

# VALUE CHAIN ANALYSIS OF KEY ECONOMIC SECTORS



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# VALUE CHAIN ANALYSIS OF KEY ECONOMIC SECTORS



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# Contents

1. Introduction	5
2. Food Sector and Value Chain for Meat and Meat Products	7
2.1. Overview of the Value Chain for Meat and Meat Products	7
2.2. Food Industry Competitiveness (Porter's Diamond)	11
2.3. Firm Level – Competitive Pressures within the Value Chain	16
2.4. Meso Level – Supporting Institutions	19
2.5. Macro Level – Framework Conditions	21
2.6. Meta Level	24
2.7. Key Gaps Identified	25
2.8. Summary of Main Findings	27
2.9. Main Recommendations	28
3. Wood Processing Sector and Value Chain for Solid Wood Furniture	31
3.1. Overview of the Value Chain for Solid Wood Furniture	31
3.2. Wood Processing Industry Competitiveness (Porter's Diamond)	36
3.3. Firm Level - Competitive Pressures within the Value Chain	41
3.4. Meso level - Supporting Institutions	42
3.5. Macro level - Framework Conditions	43
3.6. Meta Level	44
3.7. Key Gaps Identified	44
3.8. Summary of Main Findings	45
3.9. Main Recommendations	46
4. Metal Industry and Value Chain for Hydronic Heating Boilers and Stainless Steel Water Heaters	51
4.1. Overview of the Value Chain for Hydronic Heating Boilers and Stainless Steel Water Heaters	51
4.2. Metal Industry Competitiveness (Porter's Diamond)	55
4.3. Firm Level - Competitive Pressures within the Value Chain	59
4.4. Meso Level - Supporting Institutions	63
4.5. Macro Level - Framework Conditions	66
4.6. Meta Level	67
4.7. Key Gaps Identified	67
4.8. Summary of Main Findings	69
4.9. Main Recommendations	69



5. Leather and Footwear Industry and Value Chain for Shoes Production	73
5.1. Overview of the Value Chain for Shoes Production	73
5.2. Footwear Industry Competitiveness (Porter's Diamond)	76
5.3. Firm Level - Competitive Pressures within the Value Chain	81
5.4. Meso Level - Supporting Institutions	82
5.5. Macro and Meta Level - Framework Conditions	84
5.6. Summary of Main Findings	85
5.7. Key Gaps Identified (EU Company/Sector as Benchmark)	86
5.8. Main Recommendations	87
6. Conclusion	91
7. References	93
8. Annex	95
List of Interviewed Companies (July - September 2013)	95
List of Interviewed Companies within Value Chain Analysis (December 2013 - February 2014)	99
Value Chain for Poultry Meat and Poultry Meat Products	103
Value Chain for Beef and Pork Meat and Meat Products	104
Value Chain for Solid Wood Furniture	105
Value Chain for Hydronic Heating Boilers and Stainless Steel Water Heaters	106
Value Chain for Shoes Production	107

# 1. Introduction

The following “Value Chain Analysis of Key Economic Sectors” is one of the results of the CREDO Krajina Project, which is implemented by the Enterprise Development Agency *Eda*, Banjaluca. The project aims to improve competitiveness of small and medium enterprises in Krajina area, in order to create and sustain jobs, reduce poverty and improve economic status of the area.

The study was designed as a combination of qualitative and quantitative research. Based on findings of the *Baseline analysis of economic sectors* (Pucar, 2013), four priority sectors with the greatest potential for growth and employment were identified: the food industry, the wood processing industry, the metal industry and the leather and footwear industry. Afterwards, interviews were conducted with directors and/or owners of companies from these sectors<sup>1</sup> in order to identify the most important characteristics of their businesses, as well as to obtain information about implemented innovations and intended investments in the future. Based on findings from the interviews, within each sector, group of similar products with good development perspectives were selected as a basis for conducting value chain analysis.


Value chain can be defined as a series of organizations and institutions involved in process of creating and delivering of product, i.e. value for consumer - from procurement, over production and distribution, to the final consumer. Conducting of the value chain analysis is important because of the fact that the competitiveness of a particular company is largely determined by competitiveness of its suppliers and customers, as well as relevant supporting institutions. Also, we 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, customers and supporting institutions. Having that in mind, interviews with producers, their suppliers, customers<sup>2</sup> and supporting institutions were conducted. A chain is as strong as its weakest link. Identifying and strengthening the weakest links will enhance the chain as a whole, thus providing benefits for all participants in the value chain.

Within the value chain analysis of each sector, *five forces* and *diamond* models of Michael Porter, one of the world’s leading authors in area of competitiveness and economic development of states and na-

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1 List of interviewed companies is available in Annex.

2 List of interviewed companies within value chain analysis is available in Annex.



tions, were applied. Also, concept of systemic competitiveness is applied in the study. The concept argues that competitiveness depends on characteristics and interactions between the micro level (companies), the meso level (sectorial policies and institutions that provide support to enterprises), the macro level (macro-economic, political and legal framework) and the meta level (system of values, social capital, collective memory, etc.). Analysis for each sector was structured according the four aspects included in the above described concept.

We extend our gratitude to sector experts, members of Sector Boards, participants in workshops, survey, and interviews conducted within the project for their help in implementation of research. We would like to thank especially to Mr. Shawn Cunningham and Mr. Frank Waeltring from Mesopartner for methodological guidance and advisory support in preparation of value chain analysis.

## 2. Food Sector and Value Chain for Meat and Meat Products

### 2.1. Overview of the Value Chain for Meat and Meat Products

Food industry is of great importance within the economy of each country. Meat is one of the essential foodstuffs, and plays a significant role in the human diet because of its nutritional properties.

During the analysis of the value chain for products from beef, pork and chicken meat, the stages of conversion within the chain have been clearly identified and they are generically illustrated in Figure 1. Each value chain has certain characteristics which are presented in more detail and explained later in the publication.

Figure 1. Generic value chain for production and processing of meat



One of the main characteristics of the value chain for meat and meat products is underdeveloped animal production and trend of a decreasing number of livestock, as shown in Table 1. It is evident that the number of cattle's in 2012 is less than in 2005 by about 3.3 % whereby the quantity of pigs decreased for approximately 17.6 %. On the other hand, the production of poultry is increasing with a slight decline in 2011, but an 87.6 % increase of the number of poultry between 2004 and 2012 is noticeable.

Table 1. Number of livestock in the period 2005-2012

	2005.	2006.	2007.	2008.	2009.	2010.	2011.	2012.
<b>Cattle, total</b>	459.790	514.869	467.986	459.218	457.743	462.000	455.000	445.000
<b>Cows and heifers</b>	334.389	356.586	343.100	339.068	340.874	320.000	306.000	295.000
<b>Pigs, total</b>	653.943	709.648	543.764	502.197	529.095	590.000	577.000	539.000
<b>Sows and gilts</b>	198.574	130.057	127.138	95.662	100.460	82.000	81.000	69.000
<b>Poultry, total</b>	10.339.886	13.331.564	14.989.229	16.184.730	18.741.442	21.802.000	18.703.000	19.401.000
<b>Hens</b>	3.482.984	3.518.446	3.890.665	3.806.508	3.942.098	3.773.000	3.646.000	4.321.000

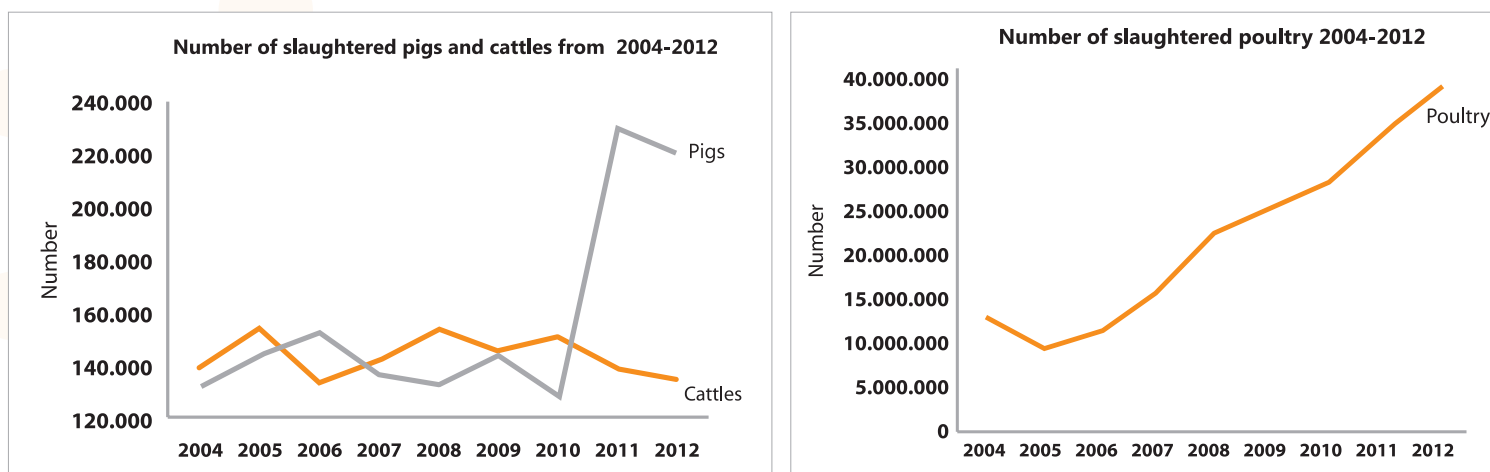
Source: Agency for Statistics of Bosnia and Herzegovina, 2014



Because of poor livestock fund B&H imports live animals, so total import in 2012 amounted to just over 50 million euros with an increase in comparison to 2009 by 5.2 %. The bulk of import of live animals originates from Serbia (42%). On the other hand, total export of live animals from Bosnia and Herzegovina is a little more than 2 million euros for 2012 (Trade Map - Trade statistics for international business development, 2014).

As far as the slaughtering industry is concerned there is a decrease in the number of slaughtered cattle, which is directly correlated to the decrease of the number of cattle and pigs in livestock fund. The number of slaughtered pigs had grown in 2011 and 2012. The largest increase was recorded in relation to the number of slaughtered poultry and this growth is continuous since 2005. Between 2005 and 2012 the number of slaughtered poultry had risen more than 4 times.

Figure 2. Amount of slaughtered animals in slaughterhouses in Bosnia and Herzegovina



Source: Agency for Statistics of Bosnia and Herzegovina, 2014

One of the reasons for the reduced number of slaughtered cattle is the continued growth of import of meat and edible parts of animals, increasing more than 59% from 2009 to 2013. The largest amount of meat is imported from Germany, Netherlands, Austria and Croatia (Trade Map - Trade statistics for international business development, 2014). Some of the main reasons for the increase in the volume of imports of beef are: the possibility to procure sufficient quantities of certain categories of beef quality, high level of quality according to the requirements of meat processing companies and favourable price of imported beef in relation to meat produced in the domestic market.

Table 2. *Import of meat and edible parts (in thousands of euro)*

Exporter	2009	2010	2011	2012	2013
<b>Total import</b>	59,174.11	55,892.55	65,971.91	68,983.04	94,305.63
<b>Netherlands</b>	4,779.76	6,560.8	10,477.91	17,386.11	19,918.6
<b>Germany</b>	6,312.78	8,722.13	10,879.25	10,378.79	16,457.67
<b>Poland</b>	2,015.59	275.63	1,505.56	1,650.75	10,507.76
<b>Croatia</b>	12,193.91	14,459.81	10,393.19	6,501.13	10,481.41
<b>Austria</b>	5,947.1	7,633.93	10,918.74	9,113.71	9,532.05
<b>Hungary</b>	2,052.16	1,253.87	3,159.74	5,894.64	6,923.36

Source: Trade Map - Trade statistics for international business development, 2014.

On the other hand, export of meat and edible parts of the animals also had an upward trend until 2013, when there was a fall of about 24%, primarily due to the inability to export to Croatia, which became a member of the European Union. By comparison, the export-import ratio is very low at around 7.65%, if we look at the year 2013.

Table 3. *Total export of meat and edible products (in thousands of euro)*

Importer	2009	2010	2011	2012	2013
<b>Total export</b>	4,292.18	6,755.84	8,387.21	9,402.96	7,135.67
<b>Serbia</b>	911.35	1,383.4	2,988.15	4,213.57	4,925.26
<b>Montenegro</b>	800.21	1,540.04	1,046.07	948.62	1,898.73
<b>Macedonia</b>	138.39	102.42	256.31	105.75	115.19
<b>Croatia</b>	2,354.03	3,518.37	3,971.04	4,023.06	100.88

Source: Trade Map - Trade statistics for international business development, 2014.

Looking at trade, in compliance with customs tariff numbers, according to data for 2012 it is evident that the greatest value of imports with over 86 million USD accounts for products from Chapter 2: Meat and edible offal. The largest part of this group is related to beef. As far as the import of live animals is concerned, the main part refers to the import of cattle. In the chapter that is dealing with food products from meat, it is evident that most of the import refer to sausages and canned products. In relation to export during the observed period, the highest export value was recorded for canned products, poultry meat and edible meat offal of poultry, sausages and live poultry. Compared to the year 2011 export growth has been recorded for canned meat products and poultry meat (Trade Map - Trade statistics for international business development, 2014). Observation of trade with neighbouring countries for the year 2012 has shown that the biggest import

of live animals (cattle) is from Serbia, while the largest amount of meat and edible meat offal import as well as the largest amount of meat products import (sausages and meat canned products) is apportioned to Croatia. The biggest export volume of meat and edible meat offal is allocated to Serbia and Croatia, with a dominating export share of poultry meat. Speaking about export of meat products (sausages and canned meat products), BiH export these products to all neighbouring countries, but predominantly to Serbia and Croatia.

*Table 4. Trade exchange of Bosnia and Herzegovina (000 USD) in 2012*

Country	Hrvatska		Srbija		Makedonija		Crna Gora	
	Import	Export	Import	Export	Import	Export	Import	Export
<b>Type of product</b>								
<b>0102 Live animals cattle</b>	11309	0	23385	0	0	0	0	0
<b>0103 Live animals pigs</b>	9350	0	581	0	0	0	0	47
<b>0105 Live animals poultry</b>	363	16	87	1357	53	287	17	938
<b>0207 Meat and edible offal</b>	6779	4896	449	4524	352	0	0	886
<b>0210 Meat and edible products, salted or brined</b>	1409	277	377	895	608	136	1423	335
<b>1601 Sausages</b>	17261	3184	10157	787	3904	2680	2205	632
<b>1602 Canned products</b>	12902	2205	7286	4985	454	460	299	2002

*Source: Trade Map - Trade statistics for international business development, 2014.*

The most significant slaughter facilities for chicken meat in the project area are: Perutnina Ptuj S ltd Povelic, Srbac and Jezerka ltd Maslovar, Kotor Varos. The most significant capacity for slaughtering pigs and cattle in the project area are: MI - Dim Dim ltd Klasnice, Laktasi; MI Tulumovic ltd Laktaši and Slaughterhouses by Laza and son Banja Luka. The most significant processing capacity for meat products in the project area are: MI - Dim Dim ltd Klasnice, Laktasi; MI Tulumovic ltd Laktasi; MI - Trivas ltd Prnjavor and MI Natura Vita ltd Teslic.

The main selling channels for meat and meat products in Bosnia and Herzegovina are large supermarket chains. In north-western Bosnia and Herzegovina several supermarkets with foreign ownership are operating, like: Agrokor (Konzum, Konzum Super, Konzum Maxi), Delhaize Group (Tempo, Delta Maxi), Intermarche (Interex), Mercator (Mercator Ltd. Sarajevo and M - BL Ltd. Banja Luka), Energotus (TUS). Some of the biggest domestic supermarkets are: Bingo Tuzla, Hiperkort Derventa, and Fortuna Prnjavor.

## 2.2. Food Industry Competitiveness (Porter's Diamond)

### Structure and Strategy of the Leading Companies

Leading companies in the value chain of poultry meat are Perutnina Ptuj S Ltd. Srbac, which is 100% owned by the Group Perutnina Ptuj Slovenia and Zivanic DS Ltd. from Prnjavor.

The company Perutnina Ptuj S Ltd. Srbac was established by purchasing the slaughterhouse, Zivino-produkt Srbac by Slovenian Perutnina Ptuj Group and today employs over 200 workers in poultry slaughterhouses. Products Company Perutnina Ptuj S Ltd. Srbac are whole chicken, ready-made chicken meat and edible parts as well as semi prepared products of poultry meat for grilling. The company Perutnina Ptuj S Ltd. Srbac is covering its activities within the value chain part to some extent with the fattening of broilers at their own farms, partially through the fattening of broilers in cooperation with subcontractors as well as by acquiring broilers from other companies. It is placing the products on the market by using two distribution channels, namely through its subsidiary companies Perutnina Ptuj - BH Ltd. Breza and Perutnina Ptuj Ltd. - Trn Laktasi. According to the data that was obtained during the interview, the main identified strengths are: rounded production cycle, large production capacity, the company's own knowledge and tradition in the business as well as the affiliation to the large group of Perutnina Ptuj. Weaknesses identified during the interview are: infrastructure deficiencies within the slaughtering plant, high operating costs and problems related to the recovering of receivables.

Company Zivanic DS Ltd. was established in 2002 with headquarters in Smrtici in the municipality of Prnjavor and covers several segments of the value chain for poultry meat and poultry meat products, namely: crop production, animal feed production, cultivation and exploitation of hence, fattening of broilers on their own farms and also in cooperation with subcontractors. Company Zivanic DS Ltd. is not possessing its own slaughterhouse, but the service of slaughtering and processing of poultry meat is performed by the company Jezerka Ltd. in Kotor Varos. The products that are distributed through the market to the end-consumers are whole chicken, dressed chicken meat and edible parts under the brand Njam-Njam. One of the products is mechanically deboned chicken meat which is mainly sold to other meat processing and serves as raw material for the production of meat products. The products are sold mainly at the market of Bosnia and Herzegovina, and to a lesser extent on the market of Serbia and Montenegro. The main strengths identified during the interview include: rounded production cycle, a good knowledge of the local market, the fact that this company is family owned - lower operative costs

and more flexible management. Weaknesses of the company Zivanic DS identified during the interviews: the lack of a proper facility for poultry slaughtering, distance to the main markets of consumption of poultry meat in Bosnia and Herzegovina (Federation of BiH), lower working capital as compared with large competing companies and the high rate of unpaid receivables.

As far as the production of beef and pork meat, including products of beef and pork meat, in the Krajina area is concerned, there is no outstanding company to be mentioned particularly in comparison to the other competitors.

A specificity that has been noticed within the product range refers to the production of canned meat products, performed by the company MI - Trivas Ltd. Prnjavor. Because of the available technological equipment for the production of canned products, the company MI - Trivas Ltd. provides service production in the field of can manufacturing for other trademarks (Podravka, Perutnina, Konzum, ZP Komerc etc.). The products manufactured under this trademarks are distributed on the markets of CEF-TA agreement signatory countries. The main strengths identified during the interview are: the existence of an effective quality management system and HACCP, a wider range of offered products in relation to the competitors, experience in the service industry for external trademarks. Weaknesses identified during the interview: outdated technology solutions, insufficient capacity for the production of smoked products, inadequate marketing and promotional activities, the lack of skilled workers (butcher) and a large share of manual labour in production.

The Company MI Dim-Dim Ltd. from Laktasi has its own slaughterhouse for slaughter cattle and pigs available as well as capacities for the production of meat products. The company supplies the butcher shops within the chain stores Konzum, Delta Maxi, Hipercort, TUS, etc. with fresh meat. In 2013, the company MI Dim-Dim Ltd. signed a contract for service production of salami products for the CEFTA market area with Croatian company PIK Vrbovec. The main strengths of the company identified during the interview are: tradition and experience in the business, good geographical position and good road infrastructure, equipped with its own slaughterhouse and processing raw materials, good infrastructure conditions for production. Weaknesses identified during the interview are: lack of adequate marketing and promotional activities, insufficient installed capacity to produce fermented dry sausages.

## Factor Conditions

Subsidies for the agriculture and food industry are channelled through the Entity Ministries of Agriculture and the Regulation act for subsidies, which is passing resolutions for each year separately. The structure of subsidies according to the data obtained during the interview is inadequate. Manufacturers of livestock for slaughter are stressing insufficient subsidies for fattening pigs and beef cattle and as a result of this, they are unable to compete with prices of imported livestock and meat imports. According to the data obtained during the interview, the envisaged subsidies for the year 2014 for the Republic of Srpska are ca. BAM 60 million, which is significantly less than in 2012. The greatest part of the subsidies is planned for milk production premiums (ca. 33.3%), while subsidies for meat production premiums are significantly smaller (ca. 4%)

Subsidies provided by the Ministry of Industry, Energy and Mining of the Republic of Srpska for exporting enterprises during 2013 were dedicated to companies' development projects for enhancement of their competitiveness, establishment of quality systems and increase of employment. Due to their inability to export their goods, only a smaller part of the companies within the value chain for meat and meat products is generally able to apply for this type of subsidies.

Interviewed enterprises in the Republic of Srpska pointed out that the reduction of the tax base and restore of the non-taxable portion of the income facilitated their business to some extent.

One of the major problems of companies dealing with the slaughtering of poultry and livestock and with meat processing is disposal of their animal waste. A particular problem is disposal of slaughterhouse waste due to the large amount of waste that is produced.

In BiH there are no incinerators which could serve as a place for the disposal of this kind of waste. Despite the fact, that the disposing of animal waste on unauthorized dumps is strongly forbidden by law, in practice this unacceptable manner can be noticed. The company Perutnina Ptuj S Ltd. solves the problem of slaughterhouse waste disposal by placing it into special containers and transporting it for the purpose of further treatment in Croatia.

For each kind of development, people are the key factor - their specificity, creativity and motivation to achieve results. In the region of Krajina the following scientific institutions are educating people with high professional qualifications to work in slaughterhouses and meat processing: Faculty of Technology, University of Banja Luka, and Biotechnical Faculty, University of Bihac.

Regarding the cooperation with universities, the companies' representatives pointed out during the interviews that the connection with educational institutions is on a very low level.

In the project area, agricultural secondary schools educating workers for the production of meat products, can be found in following municipalities/cities: Banja Luka, Kozarska Dubica, Prijedor, Ribnik, Prnjavor, Derventa, Sanski Most and Velika Kladusa. Another significant weakness is reflected by the fact, that the majority of the workforce in processing plants has no required education (professional butcher). There is a lack of sufficient workers meeting this professional requirement, and additional problem is that majority of people refuse to work in meat processing plants after completion of their vocational education. Almost all surveyed companies perceive that access to finance is too difficult and that cost of capital is too high. Special credit lines for agriculture and the food industry with preferential interest rates are provided by the Investment Development Bank of the Republic of Srpska and Development Bank of the Federation of Bosnia and Herzegovina. However, during the interview most of the companies stated that the complicated bureaucracy and, in some cases, also the political influence create the biggest obstacles for using these funds.

### **Related and Supporting Industries**

In Bosnia and Herzegovina, there are no producers of equipment for meat processing and slaughtering. The overall production machinery and equipment is imported and authorized services are responsible for the machinery maintenance, respectively the companies have organized their own maintenance services.

Raw and auxiliary materials for meat processing (additives, spices, other raw materials) are mostly imported and distributed by domestic representatives of foreign producers. The exception is salt, which is largely from BiH (salt factory "Solana Tuzla"). There is a significant interaction between companies selling additives, spices, etc. and meat processors. Namely, the first-mentioned group of companies engage technologists who are working on application of these types of products together with experts from the meat processing companies in order to improve existing and develop new products by using raw materials and products which their companies are selling.

Manufacturers of packaging for final products have a significant impact on the value chain of the meat processing and manufacturing industry. Packaging materials for primary packaging such as sausage casings are predominantly being imported. Foils for vacuum packaging of final products are procured from the domestic market which has significant number of producers of these types of packaging. Cardboard

boxes for overpack of products are almost exclusively supplied from domestic producers. Cans for production of canned products are exclusively imported goods (Serbia and Croatia), because of the fact that there are no manufacturers of cans for packing meat products on the domestic market.

## **Demand Conditions**

Meat consumption per capita in Bosnia and Herzegovina is at the average level of the region. A higher proportion of spending per capita in relation to the regional average is to be noticed for poultry and beef. The largest part of the trade of meat products is done through retailers. Requirements on the part of retailers are mainly reflected by:

- Strong pressure to reduce prices (basic rebates, additional special rebates, credit notes based on annual turnover, fees for introduction of new products on retail/store shelves, etc.). The average margin of retail chains for meat and meat products is around 15-20 %,
- Long term payments (ranging from 60 to 120 days),
- Short delivery time and
- Remaining shelf-life of meat products on delivery as long as possible.

Specific customer requirements, which slaughterhouses face with, include special types of packaging for fresh meat, especially in regard to packing (cutting and processing) of meat with a longer shelf life. Slaughterhouses which process poultry and deliver poultry meat also face with the same requirements. As far as changes in demand for meat and meat products are concerned, they do exist and are typical for winter period, from December to March. In that period, as part of tradition, many households in the Republic of Srpska carry out the slaughter and prepare meat products for their private consumption. Another reason for seasonally caused demand variations is the result of religious fasting periods when the demand for meat and meat products decreases.

Export markets that are currently available for domestic meat producers are the CEFTA signatory countries, primarily Serbia, Montenegro and Macedonia. Exports of meat and meat products (beef and chicken) on the Turkish market is possible in accordance with certain export quotas, but only for products with a Halal certificate. Interviewed companies dealing with this type of processing do not export their products on the Turkish market.

Export of meat and meat products on the EU market is currently not possible, due to inability to meet EU standards in several areas, such as official food safety regulations, market regulation and state support.



### 2.3. Firm Level – Competitive Pressures within the Value Chain

For a more detailed analysis of competitive pressure within the value chain it is selected a part of the chain that refers to meat processing and production of meat products.

#### **Competitors**

The main competitors for local producers from the Krajina area on the domestic market for meat products are large companies from Croatia (PIK Vrbovec, Podravka, Argeta, Gavrilovic), Serbia (Carnex, Neoplanta, LTS Farmer, Yuhor), Macedonia (Pekabesko, Mega) and Montenegro (MI Goranović). Competitors from Bosnia and Herzegovina are: Akova Impex ltd Sarajevo, MI Natura Teslic, MI Bajra ltd Travnik, ZP Komerc ltd Bijeljina, MI Karlik ltd Ljubuski, MI Sara d.o.o. Brod. The main competitors for poultry meat from the Krajina region are companies in the Federation of Bosnia and Herzegovina (Akova Impeks Sarajevo, MI Madi Tesanj, Broiler Sarajevo).

As the basics advantages of meat processing industry from the Krajina area in relation to imported products, domestic processors generally emphasize a better understanding of market opportunities, cheaper labour force and exemption of customs duties. As CEFTA member, B&H has a competitive advantage in relation to the import of products from Croatia, because imported products from Croatia are liable to customs duties after the EU accession of this country.

Almost all surveyed companies indicated marketing and promotion of their products to be the weakest link in the process and admitted that they are significantly weaker in this segment than their competitors. Most of the surveyed enterprises in the field of meat processing quote to have older technology solutions and difficulties to secure funds for investment in the modernization of their technological equipment. A significant level of cooperation between slaughter and meat processing companies in the project area is not noticeable, with the exception of cases of joint procurement of raw materials (mainly meat import) or mutual borrowing/lending of equipment.

#### **Suppliers**

One of the main characteristics of the domestic beef and pork meat products processing industry is its high dependence on imported basic raw material - meat. According to data obtained through the in-

interviews, the processing industry imports about 80% of meat for processing purposes. This is primarily related to beef and pork. According to the information obtained from the processors, the basic reasons for this situation are: the deficient quantity of local meat, poor quality of domestic meat (in terms of processing), significantly higher price of domestic meat in relation to imported meat. Quotas, specified for each year, are restricting the duty-free import of meat from the EU. In a situation where the domestic market is not able to meet the needs in terms of quantity and quality according to the requirements of the meat processing industry, quotas contribute to the better competitiveness of the domestic meat processors, but also create additional pressure on domestic producers of meat.

In general, poultry meat is available in sufficient quantities to satisfy the demand of the of meat products manufacturers which are primarily using mechanical separated boneless poultry meat (MOM), but there is also a significant quantity of imports due to oscillations in terms of quality and health safety and also due to lower prices of imported poultry meat. For the import of mechanical separated boneless poultry meat (MOM) from the EU, quotas have been defined, ensuring a better position for the local manufacturing industry, because the duty-free import of a certain quantity proposed by these quotas is made possible. Companies along the value chain of poultry meat production and processing showed a higher degree of integration, with the result that we have companies with an integrated production cycle, ranging from partial crop production to production of breeding animals, fattening broiler chickens up to the slaughterhouse as well as processing of poultry meat.

A small number of processing enterprises that are engaged in the processing of beef and pork have their own slaughterhouses, mostly with smaller capacities, such as MI Dim - Dim Ltd. Laktasi, MI Tulumovic Ltd. Laktasi, Slaughterhouse Laza and son Banja Luka. Slaughterhouse Laza and son Banja Luka is a small sized company, slaughtering cattle and pigs and manufacturing beef and pork meat products, procuring cattle for slaughter exclusively from the domestic market. Their strategic commitment is directed towards the purchase of livestock for slaughter from the domestic market and the sale of products through their own chain of butcher shops and barbecue restaurants "Obelix".

## Customers

The largest part of trade transactions of meat products is done through supermarkets. Restaurants, hotels and catering services are important customers for fresh meat and prepared grilling meat. Butcheries are also significant customers of fresh meat and to a limited extent of meat products.

Big supermarkets mainly determine the conditions for the procurement of fresh meat and meat products. Some of the specific requirements that meat processors must meet are mainly reflected in the following aspects: specific processing of meat, special way of packaging (controlled atmosphere), delivery of products with longer expiry dates, etc. Restaurants and hotels usually have specific requirements in terms of meat quality or specific ways of packaging of meat products (threading etc.)

Changes that have occurred after Croatia's accession to the EU have led to the fact that Croatian companies, in order to maintain the competitiveness of their products on the market of the CEFTA countries, are contracting service production with companies in the CEFTA countries. Two companies from the project area have signed such contracts so far:

- MI Dim -Dim Ltd. Laktasi - performs contracted production for the company PIK Vrbovec Croatia for salami product.
- MI - Trivas Ltd. Prnjavor - performs contracted production for the companies Podravka (Croatia) and Perutnina Ptuj (Slovenia) for canned products (stew, meat cuts, pâté, etc.).

Contract production is a specific form of cooperation between companies, with emphasis on price determination based on the final price calculated by the buyer which will be accepted on the market. However, it is important to notice that the contract production for other brands is a good solution for domestic companies, because this enables them to make better use of installed capacities and to upgrade their competitiveness, respectively reduce their costs per produced unit of their products.

### **New Competitors**

Local meat processing companies emphasized during the interview that they do not see the interest of new competitors for entering the market of Bosnia and Herzegovina. Due to their opinion, primarily because of the small size of the market and because of the existing oversized processing capacities in the country.

### **Changes in Demand**

Meat is one of the essential ingredients and must be present in human diet. However, the BiH market is characterized by seasonal fluctuations of demand:

- Reducing the consumption of meat products in the period from November to March due to the preparation of meat products in households (primarily in the Republic of Srpska),
- Reducing the consumption of meat and meat products due to seasonal nature of religious holidays and habits not to consume meat and meat products during these religious holidays,

- Increased consumption of meat during the large seasonal immigration (summer holidays etc.) of people from the diaspora in BiH.

## 2.4. Meso Level – Supporting Institutions

In Bosnia and Herzegovina, the Entity Ministries of Agriculture are primarily responsible for the creation of agricultural policies. On state level, agriculture is under direct jurisdiction of the Ministry of Foreign Trade and Economic Relations. One part of the institutions is under the direct jurisdiction of the Council of Ministers of BiH. The Foreign Trade Chamber of BiH is the only institution with a direct link to the Council of Ministers of B&H on state level.

The Veterinary Office of Bosnia and Herzegovina (BiH KZV) was founded in year 2000 by the decision of the Council of Ministers. This state agency is under the direct jurisdiction of the Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina (BiH MOFTER). The Veterinary Office (KZV) is responsible for the enforcement of responsibilities required by law, harmonized and in accordance with the operational activities of the Entity veterinary services and the Veterinary Services of the District of Brcko (Veterinary Office of BiH, 2014). There is a general dissatisfaction on the interviewed companies' side, regarding the work of veterinary institutions and their collaboration with processing companies. The main objections the companies are imputing against the work of KZV BiH and Entity veterinary services are reflected in the following: non-adequate system for control of product quality, complicated procedures concerning the technical approval of facilities, high costs for issuing accompanying health certificates for consignments, inconsistent legal regulations regarding the import of meat from the EU, failure to implement the provisions of the Veterinary Act regarding the application of the HACCP system and regarding the auditing of object conditions.

The Food Safety Agency of B&H is an independent administrative organization, established by the Council of Ministers at 08.03.2005 due to a proposal of the Ministry of Foreign Trade and Economic Relations, but on the basis of the Food Law BiH. The Food Safety Agency of Bosnia and Herzegovina was established to ensure the safety of food and feed, to conduct scientific and professional as well as technical activities based on the regulations of the Food Law, to ensure the application of international conventions and agreements in the field of food and feed safety which are compulsory for B&H (Agencija za sigurnost hrane BiH, 2014). The main points of criticism with view to the work of the Food Safety

Agency of Bosnia and Herzegovina refer to the difficult adoption of legislation in B&H in this moment as well as to the fact that the legislation is not sufficiently clear to the users - businesses who have to apply it.

The Institute for Accreditation of Bosnia and Herzegovina (BATA) was established with the aim to carry out the establishment and maintenance of a competent, impartial and independent accreditation system, so that the customers of accredited bodies and consumers in BiH can have confidence in the services provided by laboratories, certification and inspection bodies (Institute for accreditation of B&H, 2014). Accredited bodies for conformity assessment according to requirements of ISO 17025:2006 by BATA from the project area are: Euroinspekt Ltd. Doboj (testing laboratories for chemical analyses of water), Veterinary Institute, Bihac (testing laboratories for microbiological and physical - chemical testing of food), Institute for Public Health, Banja Luka (test laboratories for microbiological and physical- chemical testing of food and water), Veterinary Institute of the Republic of Srpska, Dr. Vaso Butozan, Banja Luka (test laboratories for microbiological and physical - chemical testing of food and feed).

Interviewed companies stated that costs of analyses are extremely high having in mind overall condition in the manufacturing industry. A particular problem is the non-existent recognition of analytical reports from our laboratories in countries where it is currently possible to export meat products.

Certification bodies for conformity assessment systems are mainly represented by international bodies, respectively their local branches in BiH who are covering the certification processes. During the interview, companies that are certified under one of the applicable standards stated that the costs for consultancy services and implementation of certification system are very high. Most companies managed to obtain 50% subsidies for the introduction of certification processes.

The Republic Agency for Development of Small and Medium Enterprises of the Republic of Srpska (RS RARS) is a non-profit organization founded in 2004 with the aim of providing support in the establishment and development of small and medium enterprises in the Republic of Srpska (Agency for Development of Small and Medium-Sized Enterprises of Republic of Srpska, 2014). In the opinion of the interviewed companies, RARS RS did not provide any support related to the work of their companies. Surveyed companies reported that the Entity Chambers of Commerce are institutions with a significant impact on their work. As main benefits of a membership at the Chamber of Commerce they are stating the organization of trainings for their companies and the distribution of information on economic developments. Only a small part of the company indicated that they established economic cooperation with other companies thanks to the support of the chamber.

B&H Export Promotion Agency - BHEPA was founded 2008 and it is a national agency operating within the Foreign Trade Chamber of Bosnia and Herzegovina. Its primary role is to assist all B&H companies to develop and expand export markets by promoting the products and capabilities of the country internationally (Foreign Trade Chamber of Bosnia and Herzegovina, 2014). Based on the data obtained during the interviews, only a small number of companies is familiar with the activities and services offered by BHEPA.

Generally, the companies have a negative attitude towards the role of the institutions which are responsible for providing support in the field of entrepreneurship development and improvement of business environment. The institutions do not have a clear vision how to help the companies to upgrade their competitiveness, partly because of the circumstance that people employed at these institutions are not often well informed about the business environment and the way companies are doing business. On the other hand, only in very rare cases the companies themselves are ready to take an initiative and to initiate relevant processes in order to solve certain problems. Anyway, a more intense communication between the business support institutions on the one side and the companies (ideally speaking with one voice through groups or associations) on the other side, would contribute to the strengthening of the mutual cooperation.

## 2.5. Macro Level – Framework Conditions

Institutions generating framework conditions for the meat and meat product value chain in Bosnia and Herzegovina can be divided into four groups:

- Institutions at the state level - where agriculture and food industry fall under the jurisdiction of the Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina (MOFTER),
- Institutions at the entity level - Ministry of Agriculture, Water and Forestry Federation, Ministry of Agriculture, Forestry and Water Management of the Republic of Srpska,
- Institutions at the cantonal level - Cantonal Ministry of Agriculture, Water and Forestry (only in the Federation of Bosnia and Herzegovina),
- Institutions at the municipal level - implementing activities through departments and offices for Agriculture, Water and Forestry.

The Strategy for the Development of the Agricultural Sector in the Republic of Srpska till 2015, containing long-term goals of agrarian Development in the Republic of Srpska, was adopted on 18.07.2006. According to the interviewed companies, the strategy goals have not been achieved, primarily due to following circumstances:

- No volume increase in the area of pig and cattle fattening, even the opposite effect occurred. The volume increase of fattening poultry is visible every year, but without significant state aid measures,
- Renewal of agricultural mechanization was not done in the previous period, partly because of the absence of incentives, but also due to a lack of favourable credit facilities. During the last years, no subsidized interest rates for agricultural enterprises and individuals have been approved, as it was common practice ten years ago,
- Additional support measures for mountainous regions with difficult farming conditions are not foreseen as it is the case in other European countries,
- Funds allocated for stimulating exports are on a symbolic level and insufficient,
- Resources for the improvement of the agriculture sector are planned to reach the amount of 8%. In practice they do not exceed 4 %, with a very low level of subsidies for meat production (for 2014, only 4 % of the total subsidies for the agricultural sector are dedicated for the meat production sub-sector). The funds allocated for the production of poultry meat are symbolic.

During interviews with the companies from the food industry, following deficiencies plaguing business operations of the companies in relation to the state administration at all levels, were identified:

- Complicated and unclear procedures for resolving administrative affairs,
- Too long waiting time for obtaining of certain licenses permits, etc.
- Poor communication from institutions' side with business sector,
- Poor treatment of businessmen by administrative workers,
- High prices for the various taxes, building permits,
- High fees for tender documentation,
- Lack of incentives for manufacturing activities sector, with respect to the reduction of costs for administrative fees.

As far as the certification of quality management and food safety systems are concerned, most of the enterprises introduced the HACCP certification according to the guidelines given in the documents of the Codex Alimentarius. The application of HACCP system in plants for livestock and poultry slaughtering and meat processing is also required by law in BiH. In smaller objects the HACCP implementation is not completed and a small number of these objects is certified.

Changes that occur in the EU when it comes to certification requirements on the part of trade associations, such as the requirements foreseen by the food standard IFS (The International Features Standard) are still not recognized by the meat processing enterprises in the Krajina area, with the result that in this

area we still do not have any company certified according to the IFS Food standard. As this standard is a basic prerequisite for doing business with large retail chains in the EU (Metro, Lidl, Spar, Getro, etc.), their entry into the market of Bosnia and Herzegovina will raise the demanding burden on the local suppliers when it comes to quality management and food safety systems. Retail chains like Konzum, Delhaize and Mercator are also members of this association, but are still not applying this control and requirement mechanism on their local suppliers in B&H.

Some of the surveyed local enterprises have perception, that the domestic primary production of livestock is threatened by import lobbies, which are commonly associated with political power structures. According to the Law on Customs Tariffs, quotas for duty-free import of live animals, meat and meat products are defined. This measure is a direct incentive for the manufacturing industry, because it allows the purchase of raw materials for production under favourable conditions. On the other hand, this measure has an opposite effect on the domestic primary production of livestock and poultry, because domestic primary producers are put in an uncompetitive position, due to the greater downward pressure on product prices as a consequence of a lower price for imported goods (no customs duties for imports + high subsidies for producers meat in the EU and other countries).

The Indirect Taxation Authority (ITA) of B&H, acting on the basis of the Law on Customs Tariff, each year takes a decision on customs tariff determination for the current year, thus defining additional quantities of live animals, meat and meat products, that can be imported without payment of custom duties from countries which are usually subject to custom regulations for imported goods. Local processors can take advantage of additional quotas defined by special Decrees, provided that they are able to provide evidence to ITA showing that they are procuring meat of B&H domestic origin at a rate of 1:1 compared to the additional quantity they want to import. This measure is presented as an action aiming at protecting the domestic livestock production. The fact that additional quotas almost every year remain unrealized to a huge extent, tell us that processors are not able to find sufficient quantities of meat of domestic origin on the market and that this measure does not contribute to the protection of domestic production.

CEFTA agreement includes clear and effective procedures for dispute settlement and facilitates the gradual establishment of the EU-Western Balkan countries zone of diagonal cumulation of origin. Products or raw materials imported from one CEFTA country and processed in another CEFTA country will change their origin and will be exported as a product from the second CEFTA country. If the next country further customizes the product, the designation of origin for this product will be changed again.



It is important to underline that customs and tariffs have to be paid only for product ingredients without a declared origin and therefore it is necessary that foreign trade companies are running appropriate evidence records, to avoid losing their certificates. The application of a diagonal cumulation of origin (regarding trade between the countries in the region of Western Balkans and between the region and the EU) contributes to the strengthening of the export and investment potential of the region, the growth of its technological structure and competitiveness.

## 2.6. Meta Level

According to the Ministry of Administration and Local Self-Government 63 of 70 existing associations of agricultural producers are operating on municipal level, while 7 are organized on entity level.

The 1998 founded Poultry Farmers' Union of the Republic of Srpska represents legal subjects that are manufacturing food for poultry fattening, producing and breeding chickens, dealing with the production of consumable eggs as well as companies dealing with broiler slaughtering. This organization carries out following activities: organization of professional education programs for its members, lobbying at governmental institutions for specific support measures, participation in legislating activities and cooperation with international organizations. Some of the scheduled activities have not been realized so far, such as the creation of a database containing information about existing production capacities and types. A system of joint procurement, respectively a joint market presence towards suppliers has never been established.

The Farmers' Association of the Republic of Srpska exists since 2009. The basic goals of this association are aiming at protecting the interests of agricultural producers, providing professional services to agricultural producers and at exertion of influence in order to improve the status of agricultural producers. The prevailing public opinion holds the view that these organizations are serving the needs of specific actors heading these organizations in terms of personal promotion and that these organizations are under the influence of political factors.

It is very hard to find verifiable data regarding the registered members as there is almost no transparency concerning their work. Another interesting aspect is the fact that no formal organization can be found in the sector of meat processing. Cooperatives as a possible organizational type of primary producers do not exist, probably conditioned by negative experiences from the past.

## 2.7. Key Gaps Identified

### Company Level

- As a result of fragmented production capacities (addresses mainly the breeding of cattle and pigs), production costs and the prices of livestock / meat from domestic producers are high. Farms do not meet EU standards in terms of hygiene, animal welfare and environmental protection.
- Available quantity of beef and pork, meeting the quality requirements of meat processors on the domestic market at competitive prices, is insufficient and therefore the domestic meat processing industry covers its demand for basic raw beef and pork meat through imports (approx. 80 %).
- Equipment and technology used in the meat processing process is out of date. This is particularly pronounced in smaller processing plants, which results in a very low level of productivity.
- Facilities for processing meat generally do not meet EU standards in terms of veterinarian and sanitary conditions, and one part of the facilities do not meet veterinary sanitary conditions which are in force in BiH.
- Meat processors usually do not have their own laboratories for operational quality control and product testing.
- Insufficient number of skilled workers in meat processing sector (butcher) with secondary education.
- Companies engaged in the production of meat and meat products do not have adequate marketing and promotional activities for their products.
- Low level of mutual cooperation between the companies engaged in the same or a similar activity.
- Range of meat products is mainly focused on cheaper products without significant innovation in products and without significant manufacturing of products in higher price categories.

### Meso Level – Supporting Institutions

- The official quality and food safety control for meat and meat products is not adequate and does not meet the requirements of valid legislation.
- No adequate system for the disposal of offal and animal waste from meat processing plants and slaughterhouses.
- Too many laws, ordinances and regulations governing livestock production. Farmers are not able to adequately monitor and implement the complicated procedures that are required.
- High financial burdens in terms of compensation for water, various financial burdens in the context of obtaining and monitoring environmental permits.
- Subsidy policies agricultural development are not clearly defined and are not long-term oriented.

Supporting measures by the authorities are conducted during the same year when the incentives are paid and this leads to uncertainty on the manufacturers's side, thus complicating the planning of agricultural production. The subsidies projected in the Strategy for the Development of Agriculture of the Republic of Srpska have not been fully disbursed.

- Subsidies for the production of meat, including beef, pork and poultry meat are defined as a symbolic amount and do not provide adequate support to domestic production. Size of these subsidies is far below the regional average.
- Very expensive capital, bank credit lines and high interest rates for agricultural production.
- High prices for acquisition of tender documentation within the scope of tendering procedures for the supply of domestic institutions with meat and meat products.

#### **Macro Level - Framework Conditions**

- Bosnia and Herzegovina is still a long way away from exporting live animals, meat and meat products to the EU due to the EU-incompatibility of its systems for food safety control of animal origin. The problems are reflected in following areas:
  - \* Animal health: Mainly compatible with EU requirements, with the exception of classical swine fever and veterinary control system.
  - \* Animal welfare: Problems that have to be solved are related to small pig and poultry breeding farms as well as to practices of informal slaughter.
  - \* Animal identification: EU standards adopted for cattle identification, standards for pigs, sheep and goats are underway, but movement of animals without adequate permissions still remains a problem.
  - \* Hygiene on farms and in processing industry: Conditions on big farms and processing facilities generally good, but smaller facilities are a serious problem. Another problem is the meat production outside of registered objects.
  - \* Environment protection on farms and processing facilities: Disposal of fertilizers on farms is not in line with EU standards. A strong focus of attention is also related to disposal of animal waste at slaughterhouses and meat processing facilities.
- Inequality of bilateral relations within CEFTA agreement due to existing non-tariff barriers, which are reflected in the necessity to submit specific product analyses, by taking long waiting periods for health tests etc., slows down the trade between the CEFTA members.

#### **Meta Level**

- Organizational level of business subjects through associations, unions, cooperatives etc. is very low and their management is unprofessional and often influenced by daily politics.

## 2.8. Summary of Main Findings

During the analysis of the value chain for meat and meat products, the focus was directed towards the following product groups:

- Poultry meat and poultry meat products
- Meat of bovine animals and beef products
- Pork meat and pork meat products

Despite the fact that each of these value chains shows a certain level of specificity, the value chains for beef and value chain for pork meat products show great similarity in terms of actors and the structure of the value chain.

### **Key Findings in the Value Chain of Poultry Meat and Poultry Meat Products**

- The production of poultry meat and poultry meat products showed the greatest competitiveness level of three observed value chains.
- There is a significant integration of all stages in the value chain from primary production of crop products to delivery of the final product within a company.
- Number of commercial farms for fattening broilers (with over 1,000 broilers per round) was significantly higher than the number of small farms.
- The infrastructure requirements in industrial slaughterhouses are on a satisfactory level, but there are significant gaps in smaller slaughterhouses.
- Poultry meat is generally available in sufficient quantities to meet the demand of the manufacturers of meat products who mainly use mechanical boneless chicken meat (MOM), but also a significant amount of imports due to variations in terms of quality and food safety, but also due to lower prices of imported products.
- Costs for the distribution of poultry meat and poultry meat products play a very significant role as far as the price determination of the product is concerned, because they require specific transport conditions in terms of temperature, hygiene and vehicles etc.
- The level of organisation of the Association of the poultry farmers of the Republic of Srpska is developed to a significantly higher standard as compared to other agricultural associations in the region.

### **Key Findings in the Value Chain for Beef and Pork Meat and Meat Products**

- During the past few years a significant reduction of the livestock quantity, respectively the number of cattle and pigs is to be noticed.

- The number of commercial farms is very small (farms with 20 or more cattle or farms with more than 200 pigs) in relation to a large number of small farms and farms within the household.
- There is no significant slaughtering capacity in the region of Krajina for the slaughter of livestock (cattle and pigs).
- Industrial processors of meat are importing 80% beef and pork meat in order to satisfy their needs.
- Related to the procurement of meat, insufficient quality of local meat, high price of domestic meat, insufficient amounts of certain categories of meat have been mentioned by the meat processors as their main problems. The main export destinations for products from beef and pork are Serbia, Montenegro and Macedonia.
- Manufacturers of meat products on the market of Bosnia and Herzegovina are facing competitors from CEFTA agreement who are selling their products under the same conditions as the products of domestic manufacturers. Croatian accession to the EU has had a positive impact on domestic processors due to the introduction of tariffs on products from Croatia, and on the other hand, Croatian companies have transferred a certain part of their production capacities to BiH with the impact that there has been a major recruitment processing capacities of B&H.
- Cost of distribution of pork and beef and meat products play a very significant role in price of the product, because they require specific transport conditions in terms of temperature, hygiene, vehicles, etc.

## 2.9. Main Recommendations

The key recommendations given below relate to the value chain for meat and meat products, although some segments may be applied in other value chains of food products.

The role of *Eda* in the process of implementation of the recommendations can be multiple.

*Eda* can assist to companies in terms of formulation and research of opportunities regarding cooperation with the public authorities, in order to improve the level of service of public institutions by companies themselves. The role of the EDA may be mediating the dialogue between companies and public institutions. Consultant's role of *Eda* can be reflected in providing services to companies from the food sector who want to adapt their business according to international standards for quality management and food safety. After a detailed analysis of the needs *Eda* can organize certain types of training for representatives of companies or public institutions.

## **Improvement of Business Operations at a Firm Level**

The CREDO Krajina project will support companies from the food sector through a public call for co-financing projects aimed at improving their competitiveness.

Companies need to work on the improvement of the infrastructure conditions in the production sector in order to satisfy the requirements of the standards applied in the EU and to be ready to enter the EU markets, when BiH will fulfil the required conditions or when the companies will be confronted with requirements on the part of customers, in particular large supermarkets, which are generating the biggest part of the trade with meat and meat products.

Interventions that may be related to the establishment of a greater degree of cooperation between enterprises can be carried out relatively fast through the formation of associations, clusters or similar organizations. Some forms of cooperation between the companies that would have a positive effect for all participants could be:

- Joint procurement of raw materials, where the joint enterprise could act on the market with stronger bargaining power.
- Joint distribution of products in order to optimize distribution costs.
- Joint construction and use of operating laboratories for control of the production process.
- Joint promotion and marketing of products that would be oriented to a certain mark of quality and not on the manufacturer's brand.

It is also necessary to intensify the role of enterprises with the scope of the communication with educational institutions whether they are secondary or higher education institutions. Efficient organization of practical training in companies as well as greater involvement of scholars from institutions of higher education could lead to situation where graduated students have some practical experience and industry has significant scientific support which enables development of products and technological processes.

## **Industry Wide Interventions**

To improve the competitiveness of enterprises in the value chain of meat it is necessary to improve the situation in primary production regarding the breeding of animals for slaughter. The current situation with a very small number of commercial farms which are carrying out the fattening of animals should gradually be changed through the application of adequate measures. It is necessary to take measures that

will lead to a coarsening of small farms, reconstruction of buildings for fattening animals and procurement of modern machinery. Adequate government support measures must accompany these processes. Connections established between primary producers and the processing industry should ensure the stability of primary producers in terms of market and manufacturing continuity in the supply of raw materials of domestic origin. Training that is related to the management of companies in the food industry represents one of the requirements that has been mentioned frequently during the interviews with the companies.

### **Recommendations for Meso Organisations**

A very important issue for the operation of a company from the food sector, especially processing foods of animal origin is the inconsistency of legislation between the entity level and the state level. This situation significantly reduces the competitiveness of companies in the meat processing sector with respect to the competitiveness of imported products that are on the market of B&H. Generally, this is a consequence of the lack of dialogue between industry on the one hand and government entities and institutions on the other.

A particular problem for the competitiveness of meat processing companies which are investing and maintaining the production conditions according to legal requirements is caused by unfair competition which is reflected in the fact that the competitors perform their business in completely poor and inadequate conditions for meat processing. It is necessary to fully implement legislation and to review the facilities that are used for meat processing, applying the legislation in force in BiH and thus enabling the equal treatment for all processors in B&H.

One of the most pressing problems the slaughterhouse and meat processing companies and also public institutions are facing is the problem of animal waste disposal. The solution of this problem is to build facilities for the disposal of animal waste according to the standards applied in the EU and probably two or three facilities for the whole of BiH, which should be located according to the geographic distribution (probably one facility to the region of northwestern B&H). In addition to the actual facilities for the disposal of animal waste it is essential to ensure a system for the efficient collection and transportation of waste to the facility for disposal.

### **Policy Recommendations**

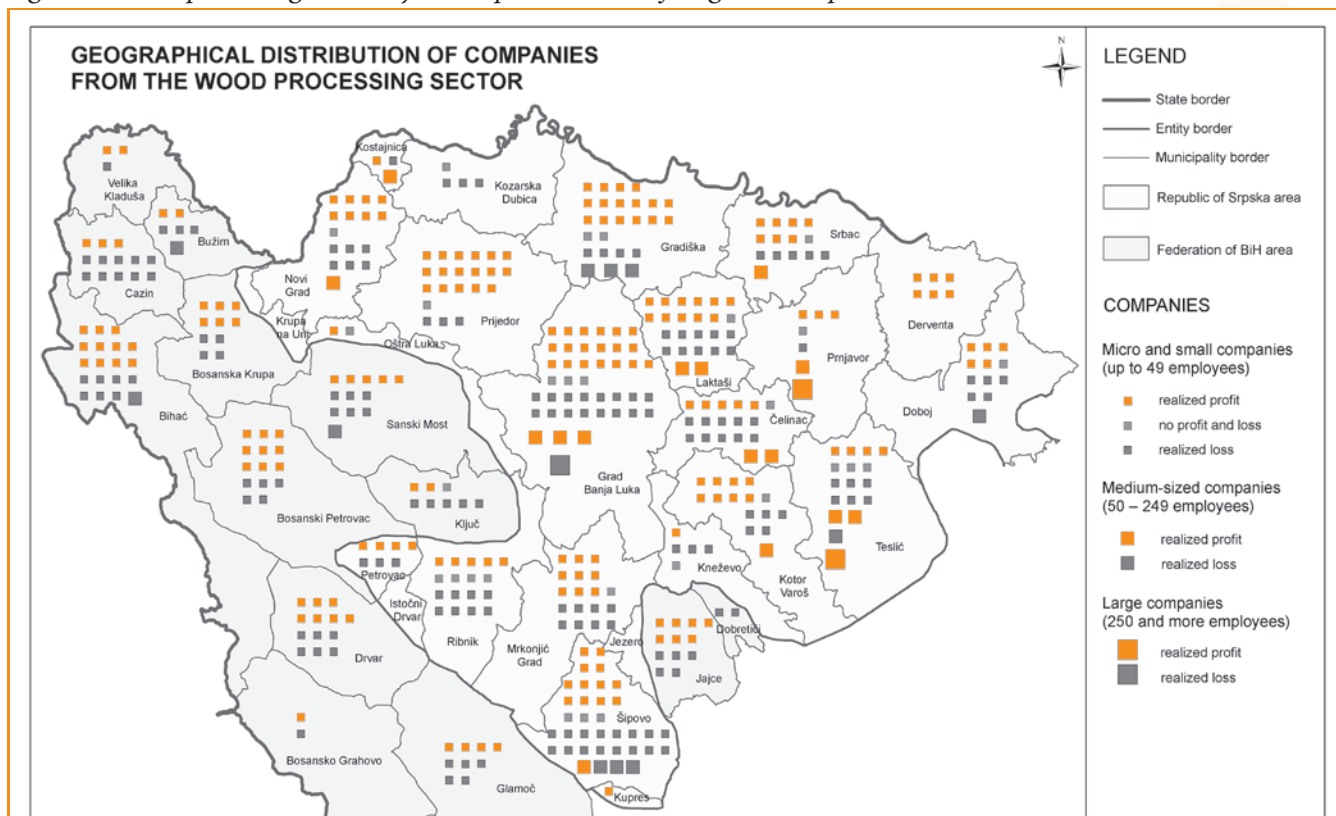
One of the priorities for BiH is to ensure the conditions for the possibility of export of live animals, meat and meat products to the EU. Key areas in terms of legislation and its implementation that have to be focus in the coming period are: animal health, animal welfare, animal identification system, hygiene on farms and meat processing plants and protection of the environment on farms and meat processing plants.

### 3. Wood Processing Sector and Value Chain for Solid Wood Furniture

#### 3.1. Overview of the Value Chain for Solid Wood Furniture

Wood processing sector has capacities throughout the project area and employs 5,881 employees in 432 companies being the largest sector of processing industry in regard to number of employees (Pucar, 2014, p. 70).

Figure 3. Wood processing - the only sector present in all of target municipalities.

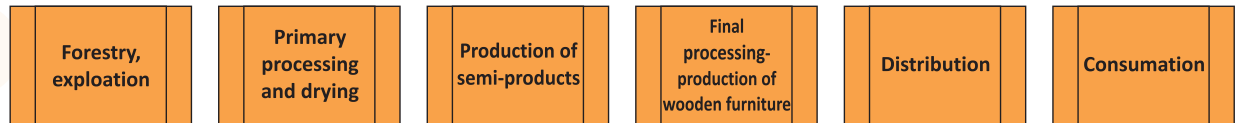


Source: Pucar, 2014, p. 103



Focus of value chain is furniture made of solid wood. In addition, comprehensive, broader picture in wood processing industry is presented. Also, organization of companies and their activities is such that some of them cover more than one link in the chain, i.e. some of them have sawmill, drying capacities, processing capacities, production of semi-finalized and final products, wholesale and/or retail sale<sup>3</sup>.

Figure 4. Generic value chain map for wood processing - solid wood furniture



Scale of export of wood processing sector focuses attention of characteristics of export. Since focus of the analysis is primarily on solid wood furniture, this production and its results will be in focus.

3 The following terms will be used in this document:

- public forestry enterprise - a public enterprise dealing with forestry, forest protection and managing exploitation (such as Javno preduzeće šumarstva Šume Republike Srpske in Republika Srpska and Šumsko privredno društvo "Unsko - sanske šume" in Una-Sana Canton),
- lumber camp - an organizational unit within above defined public forestry enterprise, i.e. Forest Management Units (šumsko gazdinstvo) in Republika Srpska and Forestry units (šumarija) in Una-Sana Canton, also dealing with forestry, forest protection and managing exploitation,
- sawmill - facility for primary processing of wood, most often privately owned, but dealing only with processing, not with forestry.

Descriptions and definitions of terms were prepared in consultations with sector expert and using information from the following sources: Šume Republike Srpske. (20 April 2010). *Organisation*. Retrieved from [http://www.sumers.org/portal/index.php?option=com\\_content&task=view&id=674&phpMyAdmin=e991023d84be1aa4db4ec4a503fdeaa7](http://www.sumers.org/portal/index.php?option=com_content&task=view&id=674&phpMyAdmin=e991023d84be1aa4db4ec4a503fdeaa7) on 26 September 2014, and Unsko - sanske šume. (n.d.). *General characteristics*. Taken over on 26 September 2014 from <http://ussume.ba/index.php?sta=ok>.

Table 5. List of importing markets for the product exported by Bosnia and Herzegovina in 2012 (product code: 940330 office furniture, wooden, nes<sup>4</sup>)

Importers	Trade Indicators				
	Exported value 2012 (USD thousand)	Share in Bosnia and Herzegovina's exports (%)	Exported quantity 2012 (tons)	Exported growth in value between 2008-2012 (% p.a.)	Exported growth in quantity between 2008-2012 (% p.a.)
Germany	567	56.2	158	181	149
Croatia	116	11.5	31	-11	-15
Switzerland	77	7.6	23	48	70
Serbia	76	7.5	35	-2	2
Sweden	58	5.7	14		-60
Slovenia	26	2.6	7	-51	-52
Austria	15	1.5	3	11	7
Netherlands	15	1.5	3	102	
Montenegro	14	1.4	3	-40	-48

Source: Trade Map - Trade statistics for international business development, 2014

Table 6. List of importing markets for the product exported by Bosnia and Herzegovina in 2012 (product code: 940340 kitchen furniture, wooden, nes)

Importers	Trade Indicators				
	Exported value 2012 (USD thousand)	Share in Bosnia and Herzegovina's exports (%)	Exported quantity 2012 (tons)	Exported growth in value between 2008-2012 (% p.a.)	Exported growth in quantity between 2008-2012 (% p.a.)
Switzerland	1197	25.3	341	49	84
Norway	921	19.4	162	3	-1
Croatia	859	18.1	512	-6	-1
France	791	16.7	767	13	14
Germany	303	6.4	95	17	10
Austria	208	4.4	54	31	27
Montenegro	136	2.9	75	-15	-10
Serbia	76	1.6	28	-48	-51
Sweden	76	1.6	26	-11	-19

Source: Trade Map - Trade statistics for international business development, 2014

4 Not elsewhere specified. (As per Trade Map. *Trade Map User Guide*, page 22. (August 2014). Retrieved from <http://legacy.intracen.org/marketanalysis/Docs/Trademap/TradeMap-Userguide-EN.pdf> on 26 September 2014.

Table 7. List of importing markets for the product exported by Bosnia and Herzegovina in 2012 (product code: 940350 Bedroom furniture, wooden, nes)

Importers	Trade Indicators				
	Exported value 2012 (USD thousand)	Share in Bosnia and Herzegovina's exports (%)	Exported quantity 2012 (tons)	Exported growth in value between 2008-2012 (%, p.a.)	Exported growth in quantity between 2008- 2012 (%, p.a.)
Germany	9051	38.2	3989	69	63
Netherlands	5490	23.2	2035	117	171
Croatia	2059	8.7	1046	3	8
Denmark	885	3.7	555		467
Serbia	773	3.3	384	1	4
Austria	761	3.2	355	45	47
France	725	3.1	406	-7	-9
Slovenia	636	2.7	271	12	11
Slovakia	479	2	176	66	69

Source: Trade Map - Trade statistics for international business development, 2014

Table 8. List of importing markets for the product exported by Bosnia and Herzegovina in 2012 (product code: 940360 furniture, wooden, nes)

Importers	Trade Indicators				
	Exported value 2012 (USD thousand)	Share in Bosnia and Herzegovina's exports (%)	Exported quantity 2012 (tons)	Exported growth in value between 2008-2012 (%, p.a.)	Exported growth in quantity between 2008- 2012 (%, p.a.)
Germany	29380	39.1	8719	28	29
Croatia	10721	14.3	5142	-9	-6
France	6263	8.3	2839	1	-3
Czech Republic	4828	6.4	2527	100	164
Italy	3875	5.2	2128	21	15
Austria	3489	4.6	1476	45	53
Netherlands	2603	3.5	496	17	26
Belgium	1634	2.2	1015	177	168
Switzerland	1598	2.1	361	-2	-15

Source: Trade Map - Trade statistics for international business development, 2014

Table 9. Exported and imported value of different types of furniture in 2012

Value Product	Exported value 2012 (USD thousand)	Imported value 2012 (USD thousand)
Office furniture, wooden, nes	1012	1678
Kitchen furniture, wooden, nes	4739	4248
Bedroom furniture, wooden, nes	23709	7252
Furniture, wooden, nes	74629	27010
<b>TOTAL</b>	<b>104089</b>	<b>40188</b>

Source: Trade Map - Trade statistics for international business development, 2014

Table 10. Value per ton of exported and imported different types of furniture in 2012

Product	Value per ton, exported products by BiH (USD thousand)	Value per ton, imported products by BiH (USD thousand)
Office furniture, wooden, nes	3,51	2,45
Kitchen furniture, wooden, nes	2,24	1,59
Bedroom furniture, wooden, nes	2,20	1,67
Furniture, wooden, nes	2,54	1,91

Source: Trade Map - Trade statistics for international business development, 2014

### Key points:

- Total import in 2012 is 40.188.000 USD and total export is 104.089.000 USD. Coverage of import by export is 259%.
- Wood processing sector is facing strong competition in BiH market where products are being imported from EU countries with developed industry, such as Germany and Italy, as well as from neighbouring countries such as Serbia and Macedonia and products from China.
- BiH producers are exporting high quality products to demanding EU markets.
- Products exported from BiH have higher value per ton than products imported in BiH.
- Imported growth in terms of both, value and quantity, is negative for most of countries exporting to BiH for the period 2008-2012, although some countries have positive results in exporting specific products to BiH, such as Denmark in office and bedroom furniture, Turkey and China for kitchen furniture, Albania and France in bedroom furniture. This indicates that BiH producers are increasing their competitiveness in domestic market and that BiH is importing products that are primarily competitive in terms of price, since value per ton of imported products is lower than value per ton of exported products.

## 3.2. Wood Processing Industry Competitiveness (Porter's Diamond)

### Firm strategy, structure and rivalry

- There are companies that produce quality products that are exported to EU. Their capacities include preparation of material (drying, and similar). Their production is different in scale, also different is number of employees.
- Domestic manufacturers recognize only external firms, i.e. companies abroad, as leaders (e.g. Tarkett Backa Palanka, Serbia) and think that these companies have favorable conditions in regard to business environment (interest rates, subsidies and funds).
- Local companies invest more and more in finalization of products and this trend is visible.
- Subsidies allocated on basis of criteria based on quantities of exported goods, regardless of type of product (i.e. whether it is final or semi-product) support more primary processing than production of final products,
- Better cooperation with and support from relevant institutions is needed to utilize opportunities offered by international agreements, such as the one with Turkey,
- Since they export most of their products, most often local producers do not see each other as competitors. Some of producers even say that they do not have local competitors. However, some furniture producers see unregistered small producers and second hand furniture traders as competitors. Retailers do see other retailers in local market as competitors.
- As strengths of competitors, companies in some cases see proximity of raw material suppliers and more complete production (companies that do not have sawmills in their facilities see that as an advantage of companies that do have their own sawmills), while retailers see wide variety of offered products as their strength.
- As weaknesses of competitors, producers see small capacities, low level of investment in infrastructure and finalization, inability to react fast, while retailers see quality of service as weakness of their competitors.
- As their advantages in comparison to competitors, companies see their own production with adequate technology, needed flexibility and focus on specific products, fast delivery and variety of options for buyers (e.g. in regard to upholstery materials) and possibilities of tailoring products to buyer requests, good prices, nice retail facilities, delivery with installation, while retailers also emphasizes relations with buyers and dealing with complaints as advantages.
- As their weaknesses in comparison to competitors, companies mention lack of qualified staff, location in regard to position of raw materials suppliers, while retailers also see the fact that competitors have their own production as their own weakness.

- In regard to cooperation with competitors, companies state that there was no need for cooperation, but also that it is not in company's interest not to have any competitors regardless of the fact that they see them as competitors especially in sale. Also, some companies mentioned that they were considering cooperation based on external / outsourced production of parts of products or performs some tasks such as upholstering chairs. Some companies say that they have contacts with other companies but that they do not cooperate. However, some companies stated that they have cooperation with competitors in procurement, sale, laboratory examination.
- Companies also state that they do not have information on their competitors, assuming that their competitors are producers selling on the same market, especially in foreign markets, but emphasizing that they do not have information on their competitors.
- From research it became apparent that firms did not have many opportunities to form networks, collaborate or share information. In one of workshops a business person mentioned large demand for chairs, while another responded that they have excess capacity and an interest to produce more.
- In regard to cooperation with companies from the same sector (e.g. borrowing equipment, product development, joint procurement, marketing), most companies included in the survey stated that they do cooperate in areas such as joint procurement, marketing, drying and preparation (even lending) of material, lacquering, consultations in developing products, sales with retails providing feedback information from customers and where producers combine their offers (e.g. producer of chairs with producers of kitchen furniture and closets), transport of raw materials, some companies cooperate with IKEA for which they produce, joint exhibitions at fairs, some of them sell to each other (e.g. company A sells press wood/ chipboard to company B and buys metal parts from company B), there are also joint projects in providing services (e.g. several companies cooperated in interior arrangement for hotels in Croatia), and there is also joint use of CNC and other machinery.
- There are cooperation initiatives between companies from the same municipality, but also cooperation between companies from different municipalities. Effects are reflected in lower prices of raw materials and materials.
- Cooperation is also facilitated by clusters, especially in regard to fairs and to joint services for clients.
- Companies say that the cooperation should be further developed, but that mentality is often not in favour of cooperation.

Priorities for companies are keeping good relations with existing companies, further improvement of quality of products, increase of production scale if possible.

### Factor Conditions

- Machinery and equipment are often procured from abroad (e.g. from Germany, Italy, Slovenia), sometimes are bought through sales agents, and supply and maintenance are good. Also, inputs like lacquer, glue, metal connecting parts - hinges and similar, upholstery materials are mostly imported. Suppliers of lacquer and glue often provide technical support.
- In regard to inputs, labor and energy are relatively cheap. However, electric energy becomes expensive due to frequent power cuts which affects calculation of price for spent energy (it is calculated at higher consumption level). Power cuts also cause problems in production (especially with new machinery).
- Raw materials are relatively expensive (taking into account quantity of available wood in BiH). Practically, state-owned forestry and lumber camps are the only supplier of raw material that can provide needed quantities and certificates. There are difficulties with quantity, quality and continuity of deliveries, especially during winter, as well as with inconsistent criteria for classifying wood (criteria applied are sometimes not in compliance with EU criteria), while other materials (metal parts, colors and lacquer, press wood/chipboard) are almost exclusively being imported,
- Regarding skilled labor, education system is not adjusted to needs of wood processing industry and companies have taken over role in education and training, so that they prepare/prequalify staff to meet requirements of production. Companies are relatively successful in this, which is proven by export of products, meaning that products meet EU standards. However, it would be better for companies to have available skilled labor, since it would shorten training period after employing a worker and increase efficiency, thus decreasing costs (workers are paid salaries while their skills after employment are not developed enough to reach average efficiency). In addition, interest of youth for enrolment/employment in wood processing is low. Also, there is an evident lack of skilled carpenters, wood processing engineers and designers.
- Companies receive support from meso-institutions which is primarily focused on subsidies for export/investments provided by relevant ministries and information by Foreign Trade Chamber.

## Related and Supporting Industries

- Supporting industries are present through sale of inputs needed for production, such as lacquer and metal parts for connecting furniture parts. Machinery is imported and suppliers often provide technical support in usage of delivered machines and most companies are satisfied with their technology saying that machines are between 5 and 10 years old, while several companies find that they do have some machinery that is obsolete which may cause bottlenecks;
- Transport is mostly based on trucks, rarely even on containers which are used only for shipment for overseas countries. Railway is not offering services good enough to be used. Also, licenses/certificates required for transporters are expensive, which leads to lack of good offer of transport services and high prices in comparison to other countries.
- Maintenance of older machinery is based on improvisations of local companies, where spare parts are often locally produced. New machinery requires maintenance services from foreign countries (e.g. Germany) where service is good, but very expensive.
- Construction and tourism may be seen as supporting industries, since their activities include products from wood processing, but they are facing different challenges, too.
- In regard to business environment, there are different parafiscal charges that are a difficulty for business.
- Research and development (products, processes, etc.) are not available in needed quality and quantity.
- In regard to use of business development services (e.g. training for employees, advisory services) companies organized training on topics which are obligatory by law (such as protection at work and protection from fire and environmental protection), training of workers for operating machinery (services to some companies were provided by Faculty of Mechanical Engineering which were evaluated as useful and in some cases by supplier of new machinery). Also, in some cases local self-government unit supported training in companies. Companies used consultants provided through donor-funded programs, participated in seminars, and used services focused on improvement of production process. In some cases companies organize internal training by using their capacities.



## Demand Conditions

- In regard to sophisticated demand, producers find that there are many information on their buyers (remark – wholesales, retails and other companies buying from producers are considered as buyers mentioned). Buyers from EU are demanding, usually more than local ones (where buyers are whole sales and retail sales in EU). In regard to buyers' requirements, companies list high quality, on time delivery in accordance with order (specifications), as well as installation, finishing and packaging. Companies mostly feel confident that they can fulfill requirements of demanding buyers.
- Companies usually do not have information on their competitors, they rely on information from their buyers. They also rely on long term cooperation with their buyers, and quality of product which justifies price.
- Small and flexible capacities enable prompt reaction to new and changing requirements.
- There is demand for high quality products (e.g. for chairs and tables made by bonding of different kinds of wood) despite higher price, since some buyers like them. Also, since the value of products in this market/niche is primarily determined by aesthetics (craftsmanship), even small firms can participate.
- In regard to market, it is needed to promote products from BiH which is famous for quality of the raw material (e.g. beech wood) and wood processing industry to some extent, trying to create a brand, at the end.
- Production based on sawdust is becoming more and more popular, where producers use sawdust for their own energy/heating, and then for briquette and pellet production.
- Currently existing market opportunity is one for producing chairs (ideas for cooperation of producers initiated) emerged due to difficulties that Italian producers (Udine) are facing with.
- Production of press wood / chipboard is evaluated by producers as very demanding in regard to technology, and especially in regard to organization of the entire system (raw materials supply, etc.).
- In comparison to competitors from foreign countries, producers find that they have the same quality of products with lower prices, but there are no brands so that products are often sold under brand that is owned by foreign companies. Bad image of BiH as country of origin is also bad for producers from BiH.

### 3.3. Firm Level - Competitive Pressures within the Value Chain

In regard to priorities for improvement of business operations, companies mention increase of production volume based on sales to current and to new buyers and improvement of technology by introducing CNC machines, production in accordance with standards, export, improvement of quality and modernization with minimal increase of number of employees, improvement of offer of products and increase of quality of services with customers in focus and control of costs, use of existing capacities and keeping quality of products, new line for increase of production and keeping current buyers since new buyers are demanding to obtain due to checks, requirements, etc., expansion to EU and Russian market, increase of production for known buyer, and improvement of equipment where in some companies the first priority is installation on new lacquering facility.

In regard to plans for development, companies say that they have ideas/concepts (in some cases with no written plans), saying that an obstacle in implementation is lack of funds and bad terms for credits so that financial support in increasing capacities for covering costs of procurement of new machines would be very useful.

In regard to introduction of new product/service within the last three years and changes in existing products/services situation in surveyed companies is as follows:

- Some companies say that they have introduced new products and that this led to changes in organization of business operations and in machinery/technology (in some cases this leads to increased productivity);
- Motives for changes are requests of customers, savings, improvement of quality of products, certification, better utilization of raw materials, completing production, increase of incomes, changes in technology, competition, own ideas, penetrating new markets;
- The biggest challenge in process of introducing changes was lack of money, technology which is hard to adjust, lack of adequate staff, finding adequate machinery, lack of information;
- Changes were most often introduced without external help, but some companies did engage external advisors (in some cases advisory was provided by supplier of equipment, in some cases advisory for optimization of production process and selection of machinery was provided by Faculty of Mechanical Engineering in Banja Luka);
- Companies are mostly satisfied with results;
- Most companies plan improvements within the next two years, often focusing on improvement of equipment.

In regard to planning significant investments in the next year situation in surveyed companies is as follows:

- Companies plan investment in different areas, e.g. installation of energy producing equipment, machinery for chopping waste wood, numerical drilling machines and finishing, introduction of (robotized) lacquering capacities, installation of upholstery machinery, machinery for briquette, ventilation and drying capacities, CNC machines, building or procurement of premises;
- Companies will primarily invest in locations/municipalities where they already do business;
- Most companies plan new employment as result of the investment,
- In regard to support needed for success of the investment financial support is number one, but also technical/advisory support and training of workers, as well as support in finding new markets/customers, visits to fairs and good practice examples.

### 3.4. Meso Level - Supporting Institutions

Within project region several clusters exist, so in regard to membership in business associations, companies included in the survey are, in some cases, members of cluster (Banja Luka, Prijedor, Gradiska) which is mostly seen as useful (e.g. organised trips to developed countries), but that there is also space for improvement, e.g. in regard to joint procurement. Cluster also provide possibility of flexible production in short series as an advantage of local producers. Cluster also promote and advocate for introduction of department for wood processing in secondary schools.

Most of companies are members of Chamber of Commerce which has achievements in establishing connections in areas of forestry and wood processing and also provides information on potential new markets/buyers, and in some cases Chamber of Commerce provides designers and other support which is also supported through donor-funded projects, while some are members of local associations and Association for forestry and wood processing RS. Some companies are of the opinion that membership in Chambers of Commerce is not useful and that they should offer more, especially when compared to Chambers of Commerce in developed countries and their services, and also believe that Chamber of Commerce should have more frequent contacts with companies.

Institutions mostly mentioned by companies are ministries that provide subsidies (supporting export and investments), Chamber of Commerce (where companies mentioned support in providing information (official gazette is distributed) and in introduction of standards such as FSC), Foreign Trade Cham-

ber (which supported some companies in participation in fairs), and municipalities. Company involved only in sales says that they do not receive any support from institutions. Also, some of producers say that they have not received any support by institutions.

Some companies also applied for foreign donor funds and some state that they have received support from donor-funded projects.

### 3.5. Macro Level - Framework Conditions

Satisfaction with hard infrastructure is on higher level than satisfaction with soft infrastructure. Standards are mostly seen as useful, while companies see many needs for improvements in regard to regulations (labor related laws, prices of public services, control mechanisms such as inspections, custom and taxes - procedures and fees/rates, etc.).

Communication should be better to ensure higher level of mutual understanding and to contribute to prioritization of projects and cooperation in defining and implementing solutions.

Procedures are generally seen as complicated and that supply of raw material should be better defined. In some cases, there is a lack of communication with local self-governance unit.

Subsidies are seen as welcome, but criteria for awarding may be a subject for improvement. In addition, procedures for applying for subsidies are rather complex and it would be good if funds for subsidies were bigger.

In regard to policies negatively affecting business operations, export/related policies are considered as obsolete and companies mentioned taxes and salary taxes, law on labor is seen as obsolete, increase of financial fees over the last five years, fiscal and para-fiscal taxes, fee for fiscal cash registers, public notaries whose services are expensive and often obligatory even in cases when it may not be necessary, sick leave regulations, tax on real estate is especially burden for producers with big production facilities, costs of procedures before court and unfair competition is present, policy in supplying raw material is bad leading to inability to procure sufficient quantities of raw materials such as beech wood. Also, licensing of transporters (vehicles, drivers) for export is costly and lasting and not even required in the EU. Besides, procedures for construction permits are not good, including procedure for change of purpose/use of a facility.

### 3.6. Meta Level

Generally, low level of trust can be noticed, as well as lack of information on capacities of different stakeholders, which in some cases creates unrealistic expectations (e.g. that local level of government can do more for businesses than it really can). This makes issue with lack of trust worse.

Also, low levels of trust between various producers affects their cooperation as well as functioning of joint initiatives such as clusters.

Producers see support from the public sector mainly as direct financial support in the form of grants and subsidies.

Domestic manufacturers do not see each other as leaders - foreign customers and competitors are assumed to be leaders.

### 3.7. Key Gaps Identified

From research process it appears that BiH wood processors are able to meet the quality requirements of international buyers. This is evident in the number of processors that are exporting finished and semi-finished products to destinations such as Germany.

However, processors remarked that they were at a disadvantage comparative to similar processors in Serbia and Croatia and that support to producers/processors in BiH is not on level of support in countries where competitors come from.

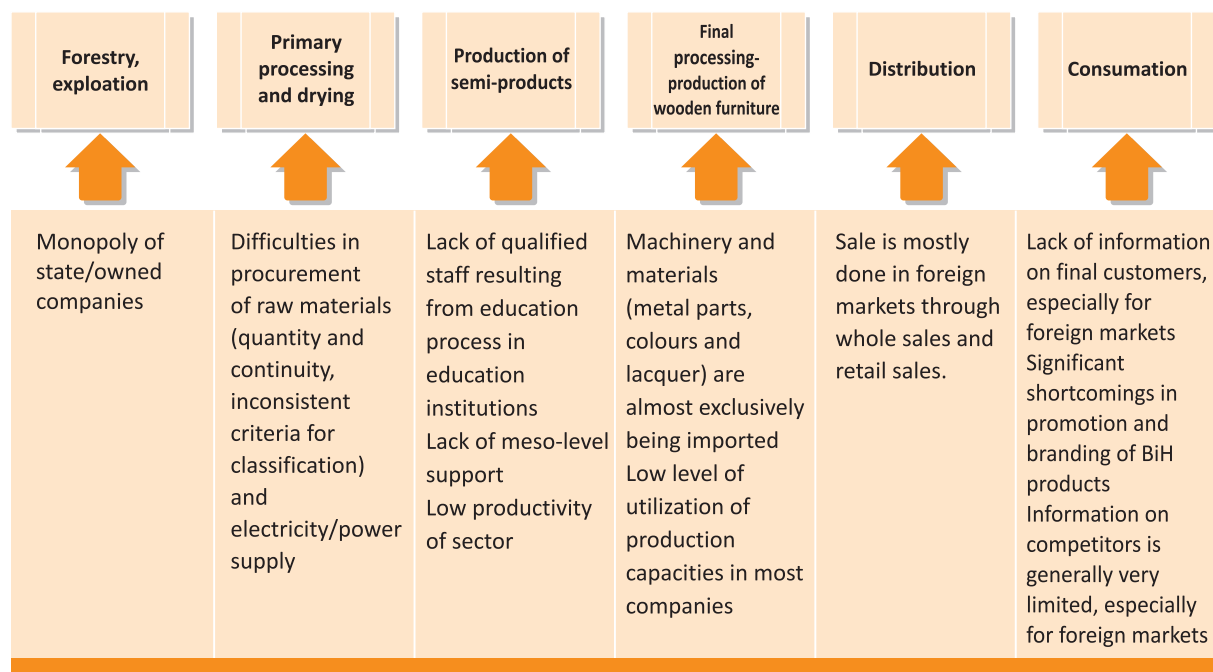
There is a gap between the producers and the foreign buyers, especially lack of information on final consumers in foreign markets, despite quantities exported.

There is gap between labor produced by education system and needs of the industry.

Although technology is not critical and is permanently being improved, there is a gap between current level of technology and latest technology used.

### 3.8. Summary of Main Findings

Figure 5. Gaps in solid wood furniture value chain



Common issues (relevant not only for solid wood furniture but for entire wood processing industry):

- business environments is lagging behind in comparison to neighbouring countries (e.g. availability and criteria for subsidies, support from institutions in utilization of international trade agreements),
- services such as transport, maintenance, R&D, training & consulting are not good enough in terms of availability and characteristics,
- expected changes may be caused by design, materials, technology, but producers do not emphasize possible changes in demand as reason for change in business operations, which indicates focus on product and lack of market intelligence,

- meso-level institutions provide support (subsidies are seen as the most useful support, but also information, introduction of standards, visits to fairs, etc.), but general impression is that they should be more active and cooperation between producers and relevant stakeholders should be improved.

### 3.9. Main Recommendations

Recommendations are mostly relevant for entire wood processing sector, not only for production of solid wood furniture, and may be organized in two groups:

- Recommendations where intervention can be planned and implemented,
- Recommendations where intervention requires further, more detailed in-depth research.

#### **Improvement of Business Operations at a Firm Level**

The main instrument would be financial support to introduce improvements in the business operations, as well as advisory and support in capacity building.

Product development is performed mostly by capacities of companies only, with no external support and without information on needs/desires of customers, so market information should be improved as well as availability and quality of support services (market research, product development and design, promotion activities). This should be done very carefully, since producers are reluctant to undertake any action that might harm their relations with current buyers (which are mostly whole sales and retails abroad). Prior to intervention, risks of such intervention should be assessed, in order to avoid situation where producers lose cooperation with their current buyers, while taking over roles for which they currently do not have capacities (marketing and sales in foreign markets).

Interventions that do not have such high risks include improvements in regard to organization of production, technology, maintenance, and services such as transport. In order to properly design intervention, it may be needed to look closer in the status of technology and organization in enterprises and precisely establish advantages and disadvantages of domestic producers in comparison to competitors.

## Industry wide interventions

These are interventions that go beyond internal improvement in firms and that to some degree require collaboration between different industry actors including firms and public support organizations. Opportunities to collaborate were identified around certification, skills development, procurement and joint initiatives towards buyers and towards authorities.

Research identified the following issues as being good opportunities for a collaborative approach:

- Procurement,
- Product development and laboratory examination,
- Outsourcing production of parts of products or phase in material processing (cutting, drying, lacquering, etc.), borrowing equipment (use of CNC and other machinery), and similar,
- Sales, especially in foreign markets (caution needed, as described above),
- Joint exhibitions at fairs,
- Joint projects in providing services (e.g. several companies cooperating in interior arrangement for hotels).

Although many of above listed opportunities for cooperation look like they can be undertaken by companies without external facilitation, they are currently isolated cases and external promotion of such initiatives should contribute to improvements industry wide.

## Interventions Aimed at Meso Organisations

During the research it was found that the Meso level organizations are far removed from the direct needs of industry. At the same time industry primarily recognized support in form of direct subsidies and grants. Also, interactions between firms and public support organizations are weak.

The research identified several issues that should be addressed by public support organizations in the meso level:

- Support in regard to R&D (research shows that only big companies do have department for this and even in such cases they are focused on finding new technology/machinery and improvement of some of production processes, with partial focus on development of new products which is done in conditions of very limited market information; also, this need should be met with support from meso level



institutions, being close enough to companies and taking into account that companies such as those in project area are less likely to solve this issue themselves, either through improvement of internal capacities or through outsourcing of such services, where situation is also difficult due to limited local availability of needed services).

- There is also need for continuous improvement of soft and hard business infrastructure,
- Difficulties in power supplies in number of municipalities are identified by producers and this issue needs to be addressed with cooperation of all stakeholders that may contribute.

Research detected that there is no local producer of press-wood/chipboard (it is not relevant for the observed value chain, but it is potentially good initiative). Since opinions are divided, some experts find that it is feasible and some that it is very difficult to realize, while there is a need for this product, it would be good to conduct a feasibility study in regard to press-wood/chipboard production.

### **Policy Recommendations**

The research revealed that other countries in the region had a more favorable environment for wood processing.

Reducing red tape around exports and imports of equipment and improvements in regard to regulations (labor related laws, prices of public services, control mechanisms such as inspections, custom and taxes - procedures and fees/rates, etc.) are also to be dealt with on policy level.

Communication should be improved to ensure higher level of mutual understanding and to contribute to prioritization of projects and cooperation in defining and implementing solutions. Low levels of trust between various producers affects their cooperation as well as functioning of joint initiatives such as clusters, which in some cases prevents producers from using market opportunities. Interventions may include strengthening capacities and roles of bodies such as sector boards as kind of permanent focus group providing inputs (initiatives and feedback on solutions in phase of consideration and in phase of implementation) for policy solutions, thus involving strongly private sector in general communication aimed at achievement of improvements in wood processing industry as a whole.

A very important issue identified in the research is that there is a lack of qualified staff in wood processing. Since companies produce final products and export to demanding the EU market, it is obvious that

quality of labor is good. However, labor force is not so much result of education system, as a result of training provided in factories. This may be used as a starting point for introduction of practical training and practice-oriented education programs on level of secondary school and on level of university, taking into account potentials and needs of wood processing industries, as well as relevant information such as latest technologies, products, market related activities, etc. Interest and experiences of industry should be used in the process.





## 4. Metal Industry and Value Chain for Hydronic Heating Boilers and Stainless Steel Water Heaters

### 4.1. Overview of the Value Chain for Hydronic Heating Boilers and Stainless Steel Water Heaters

In area covered by the CREDO Krajina project, sector of metal industry includes 308 companies that employ 5,104 workers. These companies have achieved a total turnover of about 600 million KM, of which 372 million KM derives from export. Total profit of these companies is 35 million KM, so that the average profit rate is around 5.83% (Pucar, 2013, p. 75).

The value chain analysis is conducted on the segment of metal industry dealing with production of hydronic heating boilers and stainless steel water heaters. Hydronic heating boilers use biomass as an energy source. Biomass consists of residues from agriculture and forestry that can be used as fuel for heating. Pellet, as a basic unit in the production of biomass, has a degree of utilization of 95% and its price is competitive with coal, wood or oil fuel. In conventional boilers, which use solid fuel, a large amount of that solid fuel does not turn into thermal energy (because the combustion is not complete and unburned material transforms into ash and smoke as waste). Pellet boilers have electronically controlled and optimized combustion, so burning process is complete with a good thermal energy and reduced emissions of hazardous gases. Therefore, this method of heating is more economical and environmentally friendly than the existing forms of heating, which use solid fuel or heavy oil fuel. Buying of hydronic heating boilers is subsidized by many EU countries (Slovenia, Austria, Germany, etc.). Because of all these facts, expansion of this type of heating can be expected in the future.

In the area covered by the project, producers of hydronic heating boilers are: Topling doo, Prnjavor, Termoflux doo, Jajce and Termo Klima, Laktaši.

Data on import and export of central heating boilers are presented in the following tables.

Table 11. *Import of central heating boilers (product code 840310) in BiH*

Exporters	Imported value in 2013 (USD thousand)	Imported quantity in 2013 (tons)	Imported growth in value 2009-2013 (% p.a.)	Imported growth in quantity 2009-2013 (% p.a.)
<b>Croatia</b>	2876	663	-9	-16
<b>Serbia</b>	1312	384	-5	-5
<b>Slovakia</b>	1050	85	-10	-10
<b>Germany</b>	1039	131	-19	-11
<b>Czech Rep.</b>	665	217	-7	-14
<b>Slovenia</b>	571	90	25	21
<b>Turkey</b>	460	174	19	12
<b>Italy</b>	234	68	-13	0
<b>Bulgaria</b>	189	63		
<b>Poland</b>	118	41	72	62
<b>Austria</b>	88	8	63	24
<b>Netherlands</b>	33	1		
<b>Portugal</b>	29	2		
<b>Switzerland</b>	21	1		-24
<b>Greece</b>	14	2		
<b>Montenegro</b>	1	0		
<b>TOTAL</b>	<b>8700</b>	<b>1930</b>	---	---

Source: Trade Map - Trade statistics for international business development, 2014

Table 12. Export of central heating boilers (product code 840310) in other countries

Importers	Exported value in 2013 (USD thousand)	Exported quantity in 2013 (tons)	Exported growth in value 2009-2013 (% p.a.)	Exported growth in quantity 2009-2013 (% p.a.)
<b>Austria</b>	5784	3752	44	42
<b>Slovenia</b>	1375	268	80	98
<b>Croatia</b>	785	152	52	27
<b>Serbia</b>	464	89	1	-17
<b>Germany</b>	346	42		
<b>FYR of Macedonia</b>	316	62		131
<b>United Kingdom</b>	180	36		
<b>Montenegro</b>	162	29	36	27
<b>Belgium</b>	158	23		
<b>Greece</b>	105	28		
<b>Portugal</b>	83	18		
<b>Denmark</b>	72	7		
<b>Hungary</b>	65	11	-15	-29
<b>Italy</b>	63	13	5	-10
<b>Luxembourg</b>	45	7		
<b>Spain</b>	27	6		
<b>Bulgaria</b>	7	1		
<b>Netherlands</b>	7	1		
<b>France</b>	6	1		-52
<b>Romania</b>	6	1		
<b>Sweden</b>	6	0		
<b>TOTAL</b>	<b>10062</b>	<b>4547</b>		

Source: Trade Map - Trade statistics for international business development, 2014

It can be concluded that total import is 10.062.000 USD and total export is 8.700.000 USD. In terms of quantities, 1,930 tons were imported and 4,547 tons of these products were exported in 2013. Therefore, coverage of import by export is around 115.66% (in terms of value), i.e. 235.60% (in terms of quantities), so it is clear that surplus is achieved in this category of foreign trade exchange of products. However, if we compare the value per quantity of imported versus exported boilers, the situation is quite different. Namely, the value of imported boilers is 4,547.77 USD/ton, while an average value of exported boilers is 2,212.89 USD/ton. The difference is more than double!

Generic value chain of hydronic heating boilers and stainless steel water heaters is presented on the following picture.

Figure 6. Generic value chain of hydronic heating boilers and stainless steel water heaters



Producers design and prepare technical documentation for their products on their own or with assistance of experts from the Faculty of Mechanical Engineering of Banja Luka. Most suppliers are wholesalers from BiH that buy raw materials (sheet metal etc.) from producers located in the Western Balkans and the EU. It is an interesting fact that there are no producers of raw materials for hydronic heating boilers in BiH. Steel factory Arcelor Mittal from Zenica produces steel products that can be used in construction industry (eg. reinforcement nets and ferroconcrete), but not for production of hydronic heating boilers and stainless steel water heaters. Produced hydronic heating boilers and stainless steel water heaters (for households) are sold to retailers and then to final consumers. Hydronic heating boilers are usually installed by local artisans, while service is provided by producers.

## 4.2. Metal Industry Competitiveness (Porter's Diamond)

### Structure and Strategy of the Leading Firms

Local manufacturers do not recognize themselves or their local competitors as leading firms, so that only international companies are perceived as the leading ones. Since the metal industry is highly globalized, the leading companies are from the Western Balkans and the EU. These companies have concentrated significant financial and human resources, and they have strong R&D capacities. The leading companies create and establish product and business standards, which other companies have to follow (e.g. the company Otis with its elevators). Some kind of a local leader in the production of hydronic heating boilers could be Topling doo from Prnjavor, since it produces complex hydronic heating boilers for industrial customers (the other competitors produce only relatively standardized hydronic heating boilers for households) and since it has more employees than other competitors have. Generally, there is great mistrust towards domestic producers and their products, although their quality is equal or even better in comparison with foreign brands (poor branding/reputation of BiH firms). That is why domestic producers usually do not sell their products on foreign markets using their brand names (they use distributors' brand names). Domestic producers have a problem with finding new markets (customers) and access to finance (solvency is often threatened due to problems in collection of receivables). Cooperation between producers is not evident. Some of companies wanted to initiate cooperation with their competitors, but there was no interest for that from the other side. Main priorities for the future are further improvement of products' quality, increase of production scale if possible, keeping good relations with the existing and finding new customers.

Most companies in metal industry are quite passive – they wait for potential customers, to come with their technical drawings and design, asking for the cheapest offer for production, to offer their services, while the customers are always trying to find the one amongst them to offer them the lowest price. A relatively small number of companies (like these in the selected value chain – Topling, Thermoflux, Termo Klima and Procesna oprema) have their own products. Quality of their core products is good (even or better in comparison with competitors), but aesthetics could be better (industrial design).



### Factor Conditions

Over 90% of input materials for producing hydronic heating boilers is imported. Producers of hydronic heating boilers usually buy input materials (e.g. sheet metal) from distributors from BiH (e.g. Bob d.o.o., Laktaši; Milco d.o.o., Laktaši; Bogner Edelstahl d.o.o., Vitez etc.) who import them directly from producers in Italy, Germany, Slovakia and other EU countries. Payment conditions are quite unfavorable – payment in advance or in quite a short period. Only one of the bigger companies buys sheet metal directly from the producer in Slovakia. Other components for hydronic heating boilers (motors, heaters, fans, etc.) are bought either directly from producers or from their distributors in EU.

Electricity supply is quite expensive with occasional disconnections of its supply, which is more characteristic for small municipalities such as Kostajnica and Novi Grad. That causes stoppages in production, prolongs lead times, it negatively affects the machines and creates higher electrical energy costs. After establishing of electricity supply again, the peak load price is higher, so it generates additional costs. Public companies in charge of the distribution of electricity do not suffer any consequences for the incurred damage and costs.

It is difficult to access finance, due to bureaucratic and sometimes also political issues. Interest rates on bank loans are very high, so producers try not to use them. On the other hand, there are subsidies provided by the Ministry of Industry, Energy and Mining of the Republic of Srpska for export companies. All producers in the selected value chain have got this kind of financial support.

There is an evident deficit of relevant human resources (engineers, technicians), but their quality is often more problematic than their availability. There are two relevant secondary schools in the project area (Technical School in Banja Luka and Mechanical-Transportation Mixed Secondary School in Bihac), but the quality of knowledge and especially skills of the pupils are limited. Besides that, their motivation and working habits are often critical. Representatives of companies perceive that at a production level, where 50% of staff are motivated and skilled and 50% are low skilled and not interested to upgrade. So, companies often must invest time, energy and money to improve their knowledge and skills as prerequisite to use them. On the other hand, there is a risk that employees who are “internally” educated leave and start working in competitors’ company or perhaps they can establish their own company.

The situation is quite similar with the Faculty of Mechanical Engineering in Banja Luka and Technical Faculty (Mechanical Department) in Bihac. The number of students is not sufficient (in comparison with

the production sector demand), although the number of enrolled students in the Faculty of Mechanical Engineering in Banja Luka has been increased. After they graduate, a lot of engineers leave the country and find jobs in the EU. It should be mentioned that some curricula should be improved and modernized (as well as knowledge of lecturers), because in some areas graduated students do not have required practical skills. There is no sufficient cooperation between faculties and business sector. In many cases, that cooperation is based on consulting services of skilled individuals (professors, assistants) and not on services provided by faculties. The Faculty of Mechanical Engineering in Banja Luka has recently got new equipment for laboratories, so the basis for providing services and cooperation was improved. It is still an open issue as to how that equipment will be used (education/providing services ratio) and promoted towards business sector.

Many companies perceive that their major competitive advantage is low cost human resources (engineers). But it is questionable if this competitive advantage is sustainable, and if this is (or should be) the right competitive advantage...

Water, electricity, communal services are much more expensive for industry than for households. In other countries this is the other way around.

### **Supporting and related industries**

Generally speaking, synergy between government, industry and academia is at a low level. Thus, for example, the Mechanical Faculty of the University of Banja Luka, taking into account the equipment it has at its disposal, is available to provide services to companies in regard to product design, production of a prototype and many other areas, however, in practice, this does not happen too often. But the Faculty, as an institution, is not enough oriented towards the companies, providing the needed support to them. Most of the University staff have never worked in the (real) economy.

Industrial design is also perceived as important, as a complementary activity, but there are neither schools nor professional service providers in this area. Automotive, construction and transport are related industries to the metal industry. Transport is perceived as one of the most important related industries. Most of transport is performed using truck trailers. Railway network is not enough developed and the price of their services are higher than the price of truck transportation. Machine building industry is not existing at the moment, even though this is an important metal industry segment.

### **Demand conditions**

In the selected value chain, industrial buyers are more demanding than households. All industrial buyers have specific problems and requirements from producers, so every solution must be tailored according to their needs. That is challenging but it is also a basis for learning and development. Buyers from the EU are usually more demanding than the local ones. Sometimes it happens that customer change product requirements (specifications, performances etc.) during design or even production process, so the company must be flexible and capable to make these changes and to satisfy customer. These processes are very “painful” but companies’ capacities are strengthened that way.

It is important to notice that there are no many demanding customers, so the “pressure” for further improvement is much more generated by the competition than by demanding customers.

Also, it is important to notice that domestic (BiH) market is relatively small for standardized products which can be produced in big series, so domestic companies must export their products in order to decrease their costs and increase profit (the economy of scale). Prerequisite for export is that every product must meet defined standards (e.g. CE mark). All producers of hydronic heating boilers have the CE mark for their products and export them in the EU countries.

### 4.3. Firm Level - Competitive Pressures within the Value Chain

#### Rivalry

For domestic producers within selected value chain and their products aimed at households, most competitors are from BiH (local competitors), Serbia and Croatia. In “industrial segment”, all competitors are from EU.

As key advantages over competitors in “households segment”, companies argue better quality of products, clear vision, determined management, better productivity, competent employees. In “industrial segment”, key advantage over EU competitors is delivery of products which have the same efficiency as competitors’ products, but are simpler and have lower price.

As key weaknesses in comparison to competitors in “households segment”, companies perceive problems in development of new products (caused by lack of competent engineers) and higher price (but quality is also higher). In “industrial segment”, key weaknesses in comparison to EU competitors is equipment related to automation of the entire work process related to hydronic heating.

The key advantages of producers of stainless steel water heaters are better aftersales (service) and lower price in comparison with some competitors (e.g. Elit inox from Serbia). The key weakness is the lack of working capital, which could be used to improve sale conditions towards retailers.

Generally, there is no cooperation and coordination between producers in the selected value chain. There is perception that cooperation might be established in the supply related activities, but not in sales related activities.

The situation in regard to cooperation between the metal industry companies in general is similar. Cooperation exists only between a relatively small number of companies, and it is usually in the domain of product development, procurement of inputs from suppliers, purchasing materials from another producer, production services for another producer/competitor, renting of qualified human resources and equipment.

### **New competitors**

One of producers of hydronic heating boilers only perceive some new competitor (Lafat komerc from Kalesija, BiH), who has made copies of their products and is producing them now with lower quality and offering them at a lower price.

The producer of stainless steel water heaters does not perceive any new competitor on the market.

### **Threat of substitute products**

There are some substitute products or technologies. One of them is co-generation. Co-generation is a mixture of two technologies for heating and producing electric energy, e.g. mixture of solar heating technology and production of electric energy. Alternative solutions are present, but local producers monitor the situation and may develop such solutions and respond to market demand. Also, it is possible to offer very specific solutions in the area of burning bio-mass, such as heating system that burns biomass from orchards and vineyards, as well as bio-mass from kernel of fruits (plums) as fuel.

One of the substitute product is also heat pump, but that technology is very expensive and it can be used only by households with underfloor heating. So, because of the price and demanding technical requirements, there is quite a small market potential for this product/technology.

Also, there are some technical changes and/or demand changes that affect product's competitiveness. For example, there is automated management/control that improves management of hydronic heating boilers and improves boilers' construction to improve exploitation of boiler (boiler cleaning, etc.). Also, it is important to mention improving design and introduction of modern technologies, as well as introduction of new fuels and meeting the strict EN norms/standards.

Gas is not perceived as an attractive substitute. In Serbia and Croatia (in these countries there is developed infrastructure - gas pipelines), there is a significant number of consumers that are giving up gas heating and switching to pellet or wood as cheaper sources of energy. There is no adequate infrastructure in BiH (gas pipelines) and its installation is very expensive in comparison with the number of consumers (market potential). That is especially characteristic for small settlements. The price of gas is also raising. It is believed that biomass and wood (farms of special, quickly-growing trees e.g. poplars, willows, etc.) have great perspective because of the price and environment.

Substitute for stainless steel water heaters are enameled boiler heaters. Their quality is lower, but their price is also lower (for almost 50%).

Perception of some retailers is that producers of hydronic heating boilers are not fully aware of substitute technologies/products and that their current technologies/products may become obsolete in the future.

## Suppliers

Almost all input materials and products come from the Western Balkans or EU countries either directly from their producers or, more often, via local and international distributors. All suppliers that buy input materials directly from big international producers<sup>5</sup> have problem with bad treatment because of the perception that BiH (and all companies from BiH) are highly risky for doing business, so they have to pay in advance or to provide expensive bank guarantees. Of course, that has negative influence on competitiveness of their offer towards domestic producers. It takes many years to gain confidence of these producers and to get more favorable sales conditions. That is way most of suppliers are quite indebted and their liquidity is often threatened. It should be emphasized that there are no producers of sheet metal and other products in BiH which are used in production of hydronic heating boilers and stainless steel water heaters. There is only steel and iron producer, Arcelor Mittal from Zenica, which produces different metal products for construction industry.

Speaking about bargaining power, if the supplier is a big international producer (e.g. US Steel, Kosice) and the buyer is our local producer, then the supplier is dominant, because the quantity sold to our local producer of hydronic heating boilers is very small in comparison with his total sale. Vice versa, in case that our local producer of hydronic heating boilers is one of the biggest buyer to some supplier (e.g. some small distributor), then the local producer of hydronic heating boilers has a dominant position and bargaining power.

In cases of more complex products e.g. automatic control system, engines, etc., suppliers offer relevant support and technical advice.

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<sup>5</sup> For example, the most important producers of sheet metal are: Marcegaglia and Beltrame steel from Italy, Du-nafer from Hungary, Duferco from Switerland etc.

## Buyers

In the segment of hydronic heating boilers up to 250 kW (intended for households), the main buyers are retailers, which are local companies (e.g. Economic from Vitez, Teh San from Banja Luka, Vokel from Posušje etc.). A significant part of hydronic heating boilers for households is exported, mainly to the EU countries. Retailers on foreign markets were usually found at fairs (e.g. Frankfurt, Milano etc.). Our producers are exhibitors at such fairs and that is an opportunity to contact potential retailers and talk about potential cooperation.

Hydronic heating boilers over 250 kW are sold to industrial customers from BiH, Croatia, Italy, France, etc. It is important to emphasize that more than 50% of industrial customers are demanding. Thanks to the team (professional staff), our leading producers can meet expectations of these customers, but the prices of adjusted solutions are also higher.

In the segment of hydronic heating boilers for households, specific requirements (e.g. fully automatized boilers, or boilers with big tanks) are not common, so adaptation of standardized products could be done but its price would be much higher and therefore unacceptable for customers. That is the reason for producing only standardized boilers that meet expectations of most customers, at an affordable price. In the segment of up to 250 kW, with approximately 50% buyers, there is a contract with defined dynamics of delivery, while the other half makes orders when needed, after selling the products they have on stock. In the segment over 250 kW, everything is defined by the contract.

Speaking about bargaining power, in the segment up to 250 kW, in most cases buyers (retailers) are dominant. It is possible to improve bargaining power by strengthening the marketing. Competitors also have a very strong influence on actions. On the other hand, in the segment over 250 kW, producers are dominant, because this segment is about projects that require a high level of knowledge, professionalism, adjustment etc., and it is therefore possible to make influence on the prices and terms of delivery.

#### 4.4. Meso Level - Supporting Institutions

Institutions mentioned by the companies are ministries that provide subsidies, Chamber of Commerce, Foreign Trade chamber and municipalities. A lot of companies perceives their support more declarative than real. But in spite of that fact, expectations from companies are still quite high (especially support provided from the state level).

Companies as significant support perceive subsidies for export-oriented companies located in the Republic of Srpska, provided by the RS Government of Industry, Energy and Mining. The Ministry supported 285 export - oriented companies with 19.6 million KM in 2013 (all producers from the selected value chain were supported) (Ministarstvo industrije, energetike i rudarstva Republike Srpske, 2014.). Some producers got subsidies (around 4000 KM) from the same Ministry for introducing quality standards a few years ago. Also, the same producer got financial support from the RS Agency for Development of SMEs for buying some welding equipment 5 or 6 years ago.

The Institute for Standardization of B&H proposes the strategy of standardization in B&H, prepares and publishes standards of Bosnia and Herzegovina, represents and acts on behalf of Bosnia and Herzegovina in international, European and other interstate organizations for standardization, and performs other tasks that originate from international agreements and memberships in the organizations. It participates in preparing technical regulations, develops and establishes the information system of standards of B&H, organizes and carries out specialist education of personnel in standardization area. It is engaged in issuing-publishing activities for standardization area (Institute for Standardization of B&H, 2014).

It is important to mention that the Ministry of Foreign Trade and Economic Relations (according to the “Law on Technical Requirements for Products and Conformity Assessment”, 2004), is responsible for the appointment of certification bodies, which are responsible for resolving the issues of using the mark of compliance in accordance with the relevant technical regulations for products. So far, unfortunately, this Ministry has not appointed a single certification body in Bosnia and Herzegovina, even for our domestic needs. B&H has not adopted any directive that regulates the use of the CE mark. The right to use the CE mark can be obtained only by a manufacturer whose product has been certified by an internationally recognized certification authority (such as TÜV-Germany, for example). Also, in most cases, for exporting products the companies must obtain certification abroad to demonstrate compliance with the regulations of the country of destination. The weakest point in this area is the lack of a proper conformity assessment



infrastructure in B&H – testing and calibration laboratories and certification bodies. Although legislation is in place for the BiH accreditation system to be internationally accepted, and therefore conformity assessment bodies to be accredited in BiH, there is a lack of technical implementing regulations that are EU-aligned. The outdated ex-Yu technical regulations that are in force in BiH are non-harmonized national standards, so there is little interest or economic incentive to obtain conformance assessment accreditation for them. As a result, the BiH companies must often engage foreign consulting companies and certification bodies to implement standards. Many certificates issued by local BiH bodies are at present not internationally recognized. Foreign conformity assessment can be a financial burden. However, the extent to which BiH should build its own conformity assessment resources is an open one (FIRMA, 2010, p. 23.)

Mission of the Institute for Accreditation of B&H, BATA, is establishing and maintaining a competent, objective and independent accreditation system, so that users of services of accredited bodies and the consumers in Bosnia and Herzegovina may have trust in the services provided by laboratories, certification and inspection bodies. Accreditation represents the formal approval that a conformity assessment body (laboratory, certification or inspection body) is competent to conduct conformity assessment activities according to internationally recognized rules. Accreditation ensures confidence in testing, calibration, certification and inspection results and represents proof of competence of testing and calibration laboratories, certification and inspection bodies. Accreditation also ensures international recognition of validity of these results and creates conditions for free movement of goods, services and persons (Institute for Accreditation of B&H, 2014).

Local administrations can also influence significantly on local ambient for business. Most companies are indifferent towards lightly dissatisfied in regard to their respective local administration – quality of local infrastructure and public services. Lack of communication between companies and local administrations is evident in most local government units.

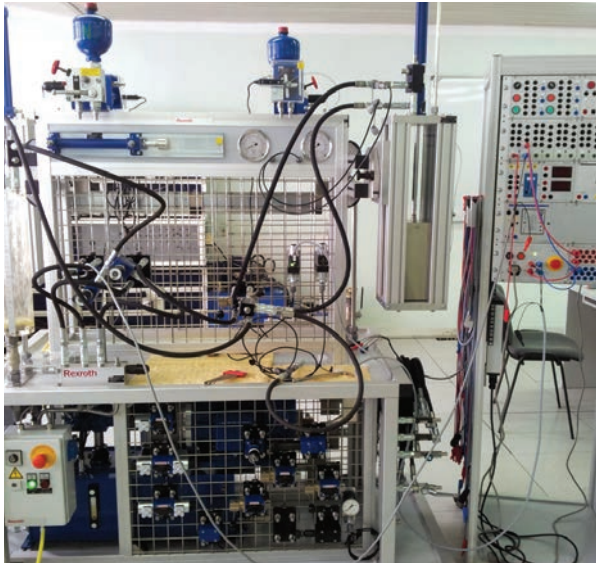
There are two relevant faculties within the project area – the Faculty of Mechanical Engineering in Banja Luka and the Technical Faculty in Bihac (Mechanical Department). Within the Faculty of Mechanical Engineering in Banja Luka there are 14 laboratories:

- Laboratory for design supported by computer - Computer center of the Faculty of Mechanical Engineering,
- Laboratory for integrated management systems
- Laboratory for plasticity and processing systems
- Laboratory for design of technological processes by using computers - CAPP (Computer Aided Process Planning)

- Laboratory for energetics
- Laboratory for machinery dynamics
- Laboratory for automation and mechanization – LAM
- Laboratory technology of cutting and processing systems
- Laboratory for hydraulics and pneumatics
- Laboratory for measurement technique
- Laboratory for engines and vehicles
- Laboratory for mechatronics and robotics
- Cooperative training center
- Laboratory for cooling technique (Mašinski fakultet Univerziteta u Banjaluci, 2014).

Faculty of Mechanical Engineering in Banja Luka has recently got a lot of new equipment. Among others, the following technology and equipment is available at the faculty: rapid prototyping, (2 generation), 3D printing - cooperation with medical research, use of composites materials, design platforms (CAD, SOLIDWORKS, CATIA, CAM), design for manufacturing. Also, there is software for manufacturing simulation, searching for the best process design. Focus in teaching is on materials flows, so there is significant space for improvement in industry, but the problem is that firms often do not have people who can use this technology.

*Figure 7 - Laboratory for hydraulics and pneumatics*



*Figure 8 – Training centre for welding*



Speaking about the secondary level of education, there are Technical school in Banja Luka and Mechanical-Transportation Mixed Secondary School in Bihać. Within mechanical engineering - metal processing department, there is education for the following occupations: mechanical technician, installer, locksmith, processor of metal by cutting and car servicer (Tehnička škola - Banja Luka, 2014). Within Mechanical-Transportation Mixed Secondary School in Bihać, there is education for the following occupations: mechanical technician - programmer of CNC machines, mechanical technician for computer design, technician for road traffic (4 year education), driver of motor vehicles, car servicer, installer of central heating systems, plumber, locksmith, operator of construction and cargo machines (3 year education). Most of the workforce in producers was educated by these schools, but with additional training for welders provided by faculties (JU Mašinsko-saobraćajna mješovita srednja škola Bihać, 2014).

#### 4.5. Macro Level - Framework Conditions

There are both positive and negative impacts of framework conditions. Example of positive impact can be found in the Federation of BiH, where export – oriented companies are supported by stimulant fiscal policy. Namely, all companies who export more than 30% of their total sale, do not pay income tax. In the Republic of Srpska, income tax is 10%, in Croatia it is 20% + additional taxes for income transfer, etc. This is one of sources of financial advantages that have companies from the Federation of BiH in comparison with other the competitors outside of the Federation of BiH.

But there are also some negative impacts of the framework conditions. For example, negative impact comes from the fact that the BiH, as a state, has not accepted EU regulations and directives with regards to technical conditions and characteristics that products must meet. Almost all our producers fulfil the above norms anyway (because large portion of their production is exported to the EU), while, on the other hand, low quality products are imported to BiH that do not meet the above-mentioned norms/standards. These products are cheaper and they take a significant market share. So, BiH regulations should be harmonized with EU technical norms/standards as soon as possible. Also, the Labor Law is not flexible. There is especially a problem with sick leaves. Only the first month of employees' sick leave is financed by the state/entity, but any further period (the second, the third month, etc.) is financed by the company and 70% of that cost is refunded by the entity. But the entity is late with that payment, they become a debtor to companies, and there is no possibility for clearing with the entity. Similarly, there is no possibility for (multilateral) compensations with the companies abroad (a special permissions from relevant ministries must be obtained).

## 4.6. Meta Level

Speaking about the meta level (the system of values, social capital, social cohesion, collective memory, etc.), which influence all other previously mentioned levels (macro, meso, company level), the following should be mentioned:

- Low level of communication and trust between producers and between people in general;
- Generations of youth without work habits - they “wait for” a job instead of “searching for” it. But also, there is no opportunity for the first job (the economy is small). Low level of practical knowledge - education is too general and academic, often obsolete, without orientation on solving real life problems;
- (Negative) politics, instead of business and real life, is a common topic on the media and between people in BiH. Via media, people are “hypnotized” and kept in constant subconscious uncertainty and fear. People are oriented towards the past instead of towards the future;
- There are some positive stories and successful cases, but most media are not interested to publish them;
- Envy in the case of the success of others.

## 4.7. Key Gaps Identified

Having in mind all previous findings, the following gaps can be identified:

### 1. Gap between international leading companies and domestic producers

There are many gaps within (general) gap between international leading companies and domestic producers, but the information and knowledge gap could be the most important:

- Information gap - some domestic producers are not aware of new technologies that the leading companies develop and use, as well as of launched new products that are based on new technologies,
- Knowledge gap – the leading companies are source of R&D and our companies try to follow them. But there are no adequate centers or nodes for technology and knowledge transfer that could facilitate that process.

## 2. Gap between small domestic market and big international market

Domestic market for most products is small because of a small number of inhabitants and low purchasing power. On the other hand, in order to be price competitive (to achieve economy of scale) and to use machinery efficiently, domestic companies must be export-oriented. In order to export, producers must fulfill specific technic requirements (e.g. the CE mark) and find customers (needed marketing knowledge).

## 3. Gap between quantity and quality of available and needed human resources

There is a deficit of mechanical engineers. Between 5 and 10 engineers per year usually graduate from the Faculty of Mechanical Engineering in Banja Luka. Around half of them find jobs in the EU countries. Knowledge of pupils after secondary education is not satisfactory. Practical knowledge and skills are missing, so the companies must organize internal trainings for them.

## 4. Gap between production and marketing mindset and orientation of producers

In many cases, directors of companies are engineers, who are focused on technology/machinery, while the market (and marketing) is often neglected. Many companies are passive towards potential customers – they are waiting for customers to find them. There are only a few companies, who have a marketing department or an employee whose job description is marketing (market research, database marketing, promotion, customer relationship management etc.).

## 5. Gap between existing and needed financial funds

Most companies have problems with payment of their receivables, and they struggle to keep their solvency. So they do not have financial funds for investments, especially in R&D projects – new products development.

## 4.8. Summary of Main Findings

The main findings are closely related to the famous quotation of Peter Drucker: “Business has only two functions — marketing and innovation. Marketing and innovation produce results; all the rest are costs”. The weakest areas of our companies are exactly marketing and innovations. Probably, that is one of the most important causes of current situation in the metal industry. Most of our companies are focused on production, while marketing and innovations are neglected. These functions are underdeveloped or do not exist. On the other hand, most investments are focused on equipment and machinery, although without innovations and marketing, they cannot be used effectively (that happens quite often). The Little Prince<sup>6</sup> would say: “What is essential is invisible to the eye...”. Machinery without innovations and marketing is useless. Also, it is important to mention that both quality and quantity of human resources should be improved (engineers, technicians, welders, etc.)

## 4.9. Main Recommendations

### **Improvement of Business Operations at a Firm Level**

The main instrument would be a call for proposals aimed at co-financing of firms’ investments. Also, training on innovations and its application for directors/owners of companies will be held in order to support internal capacity building.

Especially support should be provided in regard to product development (design, technical preparation, 3D printing etc.), as well as in regard to marketing support (market research, database marketing, promotion, customer relationship management, etc.).

### **Industry Wide Interventions**

Having in mind the findings mentioned before, it is clear that one of the most desirable interventions would be with regards to improving R&D capacities of domestic companies. Most of them do not have enough resources to establish these functions internally (and that would not probably be rational), so it is desirable to establish some kind of a R&D center, whose services would be used by all interested com-

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<sup>6</sup> The main character of the book for children written by Antoine de Saint-Exupéry.

panies. The Faculty of Mechanical Engineering in Banja Luka has recently got a lot of new equipment, so it may have a significant role. A significant part of that equipment is used only for educational purpose (students' practice) and most of the time it is not used at all. Also, the companies are not informed about the equipment (partially because of the fact that the Faculty has got it recently), so there are no requests for using it. Another important role of the R&D center could be (practical) education, retraining and transfer of (tacit) knowledge, experiences, information and possibilities for B2B contacts and networking. This "intangible" part of the R&D center is perhaps an even more important than "tangible" part of the center with equipment, machinery etc.

Figure 9. Concept of R&D center

THEMES:	
<ul style="list-style-type: none"> <li>- Technology transfer</li> <li>- Business innovations</li> <li>- New products development</li> <li>- Industrial design, etc.</li> </ul>	
TANGIBLE COMPONENT	INTANGIBLE COMPONENT
What? - Laboratories - Machinery and equipment	What? - (Tacit) knowlance - Experiences - Trainings
Who? - Mechanical faculties and technical schools - Companies (who have specific equipment) - Technology business park	- Study tours - Contacts (databases)
	Who? - Domestic companies - Successful regional companies - Suppliers of equipment - Selected experts

R&D center should be complimentary to supporting the firms to start a process of joint R&D. To make this work, the firms must be very specific about what kind of things they want to work on. (Maybe an appropriate example may be in the case when one firm produces a product, and another company uses that product as an input for its more complex product). R&D center should offer services, which could be attractive for most manufacturers – e.g. product design (using specific software), simulation of production, 3D printing etc. There is assessment that around 50 manufacturing firms (metal processing, plastics, textiles) would be able to benefit from the center.

### **Interventions Aimed at Meso Organizations**

During the research it was found that there are few meso organizations relevant to the industry and that they are far distanced from the direct needs of the industry. At the same time, the industry only recognized support in the form of direct subsidies and grants. Thus, the communication and cooperation between the firms and public support organizations were weak.

The fieldwork identified several issues that should be addressed by organizations at the meso level. *Eda* will work with the industry to explore and formulate opportunities to work with selected public support organizations to introduce improved services and to strengthen the cooperation between the industry and the meso level.

*Eda* is working closely with development agencies and municipalities already, and we will share the findings with these organizations to support them to develop more specific support and service offerings to the industry. Where meso organizations are disconnected from the industry, we will support a process of closing the gap between the organizations and the industry. Thus, *Eda's* role would be that of a mediator acting on behalf of both industry and public support organizations.

### **Policy Recommendations**

Amendments in relevant law and bylaws are needed with regards to:

- Payment system – the state/entity can be late in payment towards companies, but vice versa is not possible. The state/entity and private companies should be equal in terms of mutual payments. Now, the public sector is a significant source of insolvency, which is transferred to private sector.
- Income tax - In the Republic of Srpska income tax for export-oriented companies should be the same as in the Federation of BiH – 0%.



- Regulations and directives in regard to technical conditions and characteristics that products must meet – BiH, as a state, has not accepted EU regulations and directives in regard to technical conditions and characteristics that products must meet.

In regard to defined weak areas, policy analysis should be performed and defined solutions should be communicated towards opinion-giving leaders and decision makers.

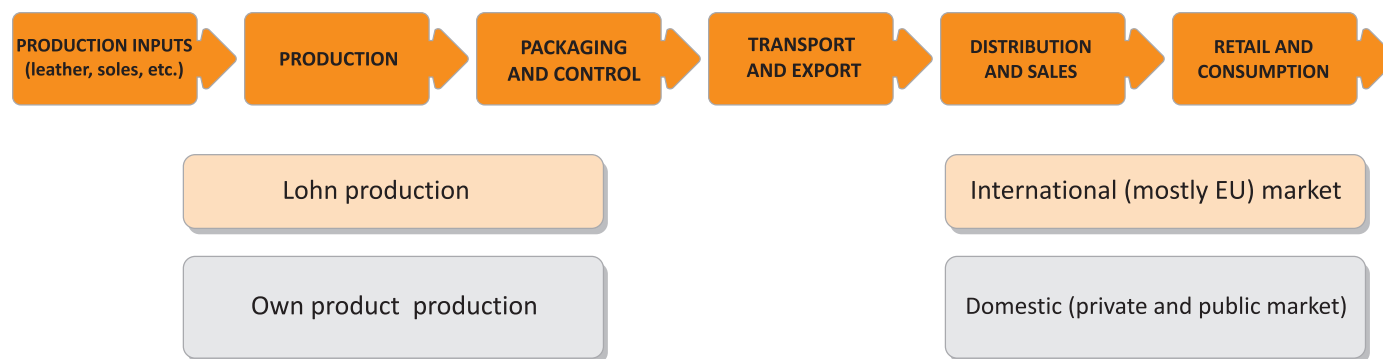
## 5. Leather and Footwear Industry and Value Chain for Shoes Production

### 5.1. Overview of the Value Chain for Shoes Production

At present, the footwear industry is highly globalised. Competition from countries with low labour cost and less-regulated working conditions has forced the EU footwear production into serious restructuring strategies and re-location policies. The overall performance of footwear in the EU has been deeply affected by this unbalanced supply to the global market. The European footwear industry is a mature sector, where companies find it difficult to sustain a significant level of growth; it is strongly pulled by a highly unstable and rapidly changing demand, due to fashion-related and seasonal fluctuations. A profound restructuring of the distribution system is also taking place, giving more bargaining power to the distributors and putting pressure on prices. In general, the footwear sector has changed its structure over the years and nowadays it is organized within global value chains on one hand and within some local chains in different countries.

Focus of the VCA is related to shoes production in the project area. More specifically, the targeted sub-region for the footwear sector is covering 4-5 municipalities in which 90% of shoe production in Krajina area is located.

Figure 10. Generic value chain

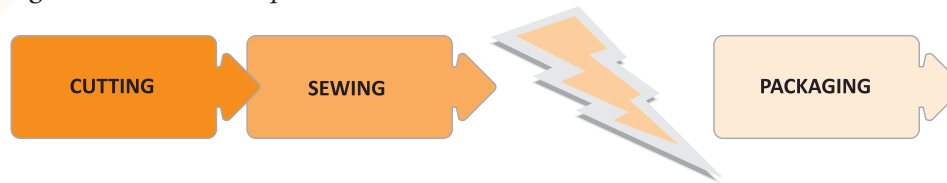


The dominant business model within the sector is seen in production on contractual basis for a known buyer who is also a supplier of the raw materials. This low value added production is usually called *lohn* production<sup>7</sup>. It can be said that local companies are involved within the global value chain with two differences – complete integral *lohn* production and partial *lohn* production. In partial *lohn* production, companies do not assemble the final products and they actually export only upper parts of shoes.

Figure 11. Integral *lohn* production



Figure 12. Partial *lohn* production



All *lohn* production is based on annual and multi-annual contracts between the local producers and well-known EU footwear producers/sellers.

There is some small portion of companies that tries to develop and produce domestic shoe models, however, this represents less than 5% of the entire companies' production in the Krajina region. These companies are mostly producing shoes for domestic market - private and public consumption.

Figure 13. Domestic production



<sup>7</sup> The concept of *lohn* or *lohn* production focuses on processing raw materials into wholesale shoes production. A shoes manufacturer makes a contract which means that they will produce items at the request of a client at the exact technical parameters in exchange for a pre-established sum of money.

Surprising findings, reached during the research, can be defined as follows:

- The sector has 2 types of *lohn* producers – those who have integrated production and those who perform only one or few phases during production,
- Limited information about potential markets and buyers – long-lasting consequence of the previous times during socialism, where export was made through export companies (agents),
- There are some champions in the sector (e.g. company Sportek),
- Bargaining power of companies is limited due to the nature of the contract with partners,
- Educational system does not support current development and production trends within the sector.

Leather and shoe production sector employs 4150 employees in 44 companies in the Krajina region. Total income of the sector in 2011 in all municipalities within the region was KM 85 millions. At the same time, the export was KM 68 millions (80% of total income)<sup>8</sup>. The profit of the whole sector in the region was KM 6 million in 2011. Around 80% of total employments are women.

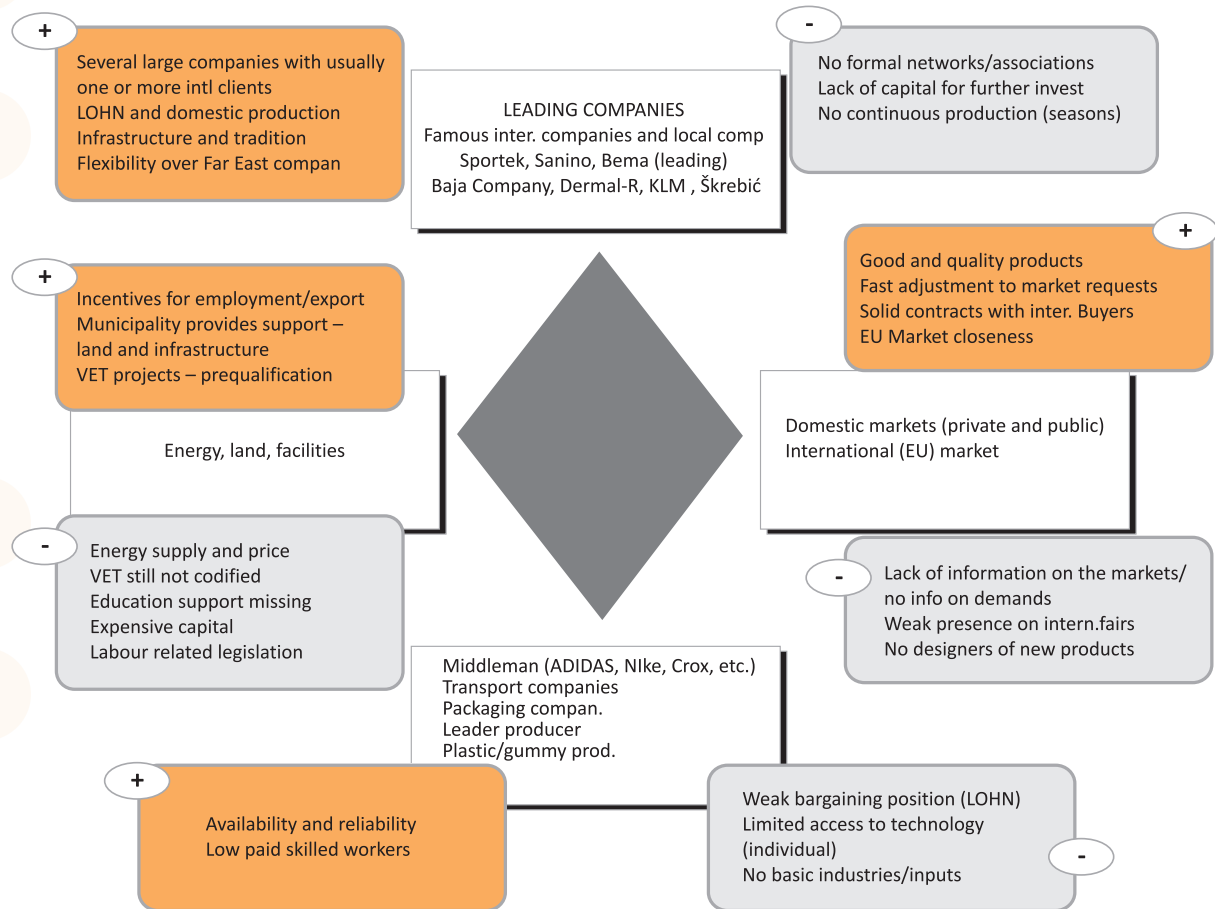
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<sup>8</sup> Figures for total income and export are several times higher but not recorded due to the nature of the business model (import for export practice within the lohn production).

## 5.2. Footwear Industry Competitiveness (Porter's Diamond)

The four broad attributes that shape the environment in which local firms compete, promote or impede the creation of competitive advantage are illustrated in Figure 14. This concept was applied in the analysis of the leather/footwear value chain in the project area.

Figure 14. Porters' diamant related to shoes production in the project area



## Structure and Strategy of the Leading Companies

Leaders of the sector in the Krajina region are 3 big companies, each with more than 1200 workers employing almost 85% of total employees within the sector. They have been mostly engaged in integrated production of shoes through *lohn* contracts with foreign suppliers who are at the same time the buyers of those products. These companies are also collaborating with smaller companies in the region by giving them some portion of contracted work and exchanging materials and equipment. They are part of a global value chain, leaned on the trends in which the EU companies seek to reallocate their production to eastern countries due to reduction of costs. This trend of the main EU companies is caused by the flexibility of local producer, closeness, and timing in delivery of final and semi-final products.

Generally, there is no strong competition between companies in the sector in the project area. Usually, firms have 1-2 dominant EU partners, which they have cooperated with in the last several years. The competition is only seen when they compete on the internal market, mostly on public tenders for various local buyers (military, police and other institutional buyers). Also, it can be noted that the price of the workforce is relatively significant competitive pressure due to cheap, but rather less qualified, workforce in the Asia.

Cooperation is usually done on an ad-hoc basis and depends on individual initiatives of owners/directors. It is evident that the lack of trust is still very big obstacle for networking, however, this is a typical issue for Bosnia and Herzegovina.

The main priorities of companies in the footwear sector are to have stable contracts with foreign suppliers/buyers. They rather opt for stability than riskier strategies in producing their own products for (un)known buyers. In the last several years, they try to expand their operation within the value chain by investing into new phases of production (mostly assembling) in order to have more added values. Also, it is evident that producers will have to find new sources of production inputs, especially related to leather from (domestic) market due to requests from buyers. This gives new perspective to *lohn* production, and roles of partners in it. Also, it enables local producers to have more value added, depending on their ability to find favorable production inputs. The firms, which produce their own products, are generally in this situation, however they lack stability, which comes with *lohn* production. They have more of value added production, but very small production series due to smaller market niches.

When looking at the other priorities, it is seen that almost all firms from the shoes sector seek for new policies related to education of workers and experts/designers, maternity leave and other labor issues within the current work regulations, and access to more favorable finance.

### **Factor Conditions**

Shoe producers have a range of costs to manage with a particular focus on raw material and production costs (labor and machinery). Other important costs include regulatory compliance costs, logistics costs, general overheads (such as utilities) and marketing. Costs of production continue to be a challenge for companies and a large proportion of shoes producers have outsourced their production totally or partially to subcontractors.

Shoe sector in the project area has a long time tradition. Also, most of the companies are owned by domestic and/or foreign investors who had large experience in shoe production. In general, most of businesses have their own buildings with solid basic infrastructure. They have solid, but rather old, equipment, while new technology and machines usually comes from suppliers of production inputs.

Current employees in the sector are generally well-skilled, but mature workers. In the last 20 years, educational programs for shoe makers were neglected due to the fact that this occupation is not attractive to students or their parents. Students rather opt for occupational education, such as mechanics, nurses or chefs although the local labor market has enormous unmet supply of these professions. Eventually, some of those students find their employment in shoes production companies, but a lot of resources was wasted due to adverse educational policies and weak link between education and labor market.

Financial support to sector is seen through several governmental policies in the last few years. Firstly, the RS Government has provided subsidies in terms of reduction of labor costs through lower income taxes for employees. Also, the Government has provided annual support to export-oriented industries. The cost of capital at the local market is generally higher due to various risks. Hence, the companies tend to invest mostly their own resources/capital into expansion of production. It should be mentioned that return on capital in the sector is very slow.

Generally, entry to market in the shoe production sector is very easy. With minor investments into equipment, one or two highly qualified professional and to some extent qualified workers, the company can position itself within the certain phase of production. For the last several years, the prices for services

related to partial production have remained the same and the producers try to decrease their own costs in order to increase their profitability.

### **Supporting and Related Industries**

The shoe sector is a diverse which covers a wide variety of materials (textile, plastics, rubber and leather) and products from different types of men's, women's and children's shoes to more specialised products like snowboard boots and protective footwear. This diversity of end products corresponds to a multitude of industrial processes, enterprises and market structures.

Almost 100% of input materials are imported. The problem, which arises from year to year, is the lack of basic industries (leather and soles). The most important determinant for competitiveness and value adding in shoe production is the production of leather. However, it can be said that shoe producers do not have a choice related to import of leather due to the lack of these producers on the domestic market. It is identified that Bosnia and Herzegovina has several companies, which deal with raw skin and their collection for export. These companies are exporting tens of millions EUR worth of raw skin to other countries, particularly to some EU countries like Austria, Italy and Slovenia. At the same time, companies from Bosnia and Herzegovina have imported 2,5 times higher amount in millions of EUR worth of leather for production of leather products, mostly shoes.

When looking at the other supporting industries (soles, strings, rubbers, etc.) it is evident that most of products from those industries are imported through various wholesale agents or through contractual buyers/suppliers involved in the *lohn* business. Less than 10% of inputs can be found on the domestic markets.

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### **The geographical concentration in the EU and current situation in the Krajina region**

The complexity of the supply chain has resulted in a concentration of companies and the formation of footwear producing districts in the EU, such as the Marche and Emilia Romagna in Italy, Elda and Elche in Spain and Norte in Portugal. This geographic concentration is one of the strengths of the footwear industry, driving the spread of knowledge and the formation of networks of companies, both formal and informal. The similar situation, although very informal is evident within companies in the Krajina area.

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Finally, it is evident that there is no proper support to the sector when looking at the design and new model making. In the previous systems, these functions were developed within huge industrial complex company organizations, which had also some training centers and institutes. Design is now completely imported with other “tangible” materials. It is seen that there is no point to develop these functions within just one shoe producer, no matter how big it is since interlocutors consider that one designer could serve the whole sector in the region.

### **Demand Conditions**

It is seen that the most demanding and sophisticated customers are the EU manufactures/dealers, who are using BiH companies for production of upper parts or entire shoes due to cheaper costs of the work force.

It is evident that the market demand has decreased globally in the last few years, but this has had no effect on the growth of shoe production in the Krajina region. Most of Lohn businesses in the Krajina region are related to production of famous brands. While many domestic markets, including Bosnia and Herzegovina are dominated by low cost imports from Asia, the EU producers are discovering that they can find markets for (branded) luxury footwear in emerging economies. For example, Italian footwear companies have outsourced their production totally or partially to subcontractors, while continuing to carry out product design and marketing activities in-house.

It is evident that the fashion and brand influenced consumer products present in the unique supply chain challenges for manufacturers, particularly given the increasing pace of change. Footwear manufacturers are beginning to develop processes for customization of footwear, to differentiate them from the competition and to meet increasing consumer demands for customized products. Thus, the BiH companies using their own advantages seen in the flexibility in production, closeness of the EU markets, quality of products, timing of delivery, etc. Far East and Asian companies cannot satisfy these requirements due to long times in delivery of these products overseas.

Some producers in the sector consider that there are some possibilities to improve the chain by improving organizational and industrial culture at the firm level, more specialists within the companies with proper education and connecting with basic industries in order to decrease the price of final product and have more satisfied customers. Also, they consider that the increase of producers’ bargaining power through networking could lead to more revenues and profits.

### 5.3. Firm Level - Competitive Pressures within the Value Chain

Generally, companies from the sector are familiar with their competitions and their main strengths and weaknesses. The main competitive advantages of foreign competitors are seen in good knowledge of the market (EU companies) and cheaper production due to cheaper labor and raw materials (mostly Asian companies). The newcomers usually tend to have lower price of the work (eurocent per minute) for certain phases of production – cutting and sewing of upper parts of shoes.

The competitive advantages of local companies are seen in high degree of professionalism in work, well trained workers, flexibility to changed conditions/demand to some extent, high quality of products and services. Most of companies have introduced international standards (ISO, CE mark, etc.) in order to satisfy high international requests to be part of globalised chain value. However, not all companies have the same path of development due to various strategies that they use.

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#### **Sportek – from *lohn* dependence to diversification**

Sportek is the biggest footwear/shoe producer in the Krajina area, with almost 1500 workers in the municipality Kotor Varos. It is Italian owned company with local management tightly leaned on foreign owner infrastructure abroad. The company has grown in the last 15 years, changing strategies and adapting to changing conditions. At the beginning in 1997, Sportek has been involved in typical partial LOHN production. Through time, Sportek has introduced new production function and enabled itself to have complete production for companies like Nike, Crocs, Decathlon Group, etc. They see their previous success in constant investments in new technology, new products and their people. Currently, they are conducting the diversification strategy and developing new types of production – carbon bicycle frames and textile production.

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All the companies use most of production inputs from abroad with no bargaining power related to suppliers of those components. This ties their hands in terms of possibility to decrease costs of raw materials. Many companies from the sector have gradually introduced new production phases in order to increase their competitiveness and to be able to produce complete shoes. This trend is evident due to the fact most EU producers are reallocating their complete production to the Eastern Europe and Asia.

The production processes and their efficiency are depending on the qualified, but also predictable, work force. Since more than 80% of employees are woman, companies are faced with problems of great fluctua-

tion of workers due to sick and maternity leaves of younger workers. At the same time, there are no proper governmental policies for compensating the companies for losses incurred due to national labor regulation.

#### 5.4. Meso Level - Supporting Institutions

Bosnia and Herzegovina does neither have general nor sectoral industrial policies. Various institutions try to provide some assistance but mostly on a short term basis and with a limited horizon.

The BiH Ministry of Foreign Trade and Economic Relations (MOFTER) is responsible for foreign trade and economic development, including the SME development. It should be noted that companies from the sector have said that they have not received proper support from this institution although they had several contacts and meetings with the Ministers and his associates. However, the MOFTER has recently brought temporary measure to decrease customs on soles for shoes that are imported by domestic produces.

The RS Ministry of Industry, Mining and Energy is responsible for industrial policies and improvement of competitiveness of companies in the Republic of Srpska. In 2013, the Ministry has spent KM 19.6 millions KM for supporting export oriented companies from various sectors. Several companies from the shoe sector have been awarded with the Ministry's grant. At the same time, some companies from the sector have used the support from the Ministry (4000 KM) to introduce quality standards at the firm level. Also, the Ministry has launched several subsidy schemes by providing KM 50 to every worker within the sector.

The RS Chamber of Commerce is an institution, which represents the main government partner representing the private sector in defining various governmental policies. The section for leather and shoes within the Chamber was very active in advocating and lobbying for various initiatives with more or less success. In general, initiatives to the state level Ministries and institutions related to change of certain customs regulation were not heard by decision-makers at the BiH level. At the same time, the entity level had had more understanding for these initiatives, including subsidies per workers or the financial support for companies' export.

Currently, the most important project for the shoe sector within the RS SME Agency is seen in the Swiss founded project “Prilika plus” which supported establishment of the Centre for education of workers in the footwear industry Sanino. Up to now, this centre has trained 65 workers, who later found their jobs in the company Sanino.

Generally, there is no cooperation between the sector and educational institution (high schools or faculties). The faculty for technology does not have programs that deal with the shoe productions nor design of these products. Although the shoe production generates constant growth and increase in employment in the region, there are no high schools that educate shoe makers and other relevant shoe production educational profiles. The reason is seen in the lack of sound governmental policies that will link education and labor market needs. The education system seems to be autistic and not sensitive to impulses from the labor markets and various companies’ needs. The first concrete activity between faculties and the sector is expected by the end of this year where the Faculty for Technology plans to introduce a new study program related to shoe production and design. Currently, the program is still not accredited and this will be done by the end of the year.

Municipalities are, in general, interested in the sector due to a high number of employed persons, but mostly without any concrete support to companies. The problems are seen in the lack of understanding and high taxes and fees that were introduced by the local level.

Although companies within the shoe production sector fit almost perfectly into the “cluster story”, no formal partnerships or networks have been introduced up to now. The previous initiative to found the association of shoes and leather producers, led by German GTZ, has failed due to various reasons. However, it seems that networking and clustering is now something that is viable and that could present a good meso policy within the region. This has been confirmed by many interlocutors during interviews since they see that the further development of the sector depends on their ability to create networks and/or clusters.

## 5.5. Macro and Meta Level - Framework Conditions

The recent trends in the EU related to shoe production and footwear industry represent the major opportunity for further expansion of local producers due to the fact that the EU represents the main market for leather shoes or their parts from BiH. Almost 99% of export from BiH related to leather shoes goes to EU countries. One of the main challenges faced by the footwear industry is the increasing costs of production, which have led the EU firms to relocate and outsource their products and processes to developing countries as a cost-reducing strategy.

In the last several years, international community has tried to unify local economic conditions and regulations within Bosnia and Herzegovina in order to set a “single economic space and common market” within the country. It can be said that this effort was successful with some minor differences that still exist when looking at regulations and conditions on the entity level.

The corporate tax rate in the Republic of Srpska is 10% which makes it one of the lowest rates in Europe, which is on average around 25-36%. Opting for such a low profit tax resulted in a moderate increase in the number of domestic and foreign companies, which registered their businesses in the Republika Srpska in years before the global economic crisis.

Domestic currency (convertible mark – KM) has a fixed exchange rate to euro. This enables international buyers to have longer-term contracts without fear for change of conditions due to appreciation/depreciation of local currency. However, many local producers consider that the exchange rate is not favorable and that a “strong convertible mark” has a negative effect on their export due to lower productivity in BiH.

There are also some negative impacts of framework conditions due to non-compliance to EU standards and rules. For example, a negative impact comes from the fact that BiH as a state has not accepted the EU regulations and directives in regard to technical conditions and characteristics that products must meet. Although the shoe producers in the region have accepted strict EU standards, it should be mentioned that most of those standards come with international suppliers, which are “titulars” of these standards.

## 5.6. Summary of Main Findings

The footwear sector is an important part of the European manufacturing industry and it plays a crucial role in the economy and social well-being in numerous localized regions within the EU. At the same time, footwear industry in BiH represents a significant exporting industry that employs a considerable number of workers.

The dominant business model within the sector is seen in production on contractual basis for a pre-determined, who also acts as a supplier of the raw material (*lohn* production). There are some small portions of companies that try to develop and produce domestic shoe models, but this represents less than 10% of the entire production in the region. However, these companies are rather small, usually less than 50 employees and they try to find their own niche on the shoe market.

Leaders of the sector in the project area are 3 big companies, each with more than 1200 workers with almost 85% of total employees within the sector. The performance of large companies in the last several years was prosperous, with constant growth in annual turnover, employability and profit. They are part of a global value chain, leaned on the trends in which the EU companies seek to reallocate their production to Eastern countries for the purpose of reduction of costs. Their strategies are almost similar while the difference is seen in the level of finalization of products as well as the level of diversification of their production.

Cooperation is usually done on an ad-hoc basis and it depends on individual initiatives of owners/directors. The main priorities of companies in the shoe sector are to have stable contracts with foreign suppliers/buyers. Also, the firms from the shoe sector seek for new policies related to education, maternity leave, labor and access to more favorable finance.

Almost 100% of input materials are imported. The problem, which arises from year to year, is the lack of basic industries (leather and soles). The most important determinant for competitiveness and value adding in the shoe production is the production of leather. In the Krajina region there is only one tannery, which remained after the privatization after 1998. However, this factory is not working due to the decision of its new owners to keep it closed. Interlocutors consider that this factory has obsolete technology without possibility to comply with the harsh EU standards related to environmental protection.

Finally, it is evident that there are no proper support to the sector when looking at the design and new model making. The main competitive advantages of foreign competitors are seen in good knowledge

of the market (EU companies) and cheaper production due to cheaper labor and raw materials (mostly Asian companies). In this institutional setting, various institutions try to provide some assistance but mostly on a short-term basis and with a limited horizon. Generally, there is no cooperation between the sector and educational institutions (high schools or faculties).

### 5.7. Key Gaps Identified (EU Company/Sector as Benchmark)

There are several gaps at the firm level between domestic shoes producers and the EU competitors, as follows:

- The EU companies are more market driven, trying to find their niche for global competition. Local companies mostly seek for new loan contracts under a close supervision from the EU partners,
- The EU companies are focused on customer, design and productivity increase, while local companies are mostly focused on production and quality of products,
- R&D component is very important for the EU companies, while local companies neglect this function,
- The EU companies have developed organizational culture within their organization,
- The EU companies have everyday information related to the market and demand for products,
- Institutional support related to formal and informal education is good in the EU.

Also, the following gaps are identified at the sector level:

- The EU companies have a huge internal market with the same regulatory framework, while local companies still cope with some basic standards,
- Access to capital to the EU companies is much easier in the EU than in the case of BiH companies,
- Sectoral industrial policy is driving the entire sector in the EU, while there are no strategic documents in the RS and Bosnia and Herzegovina,
- Clusters are common in various geographical areas in the EU, while this instrument is not used in BiH,
- Institutional support related to formal and informal education is good in the EU, while the education system in BiH is very problematic,
- Existence of sound analysis and studies related to the shoes sector in EU compared to the current state of affairs in the RS and BiH.

Gaps can be found also at the macro/meta level:

- More flexible legislation related to workers/employees,
- Stable business environment and lack of corruption.

## 5.8. Main Recommendations

There are several recommendations that were identified in close collaboration with sectoral board members:

In the short run, it is necessary to:

- Prepare studies related to shoes production,
- Improvement of technological aspect of production and standards (education, ecology, quality systems),
- Enable cheaper sources of finance,
- Acquire additional contracts and markets,
- Launch new products (improving the design).

In the long run, it is necessary to:

- Organise a cluster from all interested stakeholders in the sector,
- Prepare strategy for development of shoes production,
- Provide support for development of the base industry – leather production,
- Enable favourable business climate through lower taxes and fees, improvement of electricity supply, registration of property, enforcing contract, protecting the investor, etc.
- Provide constant formal and informal education to employees in the sector,
- Move focus from *lohn* to production of own products by initiating new investments into technology, equipment and people,
- Provide new, more favourable sources of funding from public and private sources (e.g. EBRD equity finding, Investment Development Bank, WBIF, etc.).

### Recommendations Aimed at Industry

Shoes production' companies in the Krajina region need to invest constantly into technology, people and new products. Also, they need to organise themselves in the cluster in order to prepare a joint strategy for the sector. It is evident that the production of shoes in the Krajina region has a lot of potential that could be utilised in the future.

On the basis of the previous analysis, at least three strategies could be identified:

- Introduction of new phases of production in order to have integral LOHN production – This strategy is typical for those companies like Company Skrebic, which did not have technology and equipment to produce final products from production inputs received from a foreign partner. This strategy



brings more value added to the company and relatively increases its bargaining power due to possible alternatives in the own production.

- Make it bigger or more specialised – Local shoe producers of own products like Vodex or KLM are faced with challenges in the lack of capacity in production in order to meet demand from the EU and other markets. Alternatively, they need more investments into customisation of their current products in order to find their own niche.
- Utilisation of local resources and production inputs with/without diversification of production into new complementary sectors – leaders of the sector are faced with the need to stretch the current value chain and find alternatives to current production inputs, on one hand, while increasing their own capacities to have their own products, on the other hand. Sportek's current strategy shows that the complementary approach can be seen in diversification of production to other sector, such as textile industry.

### **Recommendations Aimed at Meso Organisations**

The BiH Government should remove all impediments related to foreign trade and exports from BiH to the EU. It is necessary to equalise conditions in accordance to the EU internal rules in order to have the same regulations that are not discriminatory for local producers. Hence, the taxes and customs on production inputs needs to be revised in order to have common custom and tax policies like the business companies in the EU. BiH government needs to align all their institutions such as the Foreign Trade Chamber, the Foreign Investment Promotion Agencies, Institute for Standardisation, Directorate for Economic Planning and such in order to support future policies related to the sector.

The RS Government should recognise the sector and support establishment of clusters, providing them with a strategic framework and financial assistance. Special role of the government is seen in the case of education. Government needs to be more active in defining and implementation of various secondary and higher educational programs in line with needs of the leather industry.

Local communities should put more focus on the shoe production and its potential in the overall development at a local level, especially in fighting against unemployment of female population. They need to revise their tax policies and be more sensitive to industrial production. The RS SME Agency should support innovations and R&D in local companies. They need to strive to increase the portion of investments related to the research and development in accordance with the EU standards. Also, they have to launch the supporting programs and give subsidies for innovation in production of local companies.

## Policy Recommendations

When looking at the shoe production in the Krajina region, it is seen that new policies are needed in order to push further development and competitiveness of local firms. Here are some of them:

- Foreign trade policy and customs related to footwear industry (state level),
- Fiscal policy related to property tax for production facilities (municipality),
- Fiscal policy related to income tax for employment of new workers (RS level),
- Provision of support for cluster formation (entity/municipalities),
- New education policy related to footwear production (entity/municipality),
- Re-industrialisation and support to development of industry (state/entity).

## Opportunities for Collaboration

It is evident that collaboration and cooperation between shoes producers is necessary for their further development. The CREDO Krajina project and its sectoral board could initiate foundation of an association that can be a basis for other forms of networking. The concept of the project and its realisation leads toward more tight relations between the lead companies in the project area.

Also, it is evident that companies within the leather and shoe sector are members of the RS Chamber of Commerce and that this institution is active in advocating and promoting activities related to the sector. A window of opportunity in collaboration between the domestic and international footwear companies is seen also in cooperation between the Chambers of Commerce from various countries. Additionally, they could be more active in utilising value chains in the various sectors in order to create more dynamic and competitive industries, especially in Europe.

However, complex administrative system where various competences at a local, cantonal, entity and state level are not clear enough makes Bosnia and Herzegovina very difficult for collaboration of various institutions, especially if politics is interfered. Collaboration between various subjects and institutions within one administrative level, entity in the RS and mostly cantons in the Federation of BiH is viable, but other forms have usually not been so productive due to their complexity. For example, it is evident that cooperation between the MOFTER and the RS Industry for Industry, Mining and Energy is not functional due to constant struggle over competences related to various aspects of industrial policy. At the same time, this affects cooperation of all other institutions and agencies between these two administrative levels.



## 6. Conclusion

A chain is as strong as its weakest link. The study was conducted in order to identify the weakest link within value chain for meat and meat products (as a part of food industry), value chain for solid wood furniture (as a part of wood processing industry), value chain for hydronic heating boilers and stainless steel water heaters (as a part of metal industry) and value chain for shoes production (as a part of leather and footwear industry). The weakest links are different in different sectors.

In food industry, i.e. value chain for meat and meat products, the weakest areas are access to markets and marketing including relevant standards (e.g. *IFS Food*) and certification, lagging behind in terms of technology and business processes, environmental protection and energy efficiency.

The most problematic areas in wood processing industry, i.e. value chain for solid wood furniture is lack of information on final consumers and thus inferior position in relations with foreign distributors, lack of education programs (for both, technicians and engineers), quite obsolete equipment and inefficient technological and business processes.

In regard to metal industry and value chain for hydronic heating boilers and stainless steel water heaters weak areas are research and product development, lack of relevant human resources (e.g. engineers, welders, CNC operators and programmers) and underdeveloped marketing. To some extent problem is also production management and financing of new equipment and technology.

In leather and footwear industry, i.e. value chain for shoes production, one of the biggest problems is lack of young skilled workers who could replace those who will be retired soon, thus responding to the needs of increased production. There is no domestic leather as the most important raw material, while technological aspects of production and business processes should be improved.

In addition to weaknesses which are specific for each of aforementioned economic sectors (i.e. selected value chains within them), there are also some problems which are more or less common for all sectors, such are lack of communication and cooperation between producers, lack of relevant human resources, and problems with technology transfer.

Besides identified challenges in each of the sectors, analyses also identify relatively high volume of export, showing clearly that enterprises in project area have sound basis for future development. Accordingly, next phases of the project CREDO Krajina will be aimed at defining and implementation of specific interventions that will be undertaken to overcome identified problems, thus providing benefits for all stakeholders within the value chains, which will ultimately lead to improved competitiveness of enterprises and job creation.

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## 8. Annex

### List of Interviewed Companies (July - September 2013)

No.	Company name	Municipality/ City	Economic sector
1	Elas komerc d.o.o.	Banja Luka	Metal industry
2	Mon Amie d.o.o.	Banja Luka	Metal industry
3	Procesna oprema d.o.o.	Laktaši	Metal industry
4	Tri Best d.o.o.	Banja Luka	Metal industry
5	Bira d.d.	Bihać	Metal industry
6	Fiko commerce SF d.o.o.	Cazin	Metal industry
7	Gat d.o.o.	Sanski Most	Metal industry
8	Čekić d.o.o.	Gradiška	Metal industry
9	Ewes d.o.o.	Gradiška	Metal industry
10	KGS d.o.o.	Derventa	Metal industry
11	Maxmara d.o.o.	Banja Luka	Metal industry
12	Metal-prom MB d.o.o.	Derventa	Metal industry
13	PMP Jelšingrad. - Fabrika Mašina a.d.	Gradiška	Metal industry
14	Vigmelt d.o.o.	Banja Luka	Metal industry
15	Mehanizmi B d.o.o.	Gradiška	Metal industry
16	Metal a.d.	Gradiška	Metal industry
17	Metalac MBM d.o.o.	Derventa	Metal industry
18	Metaloprom Kovačević d.o.o.	Gradiška	Metal industry
19	Mreža Network d.o.o.	Derventa	Metal industry
20	Nivex d.o.o.	Derventa	Metal industry
21	Krupa kabine d.o.o.	Bosanska Krupa	Metal industry
22	Limometal d.o.o.	Cazin	Metal industry



No.	Company name	Municipality/ City	Economic sector
23	Livnica Tešić d.o.o.	Gradiška	Metal industry
24	Novi most d.o.o.	Bosanska Krupa	Metal industry
25	Protherm d.o.o.	Kostajnica	Metal industry
26	Remus Innovation d.o.o.	Sanski Most	Metal industry
27	Stampress d.o.o.	Cazin	Metal industry
28	Unametal a.d.	Novi Grad	Metal industry
29	ZAH d.o.o.	Bosanska Krupa	Metal industry
30	Č.J. d.o.o.	Bihać	Metal industry
31	Bosnamontaža a.d.	Prijedor	Metal industry
32	Adria MM d.o.o.	Banja Luka	Food industry
33	Babić s.p.	Laktaši	Food industry
34	Beladona z.o.p.r.	Laktaši	Food industry
35	BIOPLOD d.o.o.	Kozarska Dubica	Food industry
36	Digesta s.p.	Kotor Varoš	Food industry
37	EKO-BeL d.o.o., P.J. Agrocentar	Kozarska Dubica	Food industry
38	Fratello Trade a.d.	Banja Luka	Food industry
39	Fructa-trade d.o.o.	Derventa	Food industry
40	Grabovac-Pekara Sunce d.o.o.	Srbac	Food industry
41	HPK Draksenić a.d.	Kozarska Dubica	Food industry
42	Krajina klas d.o.o.	Banja Luka	Food industry
43	MI-TRIVAS d.o.o.	Prnjavor	Food industry
44	MladegsPak d.o.o.	Prnjavor	Food industry
45	Mushroom d.o.o.	Čelinac	Food industry
46	Perutnina Ptuj S d.o.o.	Srbac	Food industry
47	Prirodno bilje d.o.o.	Banja Luka	Food industry
48	Unaplod a.d.	Kozarska Dubica	Food industry
49	Veleprehrana a.d.	Banja Luka	Food industry
50	Vitaminka a.d.	Banja Luka	Food industry

No.	Company name	Municipality/ City	Economic sector
51	Voda Kruna d.o.o.	Mrkonjić Grad	Food industry
52	ZD.I.-Produkt d.o.o, P.J. Laktaši	Laktaši	Food industry
53	ŽITOPEKA s.p.	Banja Luka	Food industry
54	Živanić DS d.o.o.	Prnjavor	Food industry
55	Jaja Tomić s.p.	Bihać	Food industry
56	Mehlem trade d.o.o.	Bihać	Food industry
57	Čapljanka d.o.o., P.J. Milk san	Sanski Most	Food industry
58	Opšta zadruga Vrtoče	Bosanski Petrovac	Food industry
59	Tehno-pek d.o.o.	Bihać	Food industry
60	WES-trade d.o.o.	Cazin	Food industry
61	Prijedorčanka a.d.	Prijedor	Food industry
62	Mira Prijedor a.d.	Prijedor	Food industry
63	Vigan PD d.o.o.	Prijedor	Food industry
64	Urban Namjestaj-Scontoprom d.o.o.	Prijedor	Wood processing industry
65	Javor Masiv d.o.o.	Prijedor	Wood processing industry
66	Masterwood d.o.o.	Prijedor	Wood processing industry
67	Gavranović d.o.o.	Prijedor	Wood processing industry
68	Robustox d.o.o.	Prijedor	Wood processing industry
69	Brzi d.o.o.	Bihać	Wood processing industry
70	D.I. Vrbas d.o.o.	Banja Luka	Wood processing industry
71	Drvoprodex d.o.o.	Banja Luka	Wood processing industry
72	Jerić kompani d.o.o.	Banja Luka	Wood processing industry
73	Nova DIPO d.o.o.	Gradiška	Wood processing industry
74	D.I. Bor d.o.o.	Gradiška	Wood processing industry
75	D.I. Vukelić d.o.o.	Laktaši	Wood processing industry
76	McMillan d.o.o.	Banja Luka	Wood processing industry
77	Prima ISG d.o.o.	Gradiška	Wood processing industry
78	Naš dom MB d.o.o.	Gradiška	Wood processing industry

No.	Company name	Municipality/ City	Economic sector
79	Reflex d.o.o.	Gradiška	Wood processing industry
80	K-ASA d.o.o.	Ključ	Wood processing industry
81	Pogy d.o.o.	Bihać	Wood processing industry
82	Tehnik drvo Kapić d.o.o.	Cazin	Wood processing industry
83	Bema d.o.o.	Banja Luka	Footwear industry
84	Dermal d.o.o.	Kotor Varoš	Footwear industry
85	Sportek d.o.o.	Kotor Varoš	Footwear industry
86	Veneto shoes d.o.o.	Derventa	Footwear industry
87	Baja Shoes d.o.o.	Derventa	Footwear industry
88	Bross Trade d.o.o.	Laktaši	Footwear industry
89	KLM d.o.o.	Prnjavor	Footwear industry
90	Sanino d.o.o.	Derventa	Footwear industry
91	Obuća Branko s.z.r.	Derventa	Footwear industry
92	The Welly d.o.o.	Prnjavor	Footwear industry
93	Viale d.o.o.	Prnjavor	Footwear industry
94	Vodex d.o.o.	Prnjavor	Footwear industry
95	Com Soft d.o.o.	Cazin	IT industry
96	CPU d.o.o.	Cazin	IT industry
97	Telexmax d.o.o.	Banja Luka	IT industry
98	Mikroelektronika d.o.o.	Banja Luka	IT industry
99	Koming-Pro d.o.o.	Gradiška	IT industry
100	Elpin d.o.o.	Prijedor	IT industry
101	AlfaNet informatika d.o.o Prijedor	Prijedor	IT industry
102	Beoplast d.o.o.	Laktaši	Plastics industry
103	Nora Plast d.o.o.	Banja Luka	Plastics industry
104	Omorika PET d.o.o.	Doboj	Plastics industry
105	Bosnaplast d.d.	Bosanski Petrovac	Plastics industry

## List of Interviewed Companies within Value Chain Analysis

(December 2013 - February 2014)

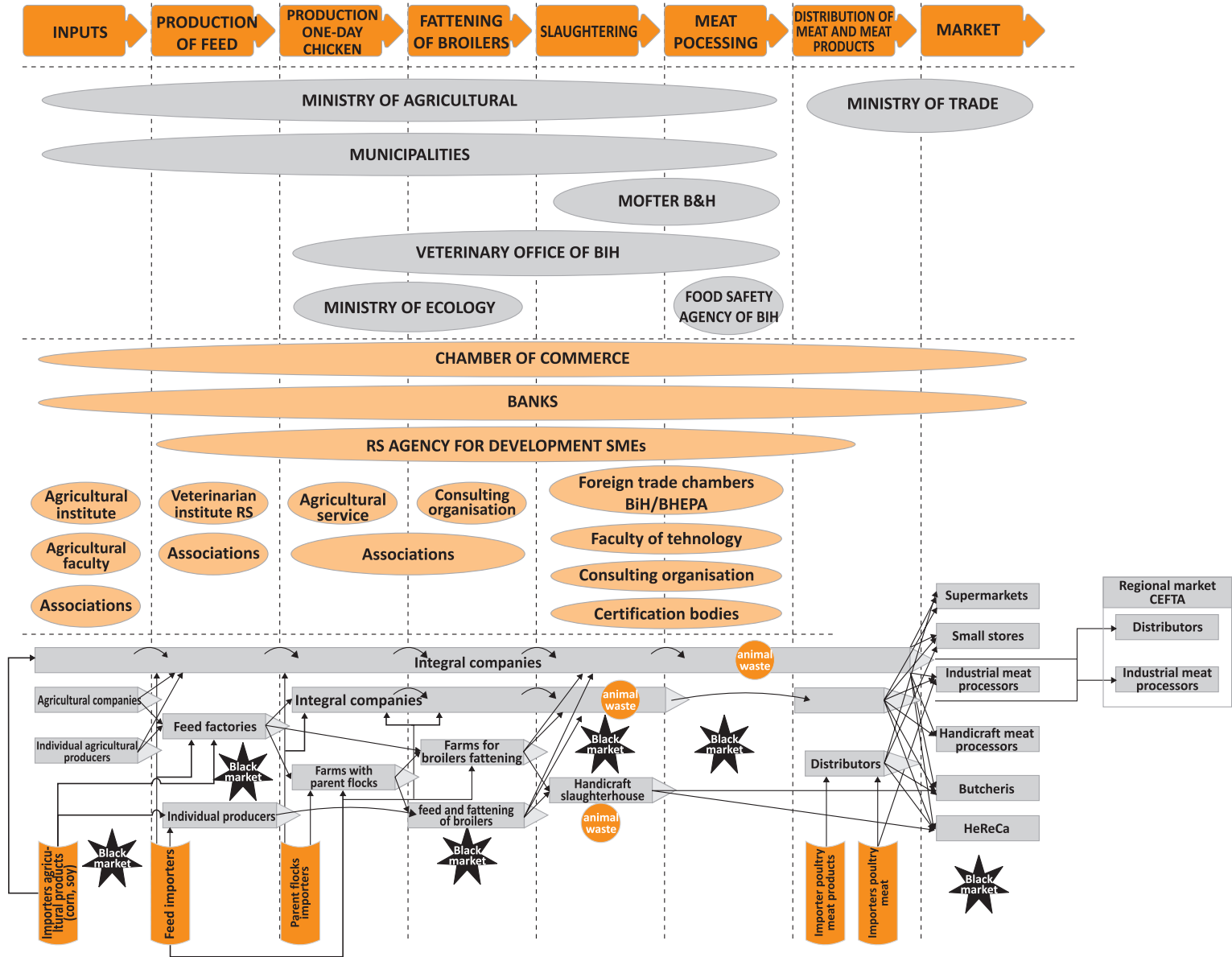
No.	Company name	Municipality/City	Value chain	Position in value chain
1	EKO Bosanska posavina	Derventa	Meat and meat products	Input-agricultural products
2	Super premix	Banja Luka	Meat and meat products	Production of feed
3	Comp Astor	Novi Grad	Meat and meat products	Production of feed
4	Agromix	Doboj	Meat and meat products	Production of feed
5	Dim-Dim d.o.o.	Laktaši	Meat and meat products	Slaughtering, meat processing, distribution of meat and meat products
6	Slaughterhouse Laza and son	Banja Luka	Meat and meat products	Meat processing, distribution of meat and meat products
7	MI Trivas	Prnjavor	Meat and meat products	Meat processing, distribution of meat and meat products
8	ZDI Produkt	Laktaši	Meat and meat products	Slaughtering, meat processing, distribution of meat and meat products
9	Perutnina Ptuj S	Srbac	Meat and meat products	Production of on-day chicken, fattening of broilers, slaughtering, distribution of meat and meat products
10	Živanić DS	Prnjavor	Meat and meat products	Input-agricultural products, production of feed, production on-day chicken, fattening of broilers, slaughtering, meat processing, distribution of meat and meat products
11	OZ Vrtoče	Bosanski Petrovac	Meat and meat products	Input-agricultural products, production of feed, fattening of broilers, slaughtering, meat processing, distribution of meat and meat products
12	Leburić komerc	Prnjavor	Meat and meat products	Distribution of meat and meat products
13	Fortuna	Prnjavor	Meat and meat products	Supermarket
14	Laza's butcher shop	Banja Luka	Meat and meat products	Butcheris

No.	Company name	Municipality/City	Value chain	Position in value chain
15	Obelix	Banja Luka	Meat and meat products	HoReCa
16	Žitopeka	Banja Luka	Meat and meat products	HoReCa
17	Ministry of Agriculture, Forestry and Water Management of R. Srpska	Banja Luka	Meat and meat products	Supporting institution
18	Veterinary institute Vaso Butozan	Banja Luka	Meat and meat products	Supporting institution
19	Faculty of technology	Banja Luka	Meat and meat products	Supporting institution
20	Agricultural institute	Banja Luka	Meat and meat products	Supporting institution
21	Bussines association "Zajednica Živinara"	Srbac	Meat and meat products	Supporting institution
22	Drvorez doo	Banja Luka	Solid wood furniture	Producer
23	Edra doo	Bosanski Petrovac	Solid wood furniture	Producer
24	Nova DIPO d.o.o.	Gradiška	Solid wood furniture	Producer
25	D.I. Vrbas d.o.o.	Banja Luka	Solid wood furniture	Producer
26	Smrča d.o.o.	Bosanska Krupa	Solid wood furniture	Producer
27	Masterwood d.o.o.	Prijedor	Solid wood furniture	Producer
28	D.I. Bor d.o.o.	Gradiška	Solid wood furniture	Producer
29	Javor d.o.o.	Prijedor	Solid wood furniture	Producer
30	Drvo klaster	Banja Luka	Solid wood furniture	Producers' cluster
31	GMP Kompani d.o.o.	Banja Luka	Solid wood furniture	Producer and distributor

No.	Company name	Municipality/City	Value chain	Position in value chain
32	Ardor doo	Banja Luka	Solid wood furniture	Distributor
33	Topling doo	Prnjavor	Hydronic heating boilers and stainless steel water heaters	Producer
34	Termoflux doo	Jajce	Hydronic heating boilers and stainless steel water heaters	Producer
35	Termoklima doo	Laktaši	Hydronic heating boilers and stainless steel water heaters	Producer
36	Procesna oprema doo	Laktaši	Hydronic heating boilers and stainless steel water heaters	Producer
37	Tehsan doo	Banja Luka	Hydronic heating boilers and stainless steel water heaters	Distributor
38	Vokel doo	Banja Luka	Hydronic heating boilers and stainless steel water heaters	Distributor
39	Termotehna doo	Banja Luka	Hydronic heating boilers and stainless steel water heaters	Distributor
40	Centrum trade doo	Banja Luka	Hydronic heating boilers and stainless steel water heaters	Distributor
41	Milco doo	Laktaši	Hydronic heating boilers and stainless steel water heaters	Supplier
42	Fit doo	Banja Luka	Hydronic heating boilers and stainless steel water heaters	Supplier
43	Bob doo	Laktaši	Hydronic heating boilers and stainless steel water heaters	Supplier

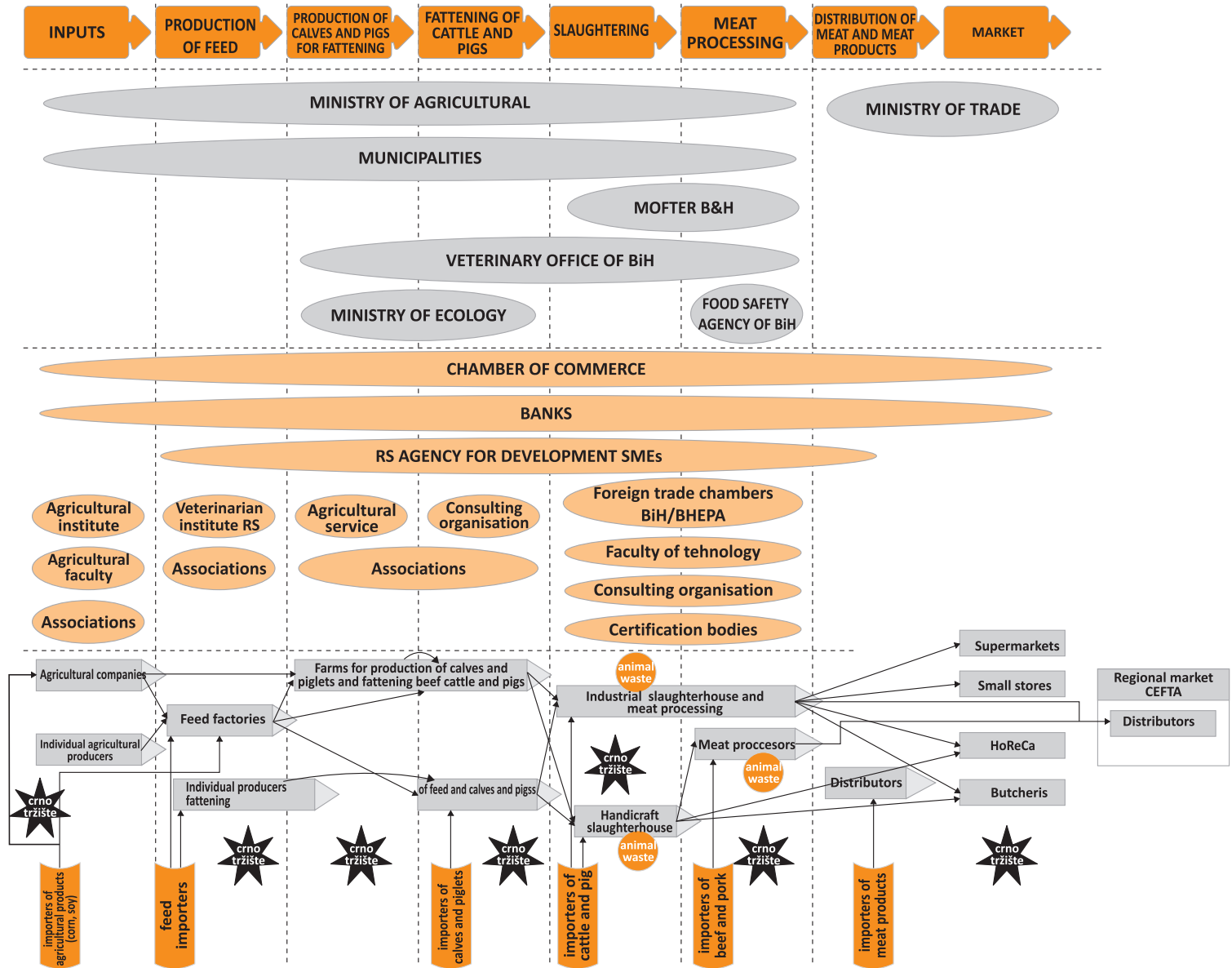
No.	Company name	Municipality/City	Value chain	Position in value chain
44	Faculty of Mechanical Engineering, Banja Luka	Banja Luka	Hydronic heating boilers and stainless steel water heaters	Supporting institution
45	Italy Leather	Banja Luka	Shoes production	Supplier (leather production)
46	Sanino d.o.o	Derventa	Shoes production	Producer
47	Baja Company d.o.o	Derventa	Shoes production	Producer
48	Skrebic company d.o.o	Teslic	Shoes production	Producer
49	Bema d.o.o	Banja Luka	Shoes production	Producer
50	KLM d.o.o	Prnjavor	Shoes production	Producer
51	Vodex d.o.o	Prnjavor	Shoes production	Producer
52	Kogoderm	Prnjavor	Shoes production	Distributor
53	Chamber of Commerce of Republika Srpska	Banja Luka	All aforementioned value chains	Supporting institution
54	Agency for development of small and medium-sized enterprises of Republika Srpska	Banja Luka	All aforementioned value chains	Supporting institution
55	Skills for Jobs / Pri-likaPlus project	Banja Luka	All aforementioned value chains	Supporting institution
56	Ministry of Industry, Energy and Mining of Republika Srpska	Banja Luka	All aforementioned value chains	Supporting institution

# Value Chain for Poultry Meat and Poultry Meat Products

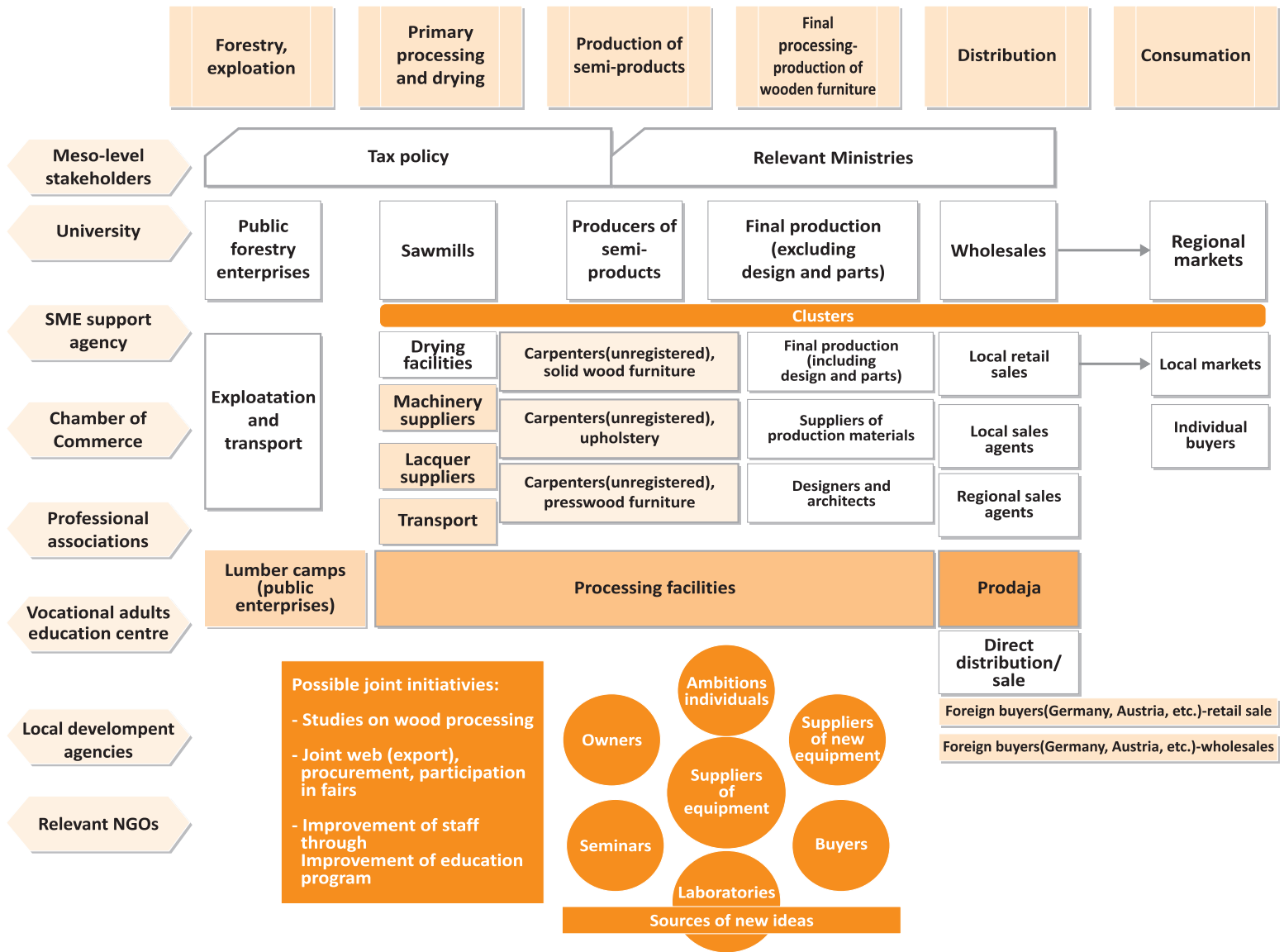




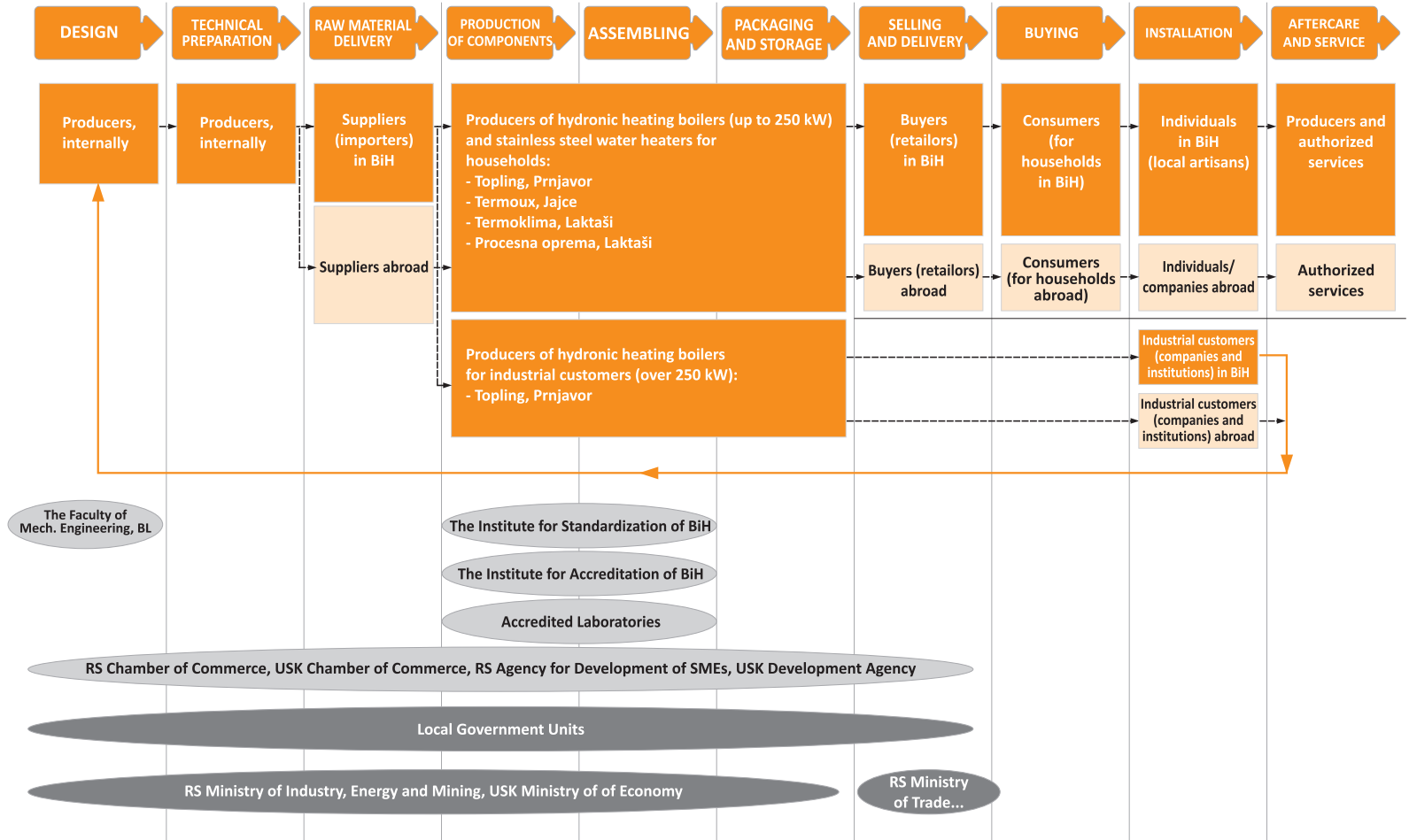
# Value Chain for Beef and Pork Meat and Meat Products



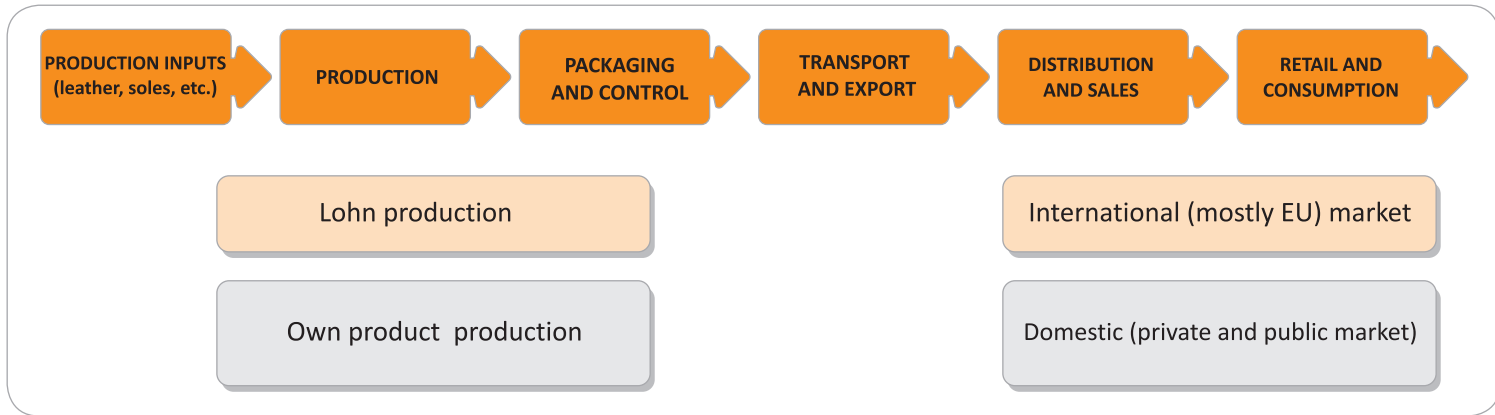
# Value Chain for Solid Wood Furniture



# Value Chain for Hydronic Heating Boilers and Stainless Steel Water Heaters



## Value Chain for Shoes Production



### *Integral lohn production*



### *Partial lohn production*

