tehnologija mesa *UDK: 664.9:637.513.05(497.16)*
Osnivač i izdavač: Institut za higijenu i tehnologiju mesa, Beograd *BIBLID: 0494-9846*

The current status of the Montenegrin meat industry*

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A b s t r a c t: Quantitative and qualitative parameters of the meat sector in Montenegro, ddressing both production and processing, have been evaluated. In Montenegro, livestock production is focused on cattle, sheep and goats and to lower extent pig and poultry. In the past decade meat processing industry in Montenegro is in its expansion. There are two medium sized enterprises and about 20 – 30 further small family enterprises. All of the slaughterhouses and all establishments for meat processing are in private ownership. Montenegro has the goal of improving the food safety system within an adequate legislative framework that conforms to European and international standards. The support is needed for the structural adjustment in the livestock sector, increasing of the overall competitiveness and productivity, improving the status of attainment of national and EU standards and improvement of the performance and offer of the service providers.

***Key words**: livestock, meat production, meat processing industry, EU standards.*

1. Introduction

Agriculture is a very important sector in the Montenegrin economy, since it participates in total Gross Agricultural Output (GAO) with 8.3% and plays a multifunctional role (*Bulletins of Central Bank of Montenegro,* 2010). In spite of agricultural resources available (about 0.80 ha of agricultural land per capita), the country is highly dependent on import of food. This goes also for meat and milk as the main products of animal origin.

Livestock production is with around 170,000 tons of milk production (23% of GAO) and 17,000 tons of meat production (28% of GAO) per year the largest contributor to Montenegro's agricultural economy (*Bulletins of Central Bank of Montenegro,* 2010). Most significant farm products are cattle, sheep and goat's milk and the production of lamb with traditional breeds as well as veal and beef meat.

Generally, structural characteristics of the Montenegrin agriculture, particularly of the livestock sector, are not favourable. An insufficient knowledge on modern production techniques/ technologies and standards, low productivity and therefore low international competitiveness of production, insufficient use of potential of natural resources for fodder production (pasture and meadows) and training on effective pasture and meadow management, difficult access to financial resources for investments (particularly for farmers), insufficient implementation of existing food safety legislation and public food inspection, etc. represent the main obstacles for the development of this sector.

On the other hand, there has been overall very dynamic development of the Montenegrin meat processing industry during the last 10 years, with significant investments in modernisation and implementation of improved hygienic standards and modern slaughtering and meat processing equipment. There are 4 big enterprises that are covering about 2/3 of the total domestic meat production and utilize the capacity per enterprise between 1,000 – 6,000 tons meat per year (*Monstat,* 2009). They have integrated system of slaughtering and meat processing as well as the retail activities. Furthermore, 2 medium sized enterprises utilize a capacity between 500 – 1,000 tons meat per year (*Monstat,* 2009). A few enterprises are specialised on slaughtering and processing of poultry meat. Very important are the producers of traditional air-dried and smoked prosciutto - Njeguš ham. The bigger prosciutto producers are active with export to neighbouring countries.

The most important strengths of the meat sector lie in the fact that there are large areas of pasture and

**Plenary paper on International 56th Meat Industry Conference held from June 12-15^{h} 2011. on Tara mountain;*
**Plenarno predavanje na Međunarodnom 56. savetovanju industrije mesa, održanom od 12-15. juna 2011. godine na Tari.*

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meadows available for ruminants. There is also high potential of domestic markets for meat products and export of several products. This is supported by the dynamic development of meat industry and strong linkage to retail activities as well as the preferences of consumers for domestic meat products.

Very important for further development of meat sector is the fact that Montenegro currently has the status of potential candidate country to become member of the European Union (EU). Montenegro signed the Stabilization and Association Agreement (SAA) with the EU in October 2007, while Interim Agreement entered into force in January 2008. Furthermore, the harmonization with the World Trade Organization (WTO) principles and the implementation of the regional Central European Free Trade Agreement **(**CEFTA) are currently important issues for Montenegro. In 2007 and 2008, Montenegro has also joined several other international organisations: Food and Agriculture Organisation (FAO), World Organisation for Animal Health (OIE) and Codex Alimentarius.

2. Overview on Meat Production and Processing

The highest share of total meat production in Montenegro is coming from ruminants; largest quantity of meat is bovine meat (40%), followed by meat of small ruminants (sheep and goats), 24%. The rest is pork (19%) and poultry meat (18%) (*Monstat,* 2010). The total domestic meat production is covering only about 40% of the total meat consumption in the country.

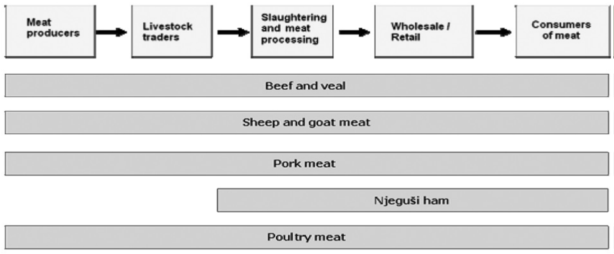

Figure 1. Key actors of the meat supply chain
Slika 1. Ključni akteri u lancu snabdevanja mesom

About 100% self-sufficiency is with sheep and goats meat but significant share of cattle and poultry meat, and particularly, of pork meat consumption is based on imports (Table 1). The production and consumption of traditional air-dried and smoked prosciutto ham (Njeguši ham) has long tradition in the country. It is based mostly on imported pork for ham production.

3. Overview on Livestock Sector

Livestock is a dominant sector in the Montenegrin agriculture due to the fact that meadows and pasture have a very high participation in total agricultural land. Montenegro does not fully use its production potential in the livestock sector. Total number of livestock units (LSU[1]) is about 110.000. If it is compared only to the total area of meadows (127.000 ha), even ratio is bellow 1.

Table 1. Overview on Meat Production and Consumption in Montenegro (2009)
Tabela 1. Pregled proizvodnje i potrošnje mesa u Crnoj Gori (2009)

Meat Product/Meso	Domestic Production, tons/ Domaća proizvodnja, t	Import, tons/ Uvoz, t	Domestic Consumption, tons/Domaća potrošnja, t	Export, tons/ Izvoz, t	Deficit, tons/ Deficit, t	Self-sufficiency/ Samodovoljnost, %
Beef & Veal/ Goveđe i teleće meso	6,790	5,355	12,069	76	5,279	56
Sheep & goat meat/ Ovčetije i kozje meso	4,120	100	4,220	0	100	98
Pork/ Svinjsko meso	3,170	21,692	23,672	1,190	20,502	13
Poultry meat/ Živinsko meso	3,030	4,756	7,631	155	4,601	40
Meat total/ Ukupno mesa	**17,110**	**31,903 *)**	**47,592 **)**	**1,421**	**30,482**	36

[1] Livestock unit is equivalent for aggregation of the different livestock species and poultry. One adult cattle is 1 LSU, one animal of cattle young stock is up to 0,6 LSU, 8 adult sheep or 10 adult goats are equivalent to 1 LSU.

Cattle breeding are the largest sub-sector in the livestock production in Montenegro. In total 25.928 agriculture holdings are currently holders of cattle (*Information of Animal I&R unit,* 2010). The total cattle population counts currently about 90.000 heads, while dairy cows thereof are about 62.500 heads.

Sheep breeding sector is mainly characterized by the semi-extensive way of production and is a very important sector of livestock production and economically is just behind cattle production. Annual volume of output is about 3.600 t of meat and 7.000 t of milk (*Annual Report of Livestock Selection Service,* 2009).

Goat breeding is also very important for the karstic regions in Montenegro where natural conditions do not allow for the breeding of other kinds of ruminants. Estimation is that total number of goats is currently around 35,000 to 40,000. The total number of goats has been stable during the last years. Annual production of goat meat (young goats, and meat of the mature and culled animals) is estimated at about 460 tons.

Pig production in Montenegro is a weak sector, primarily due to lack of suitable areas for domestic cereals production for pig feed and appropriate utilisation of the nutrition value of manure/ slurry in the whole production cycle. According to MONSTAT Census, in June 2010 about 43,000 pigs had been identified (*Monstat,* 2010).

Poultry production is characterized by significant changes occurred in the recent years, ranging from creating numerous family farms for eggs production, the expansion of broiler production, to the founding of slaughterhouses and processing capacities for that sector.

4. Meat processing industry

The development of Montenegrin meat processing industry was dynamic during the last 10 years with significant investments in modernisation and implementation of state-of-the art buildings and equipment as well as improved food hygiene standards.

4.1. Overall Structure of Meat Industry

Two medium sized enterprises utilize an annual meat production capacity between 500–1,000 tons. These two have also an integrated system of slaughtering and meat processing with strong regional retail activities (*GTZ,* 2008). They are currently not exporting meat to neighbouring countries. About 20 – 30 further small family enterprises exist, which are specialized on slaughtering, fresh meat production and/or limited number of processed products. Several of them have also their own regional/local retail shops. This sub-group is focused particularly on regional/local markets (e.g. butcheries, restaurants, regional retail shops) in Montenegro. Three specialized enterprises are operating slaughtering and processing of poultry meat.

An estimated of about 221 active meat retail shops exist. Many larger supermarkets have also a butchery section or are directly linked to meat processors. In addition, specialized producers of traditional air-dried and smoked Njegusi ham are very important for the Montenegrin meat industry. Beside some bigger specialised producers, also several small family units are producing traditional air-dried and smoked prosciutto ham.

4.2. Slaughterhouses and approved establishments for meat

According to the Veterinary Law (*O.J. MNE,* No. 27/07), cattle slaughtering is permitted for home consumption, but commercial slaughter may only be done in officially approved or registered slaughterhouses. Rendering plants do not exist.

All the slaughterhouses and all establishments for meat processing are in private ownership. The establishments meet the minimum required veterinary, sanitary and technical conditions (*Rulebook, OJ MNE, No. 56/00,* 2000). However, some of these establishments do not have sufficient cold stores, which are resolved by transportation of meat, immediately after dripping and examination, in a prescribed means of transportation to retail shops, which have cold stores of adequate capacity for cooling and keeping meat till it is sold. Very often slaughterhouses do not have conditions for removal of offal and waste in a prescribed way and the conditions are not provided at the level of the country, either there is not a city pond, burial pit, cattle cemetery, incineration plant or sites or dumps for disposal of animal by-products. The waste is collected into containers and then transported to the city garbage dump, where it is buried.

4.2. Level of attainment of the relevant EU standards

In the area relevant to Food Safety Montenegro is committed to international integration, it is in the final stage of accession to the WTO and it is a member of FAO, (2007), OIE (2008), Codex Alimentarius (2008), and WHO (2007).

The Montenegrin Strategy of food production and rural development (2006) has the goal of improving the food safety system within an adequate legislative framework that conforms to European and international standards. The strategy is drawn up according to the Action Plan for the European Partnership. Framework legal document - the Law on Food Safety (*OJ, MNE, No.* 14/07) lays down the general food safety rules, requirements for placing on the market of food and feed and provides a basis for adoption of secondary legislation in this field.

The rules in the food safety field are laid down, in addition to the law mentioned above, also by a large number of secondary legislation from the former legal system (Federal Republic of Yugoslavia, Serbia and Montenegro). Adoption of new rulebooks, instructions and guides is planned in accordance with the EU legislation in this field by the year 2012. It is also necessary to set up a system for appointing food control laboratories (*EC Regulation* 882/2004) and National Reference Laboratories (whether in Montenegro or externally) to provide a co-coordinated and overarching approach to food safety testing (*GTZ,* 2007).

The Montenegrin Food Law is partially harmonized with the EU Regulation 178/2002, but still further alignment is required. In particular some aspects are still to be clarified, like for instance the separation between risk management and risk assessment that is not fully in compliance with EU principles.

Legislation included in the so called „EU Food Hygiene Package“ has been partially transposed in Montenegrin legislation and missing laws are under preparation. At the moment following rulebooks were adopted in 2008:

- Rulebook on Hygiene Requirements for Food of Animal or Plant Origin (OJ of Montenegro, No. 14/09) transposed Regulations 852/2004;
- Rulebook on Special Hygiene Requirements for Food of Animal Origin (OJ of Montenegro, No. 14/09) transposed Regulations 853/2004;

New secondary legislation is being developed, but will not come into full effect until 2012 according to existing plans. A detailed schedule for the preparation of the secondary legislation is outlined in the National Programme for Integration 2008–2012 by the Montenegrin Government (2008).

The integration of data systems for food safety needs to be developed. There is, for example, no beef labelling and tracing system to link with the new animal identification system. There is no unified data information system linking border posts, laboratories, and the register of food processing and marketing establishments.

Due to the investments in recent years there are several advanced meat processing companies with state-of-the art equipment. But, the Montenegrin meat processing industry includes also many small-scale meat processors. Their technology is generally not ‘EU compliant’. Those companies are serving only the domestic markets.

Several processing units are not in compliance with EU requirements concerning the premises, facilities, equipments or general management. One of the main reasons can be found in the high costs necessary for the renovation of the establishments, premises and equipment up to EU standards. In addition, the lack of infrastructure, such as systems for the treatment of waste water, is one of the biggest concerns.

A deadline of 1st January 2010 was declared by Government policy in order for food companies to become compliant with food law and HACCP. As not all meat processors were able to respect the deadline, the final term is being extended. However, a system for official control and monitoring on implementation and use of HACCP is not in place. In addition, there are no officially approved or recommended manuals or guides for good hygiene practice, good manufacture practice or HACCP in the country apart from a guideline developed for meat industry under GTZ comprising EU and international requirement and practice on self control of the meat industry (*GTZ,* 2006).

There is a high number of constrains in the meat sector. Some of the most important ones are the lack of technical knowledge and adoption of improved technology and management practices in many meat processing enterprises, deficiencies in plants not having EU standards related to technical design, equipment, operation methods, professional staff and inadequate level of internal control systems, incomplete HACCP implementation, inadequate construction of the buildings, older equipment, etc.

There is little specific depth to the current Montenegrin legislation and it lacks precise definition. Fully approximation of Montenegrin and EU legislation will be a lengthy process as there is little specific depth to the current legislation it lacks precise definition, it is not in line with Codex standards and has multiple missing links.

One of the most critical issues for the primary and secondary processing is the safe disposal of ABPs (animal by-products) for the protection of environment and the health of humans and animals. EC Regulation 1774/2002 deals with ABP management in connection with Regulation 999/2001 on TSE control and eradication.

The area of animal welfare is governed by the Law on Animal Welfare (*OJ, MNE, 17/08,* 2008). This Law regulates rights, obligations and responsibilities of physical and legal persons for animal welfare protection in relation to animal protection from torture, during keeping and breeding, killing and slaughter, performing of surgeries on animals, transportation and carrying out of experiments, rules of animal treatment, as well as other issues relevant for animal welfare protection. The Law sets forth general provisions for transposition of the EU legislation into secondary legislation for the purpose of full harmonization of this field with the EU legislation.

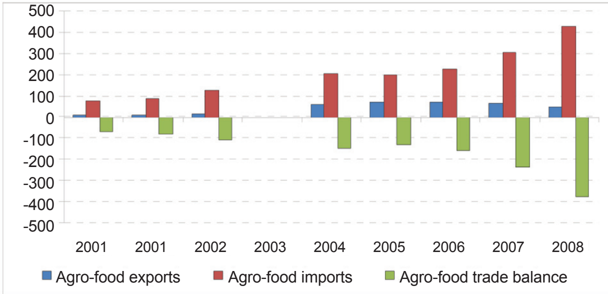

Figure 2. Agri-food trade (in EUR million); 2000–2008;
Slika 2. Trgovina poljoprivrednim proizvodima (u milionima Eura); 2000–2008

5. Import and Export of Meat and Live Animals

Montenegro is a net importer of food products. The high dependency on food imports is shown in the share of agricultural products in total import which exceeds two times their share in export. Agro-food trade is growing continually, import is significantly increased in the last few years (see figure below), while export was declining in the last three years. Thus, as consequence of those trends, the import deficit is growing.

The export value of agro-food products in 2008 amounted to EUR 46.7 million. More than half of this value (EUR 25.9 million, or 55.5%) goes to one group of products – beverages. Amongst beverages, the most important is wine (EUR 17.2 million, or 66%). Other relevant export products are meat (EUR 2.9 million); vegetables (EUR 3.99 million); fruits (EUR 3.22 million); meat preparations (EUR 2.30 million) and tobacco (EUR 4.30 million). Taken together, meat and meat preparations are second ranked in total food export (EUR 5.1 million or 11.1%) (*Monstat,* 2009).

The breakdown of the total import valued at EUR 426 million in 2008, shows that major tariff groups are meat (EUR 58.9 million or 13.8%); beverages (EUR 56.3 million); dairy produce (EUR 38.7 million); preparations of cereals (EUR 27.6 million); processed meat (EUR 24.9 million) and preparations of cereals (EUR 23.6 million) (*Monstat,* 2010).

The development of import and export of live animals (Chapter One of Customs Tariff), meat of all species (Chapter 2 of the CT) and meat preparations (Chapter 16 of the CT) over the last five years is presented in the next two tables.

Data presented in the above table show constant increases of import until 2008. In 2009, total import was similar to that of the year before, for poultry meat and meat preparations it was even lower than the year before. Pig meat is the main import commodity; it has a share of around 70% in the total import.

Export of meat and meat preparations is very modest, but the trend is positive. The main export commodities are smoked products and meat preparations. It is realistic to expect that the positive trend will continue, especially for smoked ham and meat preparations. The export is still only to the CEFTA countries, Serbia, BandH, Macedonia, small quantity to Albania. Once technical barriers are removed for export to EU countries, lamb meat will also be exported.

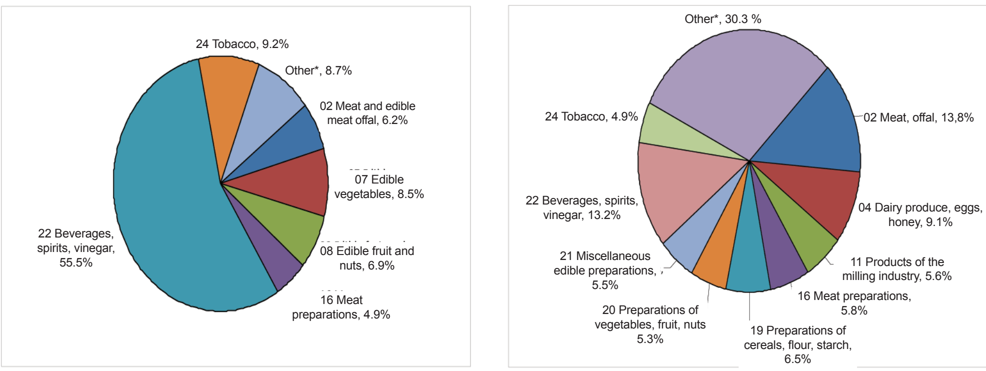

Figure 3. Composition of agri-food exports (left) and imports (right) by main commodity group
Slika 3. Profil izvoza poljoprivrednih proizvoda (levo) i uvoza (desno) prema glavnim grupama proizvoda

Table 2. Data on import of live animals, meat and meat preparations
Tabela 2. Podaci o uvozu živih životinja, mesa i proizvoda od mesa

Product/ Proizvod	2005		2006		2007		2008		2009	
	Qty, tons/ Količ. t	Value/ Vred., 000 €	Qty, tons/ Količ., t	Value/ Vred., 000 €	Qty, tons/ Količ., t	Value/ Vred., 000 €	Qty, tons/ Količ., t	Value/ Vred., 000 €	Qty, tons/ Količ., t	Value/ Vred., 000 €
Live animals/ Žive životinje	**1,704**	**3,027**	**2,781**	**4,726**	**3,410**	**4,683**	**10,681**	**15,965**	**9,690**	**16,174**
Beef & Veal/ Goveđe i teleće meso	474	2,480	922	3,315	2,260	5,935	3,375	11,223	3,193	11,177
Sheep & Goat/ meat Ovčije i kozije meso	0	3	0	26	58	239	126	545	97	481
Pork/Svinjsko meso	4,907	20,527	6,484	26,241	12,860	26,316	18,028	38,262	17,878	39,232
Poultry meat/Živinsko meso	1,557	2,214	1,213	1,754	1,973	3,267	3,740	7,286	3,666	6,728
Other (incl. dried & smoked prod.)/ Ostalo (uklj. Sušene i dimljene proizvode)	154	735	169	1,028	799	1,336	663	1,546	944	2,234
Total meat (Chapter2)/ Ukupno mesa (pogl. 2)	**7,092**	**25,959**	**8,788**	**32,364**	**17,950**	**37,093**	**25,932**	**58,862**	**25,778**	**59,852**
Meat preparations/ Proizvodi od mesa	1,891	6,163	1,489	5,956	4,456	11,802	6,750	20,781	5,448	17,237
Total meat & preparations / Ukupno proizvoda od mesa	**8,983**	**32,122**	**10,277**	**38,320**	**22,406**	**48,895**	**32,682**	**79,643**	**31,226**	**77,089**

Source: Ministry of Agriculture and Rural Development – MARD / Izvor: Ministarstvo poljoprivrede i ruralnog razvoja

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	Qty, tons/ Količ.	Value/ Vredn., 000 €	Qty, tons/ Količ., t	Value/ Vredn., 000 €	Qty, tons/ Količ., t	Value/ Vredn., 000 €	Qty, tons/ Količ., t	Value/ Vredn., 000 €	Qty, tons/ Količ., t	Value/ Vredn., 000 €
Live animals/Žive životinje	**128**	**36**	**6**	**6**	**36**	**14**	**12**	**4**	**69**	**13**
Beef & Veal/Goveđe i teleće meso	19	43	20	49	7	32	36	112	0	2
Sheep & goat meat/ Ovčije i kozje meso	0	0	0	0	0	1	0	0	0	0
Pork/Svinjsko meso	117	225	47	72	128	31	37	43	49	126
Poultry meat/Živinsko meso	1	1	0	1	10	19	21	34	4	1
Other (incl. dried & smoked prod.)/ Ostalo (uklj. Sušene i dimljene proizvode)	307	1,341	213	1,594	421	1,668	745	2,713	607	2,816
Total meat/ Ukupno mesa	**444**	**1610**	**280**	**1716**	**566**	**1751**	**839**	**2902**	**660**	**2945**
Meat preparations/Proizvodi od mesa	87	389	45	203	290	1054	617	2203	755	2692
Total meat & preparations / Ukupno proizvoda od mesa	**531**	**1999**	**325**	**1919**	**856**	**2805**	**1456**	**5105**	**1415**	**5637**

Source: Ministry of Agriculture and Rural Development – MARD / Izvor: Ministarstvo poljoprivrede i ruralnog razvoja

6. SWOT analysis of meat processing sector

The main strengths and weaknesses, as well as opportunities and threats of the meat industry, with specific focus on processing side, can be summarised in the following table.

7. Future Meat Sector Developments

Since the average size of livestock farms in Montenegro is currently too small it is important to facilitate the structural adjustment during the next years through support programmes focused on economic viable farm structures, including the support

Table 4. SWOT analysis of the meat processing sector
Tabela 4. SWOT analiza sektora za preradu mesa

Strengths
– Competitive processing of meat and meat products
– Traditional production and consumption of processed and Smoked Products
– The tradition in production and well known technology
– Consumer preference for local branded products
– Readily available labour force at affordable prices
– Quality Products with export potential to the lucrative EU market
– Strong Local Market and tourism related consumption
– Recognizable branded products and products origin
– Affordable product at retail level
Weaknesses
– Raw material is mainly imported
– Insufficient level of compliance with environmental and hygiene standards
– Lack of food safety training within the sector
– Small fragmented agricultural farms to produce continuous supply of raw material
– Lack of Market infrastructure
– High Market prices of domestic production due to high production costs
– Lack of added value in fresh meat products
– Insufficient product diversification
– Insufficient knowledge of sanitary standards
– Insufficient awareness of environmental protection
Opportunities
– Market potential (EU Export and Domestic)
– Domestic supply, a vast unutilized area of pasture land is available for veal and lamb production
– Higher value products as national and international markets are developed
– Potential for the increase of competitiveness and safety of meat products
– Greater variety of value added cuts for the export and retail market
– Ongoing restructuring of the sector by establishing new production units in line with EU requirements
– Existence of internationally competitive processing with EU export licenses
– Increased market opportunities if Community standards are met
– Regionally recognised branded processed meat products
– Increase of meat consumption
Threats
– Non-compliance with relevant European community standards
– Imported products will saturate the market with Quality /Safe products at lower prices
– Non–compliance to ecological conditions and situation on animal welfare and husbandry
– Costly investment in restructuring and upgrading
– Lower level of quality and safe products due to outdated processing equipment
– No competitiveness of meat processing industry on global markets
– Capital investment o High interest rates from Bank Loans o Insufficient Bank Support
– Insufficient skill and food safety training absorbed by personnel
– Insufficient co-operation among competent state bodies

for the establishment of producer groups (machinery rings etc). Besides competiveness also overall compliance of livestock farming with national and EU standards regarding animal health and welfare, environmental protection, food safety and occupational safety has to be improved considerably.

The meat processing industry should be supported in their dynamic development targeting their competitiveness in the CEFTA countries and the future EU market. Important strength for the domestic market is the strong link to the consumer through own retail activities.

With regard to food safety, environment protection and animal welfare standards, facilities at many meat enterprises require upgrading to comply with EU requirements, especially in small enterprises. The industry needs support to raise standards for hygiene and environmental protection. Areas for intervention are in addition to further modernizing the production processes, production hygiene as a prerequisite for EU approval and increasingly as a prerequisite to access export markets.

Montenegro will also have to introduce carcass classification system, fully compliant with the EU regulations, in order to better fit production to market demand.

Conclusion

Taking in consideration the overall situation, the future interventions in the sector should be oriented mainly to the support of the structural adjustment in the livestock sector, increasing of the overall competitiveness and productivity through investments for application of modern production techniques and technologies and better management, improving the status of attainment of national and EU standards, improvement of the awareness, knowledge and skills in the sector by vocational training and improvement of the performance and offer of the service providers.

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Status industrije mesa u Crnoj Gori

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R e z i m e: Kvantitativni i kvalitativni parametri sektora proizvodnje mesa u Crnoj Gori, sa stanovišta proizvodnje i potrošnje, su predmet analize ovog rada. U Crnoj Gori, stočarstvo je fokusirano na uzgoj goveda, ovaca i koza, a u manjoj meri svinja i živine. U prethodnoj deceniji, počela je ekspanzija industrije mesa u Crnoj Gori. Postoje dva preduzeća, srednje veličine, i 20 do 30 manjih porodičnih preduzeća, koja posluju u ovom sektoru. Sve klanice i objekti za preradu mesa su u privatnom vlasništvu. Cilj Crne Gore je poboljšanje i unapređenje sistema bezbednosti hrane u zakonskim okvirima koji su usklađeni sa Evropskim i međunarodnim standardima. Podrška je neophodna za strukturna usklađivanja u stočarstvu, povećanje ukupne konkurentnosti i produktivnosti, poboljšanje statusa u ispunjavanju nacionalnih i EU standarda i poboljšanje proizvodnih rezultata i ponude usluga.

***Ključne reči**: životinje za klanje, proizvodnja mesa, industrija prerade mesa, EU standardi.*

Paper recieved: 24.05.2011.