saturated with providing cutting services for people working illegally so that companies working legally which produce custom made furniture are not competitive).

Figure 32. Ideas/initiatives that may be most useful for improving the situation in the wood processing industry



When it comes to the most useful topics for education, most companies are interested in topics: lean production and business process optimization - 5S, Kaizen, Six Sigma, etc. (70% respondents), development of higher added value products (60% respondents), as well as digitalisation of business (55% respondents). To a less extent, there is also interest in the topic of market research and new trends in target export markets (40% respondents) and HRM - human resources management (25% respondents). Only a small number of companies (15% respondents) are interested in the topic of industrial design as well as marketing and branding.

Figure 33. Which topics for education would be most useful to you?



In order to improve their business, most wood processing companies would appreciate the most consulting and financial support in the area of transfer of new technologies - purchase of new machines and equipment (60% respondents). Also, they find very valuable consulting and financial support regarding improvement of existing and developing new products (55% respondents),

improvement of business processes and lean production (55% respondents), as well as the introduction of IT and software solutions - digitalization of business (50% respondents). To a less extent, there is also interest in consulting and financial support in the area of marketing and branding (30% respondents), the introduction of standards and certifications (25% respondents), as well as energy audit and energy efficiency improvement (20% respondents).

Figure 34. In which areas would consulting and financial support be the most valuable for you to improve your business?

In the end, when asked if there is something important for this topic and they were not asked about it, some respondents commented that it is necessary to provide support to wood processing companies in all segments, especially when it comes to the purchase of equipment so that the share of companies in its financing is relatively small. A relatively large share of companies in financing equipment procurement is often required, so the procurement is not realised at all in the end. Some respondents commented that in the past year they have invested in the development of new products, their standardization and certification, which has burdened them financially, and now they need support in purchasing new machines and equipment. Also, it is necessary to strengthen the connection with foreign investors, make available information about potential buyers of furniture on the EU market and harmonize labor production with the needs of SMEs.

11. Literature

1. Albu, N., Zubrzycki, K., Scholz, R., Ostwald, D.A., Somweber, K. and Haut, S. (2020). *The Direct Gross Value Added Calculation Method*. Basel/Berlin/Darmstadt. Retrieved from: https://www.wifor.com/uploads/2021/04/Case_Study_Novartis_WifOR_Direct_Gross_Value_Added.pdf
2. Academy of Fine Arts Sarajevo. (2022). *Produkt dizajn.* Retrieved from: https://www.alu.unsa.ba/odsjek/produkt-dizajn
3. Arhiproducts. (2022). *4,943 Designers.* Retrieved from: https://www.archiproducts.com/en/designers
4. Bern University of Applied Sciences. (2022). *Bachelor of Science - Wood Technology.* Retrieved from: https://www.bfh.ch/ahb/en/studies/bachelor/wood-technology/
5. Borojević, S., Miovčić, P, Šipragić, M, Janković, G. (2018). *Inovacije i interakcije – ključni faktori razvoja preduzeća.* Eda – Agencija za razvoj preduzeća. Retrieved from: https://edabl.org/wp-content/uploads/2018/10/Inovacije-i-interakcije.pdf
6. Brera Interni. (2022). *Eco-sustainability in the Furniture Industry, Production Standards and Compliance Protocols.* Retrieved from: https://www.brerainterni.com/magazine/post/eco-sustainability-in-the-furniture-industry
7. Burks, J., Sipragic, M, Bogunovic, S. (2019). *Information and Communications Technology – Fuel for SME Competitiveness.* Deutsche Gesellschaft fur Internationale Zusammenarbeit (GIZ) GmbH. Retrieved at: https://edabl.org/wp-content/uploads/2019/08/ICT-Fuel-for-SME-Competitiveness.pdf
8. CDP Group. (2020). *Wood – furniture and Covid-19.* Retrieved from: https://www.cdp.it/sitointernet/page/en/wood__furniture_and_covid19?contentId=TNK30231
9. Cidea. (2016). *Drvo klaster*. Retrieved from: https://cidea.org/drvo-klaster/test-drvo-klasteri/
10. de Vet, J. M., Ferrer, J. N., Gross, A.K., Kuehl, S., Flickenschild, M. (2021). *Impacts of the COVID19 pandemic on EU industries*. Publication for the committee on Industry, Research and Energy, Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament, Luxembourg, 2021. Retrieved from: https://www.europarl.europa.eu/RegData/etudes/STUD/2021/662903/IPOL_STU(2021)662903_EN.pdf
11. Dun&Bradstreet. (2021). *Poslovna analitika*. Retrieved from: https://www.dnb.com/bs-latn/bisnode-proizvodi/
12. EBRD. (2022). *Grow your business in Bosnia and Herzegovina.* Retrieved from: https://www.ebrd.com/work-with-us/advice-for-small-businesses/bosnia-and-herzegovina-local-consultants.html%20
13. eCommerce Association in Bosnia and Herzegovina. (2022). *O nama*. Retrieved from: https://e-comm.ba/#forma
14. Eda – Enterprise Development Agency (2021). *Project summary: NOVALIS.* Retrieved from: https://edabl.org/wp-content/uploads/2020/12/Project-summary-NOVALIS.pdf
15. Eda – Enterprise Development Agency. (2020). *Priority technical standards more accessible to companies*. News, 7 October 2020. Retrieved from: https://edabl.org/priority-technical-standards-more-accessible-to-companies/
16. Enterprise Europe Network. (2022). *Helping companies innovate and grow internationally*. Retrieved from: https://een.ec.europa.eu/
17. EU4DigitalSME. (2022). *Apply to the public call for establishment of the digital innovation hubs*. Retrieved from: https://b2bit.ba/public-call/apply-now/

18. EUNORS. (2022). *Bilten poslovne saradnje, 1.02.2021. - 28.02.2021*. Evropska mreža preduzetništva Republike Srpske. Retrieved from: http://eunors.org/wp-content/uploads/2021/03/BILTEN-POSLOVNE-SARADNJE-februar-2021.pdf
19. European Commission. (2022a). *Digital Innovation Hubs.* Retrieved from: https://s3platform.jrc.ec.europa.eu/digital-innovation-hubs
20. European Commission. (2022b). *Ecolabel – FAQ*. Retrieved from: https://ec.europa.eu/environment/ecolabel/faq.html#top-ten
21. European Commission. (2016). *EU Ecolabel User Manual Furniture - Commission Decision for the award of the EU Ecolabel for furniture (2016/1332/EU).* Retrieved from: https://ec.europa.eu/environment/ecolabel/documents/Furniture_UM_parts_A_B_C_D_E.pdf
22. Eurostat. (2021). *Manufactured goods (PRODCOM). Excel files - NACE rev. 2.* Retrieved from: https://ec.europa.eu/eurostat/web/prodcom/data/excel-files-nace-rev.2
23. Faculty of Forestry Banja Luka. (2022). *Prerada drveta.* Retrieved from: https://www.sf.unibl.org/prerada-drveta-i-ciklus/
24. Faculty of Mechanical Engineering, Computing and Electrical Engineering Mostar. (2017). *Centar za "Lean menadžment sustav upravljanja" na FSR-u*. Retrieved from: http://fsre.sum.ba/naslovnica/artikli/news/centar-za-lean-menadzment-sustav-upravljanja-na-fsr-u/
25. Faculty of Mechanical Engineering Sarajevo. (2022a). *Odsjek za tehnologiju drveta*. Retrieved from: https://mef.unsa.ba/bs/odsjek-td
26. Faculty of Mechanical Engineering Sarajevo. (2022b). *Razvojno edukativni centar za savremene tehnologije u drvnoj industriji.* Retrieved from: https://mef.unsa.ba/bs/recdi
27. Faculty of Mechanical Engineering Sarajevo. (2021). *Drugi javni poziv za mala i srednja preduzeća iz drvne i metalske industrije.* Retrieved from: https://www.mef.unsa.ba/bs/novosti/129
28. Faculty of Mechanical Engineering Zenica. (2022). *Razlozi za osnivanje dodiplomskog stručnog studija prema bolonjskom konceptu 3 + 2 + 3.* Retrieved from: https://mf.unze.ba/i-ciklus-studija-323/
29. Fordaq. (2022). *About us.* Retrieved from: https://www.fordaq.com/html/about_us_En.htm
30. FSC - Forest Stewardship Council. (2022). *Public certificate search*. Retrieved from: https://info.fsc.org/certificate.php
31. FSC - Forest Stewardship Council (2021a). *Sustainable wood is the material of the 'new normal'*. World Furniture. International Markets Review No. 92, December 2021, Year 23. Retrieved from: https://www.worldfurnitureonline.com/PDFres/WFR92/WFR92.pdf
32. FSC - Forest Stewardship Council (2021b). *Sustainability on the rise in the European furniture sector.* World Furniture. International Markets Review No. 91, September 2021, Year 23. Retrieved from: https://www.worldfurnitureonline.com/PDFres/WFR91/WFR91.pdf
33. FSC Adria Balkan. (2022). *Bosna i Hercegovina*. Retrieved from: https://fsc.org/en/adria-balkan/bosna-i-hercegovina
34. Globescan (2021). *2021 Global Consumer Research Reveals Escalating Concerns about Climate Change and Threats to Forest Biodiversity.* Retrieved from: https://globescan.com/2021/10/21/consumer-research-reveals-escalating-concerns-about-climate-change-forest-biodiversity/
35. Govoni, P. (2021). *A turning point called 'innovability'.* World Furniture. International Markets Review No. 91, September 2021, Year 23. Retrieved from: https://www.worldfurnitureonline.com/PDFres/WFR91/WFR91.pdf
36. HolzKann. (2022). *Der nachhaltigste Baustoff der Welt.* Retrieved from: https://www.holz-kann.de/holz-die-vorteile/nachhaltigkeit/

37. imm Cologne (2022). *Sustainable furniture: The industry is becoming greener*. Retrieved from: https://www.imm-cologne.com/magazine/future-living/sustainable-furniture/
38. International Trade Centre. (2021a). *Trade Map*. Retrieved from: https://www.trademap.org/Index.aspx
39. International Trade Centre. (2021b). *Export Potential Map. FAQ – Summary*. Retrieved from: https://exportpotential.intracen.org/en/resources/learning/faq#question5
40. International Trade Centre. (2021c). *Export Potential Map. Glossary.* Retrieved from: https://exportpotential.intracen.org/en/resources/learning/glossary
41. Janković, G. (2014). *Value chain analysis for solid wood furniture.* Eda – Enterprise Development Agency. Retrieved from: https://edabl.org/pub/edaen/drvo_engleski.pdf
42. Jovanović B., Ghodsi, M., Van Zijverden O., Kluge, S., Gaber, M., Mima, R., Hasić, B., Lalović, O., Ibrahimi, M., Manova Stavreska A., Nikolova, S., Ćulafić, B., Vasić, J., Mandić, M. (2021). *Getting Stronger After COVID-19: Nearshoring Potential in the Western Balkans.* Research Report 453. May 2021. The Vienna Institute for International Economic Studies. Retrieved from: https://www.wb6cif.eu/wp-content/uploads/2021/09/Study-Nearshoring-potential-in-the-Western-Balkans.pdf
43. Knaus, U. (2020). *Timber constructions: market share higher than 20%.* Retrieved from: https://www.timber-online.net/timber_construction/2020/03/timber-constructions--market-share-higher-than-20-.html
44. Lectra (2021). *The furniture industry and digitalization: a winning team during the Covid 19 crisis.* Retrieved from: https://www.lectra.com/en/library/the-furniture-industry-and-digitalization-a-winning-team-during-the-covid-19-crisis
45. Lectra. (2020). *The furniture industry post COVID-19.* Retrieved from: https://www.lectra.com/en/library/the-furniture-industry-post-covid-19
46. Meyer-Stamer, J. (2005). *Systemic Competitiveness Revisited: Conclusions for Technical Assistance in Private Sector Development.* Mesopartner Working Paper No 14. Mesopartner. Retrieved from: https://www.mesopartner.com/fileadmin/media_center/Working_papers/mp-wp14_01.pdf
47. Miovčić, Z., Radulović, B., Kovačević, B., Šipragić, M., Janković, G. (2021). *Kako poboljšati implementaciju strategija i planova za razvoj MSP? Mehanizam, rezultati, iskustva i preporuke*. Eda - Agencija za razvoj preduzeća. Retrieved from: https://edabl.org/wp-content/uploads/2022/01/SIEM-Mehanizam-rezultati-iskustva-i-preporuke.pdf
48. Nechev, Z. & Jelenka Kirchner, M. (2021). *Time to move to the Western Balkans: How diversification of global supply chains can benefit EU resilience*. Policy Paper No.9/2021. Center for International Private Enterprise and Institute for Democracy "Societas Civilis". Retrieved from: https://idscs.org.mk/wp-content/uploads/2021/04/A4_supply_chain_EU_CHINAWEB.pdf
49. Novaković, B. and Borojević, S. (2020). *Mapiranje institucija za ocjenu usaglašenosti proizvoda.* Eda - Agencija za razvoj preduzeća. Retrieved from: https://edabl.org/wp-content/uploads/2020/05/Mapiranje-institucija-za-ocjenu-usagla%C5%A1enosti-proizvoda.pdf
50. OECD. (2021). *FDI flows (indicator)*. Retrieved from: https://data.oecd.org/fdi/fdi-flows.htm
51. OECD. (2017). *Skills and Global Value Chains*. Retrieved from: https://www.oecd-ilibrary.org/sites/9789264273351-5-en/index.html?itemId=/content/component/9789264273351-5-en
52. OECD. (2010). *The OECD Innovation Strategy: Getting a Head Start on Tomorrow*. OECD Publishing, Paris, https://doi.org/10.1787/9789264083479-en. Retrieved from: https://read.oecd-ilibrary.org/science-and-technology/the-oecd-innovation-strategy_9789264083479-en#page1

53. OECD/Eurostat. (2005). *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, 3rd Edition*. The Measurement of Scientific and Technological Activities, OECD Publishing, Paris, https://doi.org/10.1787/9789264013100-en. Retrieved from: https://www.oecd-ilibrary.org/docserver/9789264013100-en.pdf?expires=1642880283&id=id&accname=guest&checksum=7AD2B3BB3C51F8294BE9C8B86D515DAC
54. Osterwalder, A., Pigneur, Y., Bernarda, G., Smith A. (2014). *Value Proposition Design*. Wiley. Retrieved from: https://s3.tenten.co/share/Value-Proposition-Design-Book.pdf
55. Pau&Latorre. (2021). *Green furniture: what it is and how to distinguish between them.* Retrieved from: https://paudesign.com/en/green-furniture-what-it-is-and-how-to-distinguish-between-them/
56. Pelizzari S. and Pisa, C. (2021). *Looking ahead to an uneven recovery.* World Furniture. International Markets Review No. 92, December 2021, Year 23. Retrieved from: https://www.worldfurnitureonline.com/PDFres/WFR92/WFR92.pdf
57. Porter, M. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance.* The Free Press
58. RS Chamber of Commerce. (2022). *Centar za digitalnu transformaciju*. Retrieved from: https://komorars.ba/centar-za-digitalnu-transformaciju/
59. ProPopulus (2021). *The impact of Covid-19 on the European forest industry*. Retrieved from: https://propopulus.eu/en/the-impact-of-covid-19-on-the-european-forest-industry/
60. Pucar. S. (2014). *Where are we now and where should we go? Gap analysis of wood sector.* Eda - Enterprise development Agency. Retrieved from: https://edabl.org/pub/edaen/GAP_Wood.pdf
61. Savić, D., Gackić, Z. (2016). *Analiza stanja u sektoru drvoprerade BiH s fokusom na proizvođače namještaja i građevinske stolarije.* Zenička razvojna agencija ZEDA. Retrieved from: http://www.zeda.ba/wp-content/uploads/2017/07/ANALIZA_MENTOR2.pdf
62. Smoljak, P. (2021). *Reportaža: Kako je jedna obitelj napravila čudo usred Bosne, tvornicu luksuznog dizajnerskog namještaja koji je postao svjetski hit.* Retrieved from: https://www.haber.ba/vijesti/bih/871628-reportaza-kako-je-jedna-obitelj-napravila-cudo-usred-bosne-tvornicu-luksuznog-dizajnerskog-namjestaja-koji-je-postao-svjetski-hit
63. Snowden, D. J., Boone M. E. (2007). *A Leader's Framework for Decision Making*. Harward Business Review, November 2007. Retrieved from: https://hbr.org/2007/11/a-leaders-framework-for-decision-making
64. Springer-Heinze, A. (2018). *ValueLinks 2.0. Manual on Sustainable Value Chain Development. Volume 1 - Value Chain Analysis, Strategy and Implementation*. GIZ Eschborn. Retrieved from: https://www.valuelinks.org/material/manual/ValueLinks-Manual-2.0-Vol-1-January-2018.pdf
65. Šipragić, M. & Janković, G. (2020a). *Gazzda - Kreativna platforma za saradnju proizvođača i tima stručnjaka. Intervju sa g. Salihom Teskeredžićem*. Kako do veće dodane vrijednosti - Priče inovativnih kompanija iz našeg okruženja. Eda – Agencija za razvoj preduzeća. Retrieved from: https://edabl.org/wp-content/uploads/2021/01/Kako-do-ve%C4%87e-dodane-vrijednosti-Pri%C4%8De-inovativnih-kompanija-iz-na%C5%A1eg-okru%C5%BEenja..pdf
66. Šipragić, M. & Janković, G. (2020b). *Artisan – Saradnja sa dizajnerima. Intervju sa g. Fadilom Ćostovićem*. Kako do veće dodane vrijednosti - Priče inovativnih kompanija iz našeg okruženja. Eda – Agencija za razvoj preduzeća. Retrieved from: https://edabl.org/wp-content/uploads/2021/01/Kako-do-ve%C4%87e-dodane-vrijednosti-Pri%C4%8De-inovativnih-kompanija-iz-na%C5%A1eg-okru%C5%BEenja..pdf
67. Targer. (2021). *Rješenja za trenutne izazove kompanija BH drvne industrije.* Prezentacija korištena tokom istoimenog webinara i online panela, 7-8.10.2021.

68. Technical Faculty Bihac. (2022). *Nastavni plan i program (I ciklus 2017.god.) - Drvnoindustrijski odsjek.* Retrieved from: https://tfb.unbi.ba/clanak.jsf?cid=575&stavkaId=3-3-1-1&ssb=1&mid=gi
69. Technical University of Rosenheim. (2022). *Faculty of Wood Technology and Construction.* Retrieved from: https://www.th-rosenheim.de/en/th-rosenheim/faculties-institutes/faculty-of-wood-technology-and-construction/
70. Tracogna, A. (2021). *Products initiative in Europe: insights from the furniture sector.* World Furniture. International Markets Review No. 91, September 2021, Year 23. Retrieved from: https://www.worldfurnitureonline.com/PDFres/WFR91/WFR91.pdf
71. UNDP. (2019). *Mapping of the Sustainable Development Goals (SDGs) against value chains in furniture and automotive parts sectors in Bosnia and Herzegovina*. Retrieved from: http://zamisli2030.ba/wp-content/uploads/2019/07/SDG-report_eng.pdf
72. UNDP. (2017). *Local Integrated Development – Wood Industry.* Infographic. Retrieved from: https://www.ba.undp.org/content/dam/bosnia_and_herzegovina/docs/Operations/Projects/PR/PR1/web%20DRVO%20LID%20infografike%2031-05-2017.pdf
73. Vienna Institute for International Economic Studies. (2021). *Monthly Report No. 11/2021 - FDI in Central, East and Southeast Europe.* Retrieved from: https://wiiw.ac.at/monthly-report-no-11-2021-fdi-in-central-east-and-southeast-europe-p-5991.html
74. WMTA Banja Luka. (2022). *O nama.* Retrieved from: https://wmta-edu.com/o-centru/
75. Wood cluster Herzegovina. (2022a). *O klasteru*. Retrieved from: https://dkh.ba/o-klasteru/
76. Wood cluster Herzegovina. (2022b). *Prijavi se na besplatnu obuku za tehničku pripremu proizvodnje namještaja*. Retrieved from: https://dkh.ba/blog/2022/01/28/prijavi-se-na-besplatnu-obuku-za-tehnicku-pripremu-proizvodnje-namjestaja/
77. Wood Cluster - PD. (2022). *O nama*. Retrieved from: https://pd-drvo.com/
78. World Bank. (2020). *Forest Economy Development Project (BiH FEDEP) (P171513) - Project Information Document*. Retrieved from: https://documents1.worldbank.org/curated/en/223291604413419904/Concept-Project-Information-Document-PID-Bosnia-and-Herzegovina-Forest-Economy-Development-Project-BiH-FEDEP-P171513.docx
79. World Bank Group. (2021). *Greening the Recovery. Western Balkans Regular Economic Report No.20 | Fall 2021.* Retrieved from: https://documents1.worldbank.org/curated/en/900381634670558017/pdf/Greening-the-Recovery.pdf
80. Zeda - Zenica Development Agency. (2022). *Laboratorija za ispitivanje sigurnosti proizvoda LIND.* Retrieved from: https://zeda.ba/m-laboratorija-za-testiranje-sigurnosti-proizvoda-lind/