MEAT and MILK
in Zlatibor Region
Sector analysis

PSD PRIVATE SECTOR DEVELOPMENT PROGRAMME

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC

РЕГИОНАЛНА РАЗВОЈНА АГЕНЦИЈА „ЗЛАТИБОР" УЖИЦЕ

Executive summary

PSD is a three and a half-year- long project (May 2009 – December 2012) implemented by the Regional development Agency Zlatibor on the territory of the six local self-governments of Zlatibor Region: Arilje, Nova Varos, Priboj, Prijepolje, Cajetina and Uzice. The project is financed by the Swiss Government through the Swiss Agency for Development and Cooperation (SDC) with an amount of 1.65 million CHF.

The overall objective of the project is to reduce poverty and improve economic position of all the actors in the value chain of SMEs, by creating opportunities for new jobs and preserving the existing ones through the system of multiphase interventions of support for the development and growth of the SME sector. Three sectors have been chosen: tourism, meat and milk and fruit processing since all three have a very important role in generating profits and employment in the region.

The meat and milk sector has been chosen for the following reasons:

- **Relevance:** It is estimated that almost 13,000 people (30% of the total agricultural population), i.e. 3,700 households (24.2% of the total number of households) make profit through livestock as their primary activity. Annually, 121 million litres of fresh milk is produced in the Region (8.2% of the total production of Serbia), i.e. over 4,000 tons of fresh meat and 1,500 tons of processed meat products.

- **Potential for creating profit and employment:** In Zlatibor Region, there are 17 dairies which deal with milk production and processing, as well as 44 slaughterhouses which deal with meat production and processing. In Zlatibor Region, there is 11% of the total number of dairy cows (481,083 cows) in Serbia. The Region is well known for the traditional production of dairy products (kajmak and cheese) and processed meat products (pork and beef smoked ham), with considerable recognizability and participation in the domestic market. The potential for creating profit and employment is in intensifying livestock production with an adequate approach to increasing primary production quality and improving competitiveness of traditional milk and meat products, which would, on the one hand, lead to the improvement of the livestock and increase in productivity, and on the other hand, it would improve the market position of mainly traditional milk and meat products. This would create conditions for the depopulation of rural areas and profit increase with potentially new resources through linking with other sectors such as rural tourism, handcrafts, catering etc.

- **Intervention potential:** In the Region, there are several recognized drivers of change with a significant market position. With the resources provided by PSD and in cooperation with the leaders in the production and processing of milk and meat, remarkable results could be achieved through interventions directed towards system changes by building up human resources in primary and secondary production, partnership and associations at different levels of production and processing, spread of good production practice, protection of geographical indications and promotion of typically regional products.

By applying the M4P approach (Making Markets Work for the Poor), PSD appears as a facilitator of the sustainable system change in the market with the aim to contribute to the creation of profit and employment. It is oriented towards creating a long-term system change which will make the market more efficient and more available and contribute to the improvement of the economic situation of all the actors in the value chain. That is why PSD puts an emphasis on recognizing the real causes of the unfavourable market situation, which takes it beyond the framework of conventional projects in which development is based on solving the symptoms. By using the M4P approach as a directive in process facilitation, PSD tends to contribute to establishing a mechanism for improving cooperation in the business sector, creating public-private dialogue and increasing availability of business services. PSD will try to achieve system change in the meat and milk sector within two areas of intervention:

Improvement of primary production quality. The project will tend to support activities which will contribute to the development of cattle productivity, and thus create opportunities for making more profit and employment. Increase in productivity can be achieved by developing the genetic potential of cattle in Zlatibor Region, where veterinary stations providing artificial insemination services have the most important role. In order to achieve the development of genetic potential, it is necessary to create strong connections between veterinary stations and Centres for artificial reproduction and artificial insemination so that flow of information would be improved with the aim to raise producers' awareness about the importance of investing in the genetic potential of cattle, marketing of high quality reproductive material would be improved and distribution channels of high quality material would be developed.

Strengthening the competitiveness of traditional meat and milk products. The possibility for creating profit and employment is seen in strengthening the competitiveness of traditional meat and milk products in order to meet the market demands. It is particularly important to connect producers with markets at the regional level, such as the market of tourism and catering (hotels, restaurants, etc.). In this respect, the project will support activities on creating a regional brand which would include traditional milk and meat products, and which would be used as a quality control mechanism.

1. Context

The following chapter gives a brief overview of the project called the Development of the private sector in Southwest Serbia (hereinafter PSD), with a special attention to the uniqueness of the approach which is used in market analysis, as well as to the criteria for the milk and meat sector selection.

1.1. The Project of Private Sector Development (PSD) - Overview

PSD is a three and a half-year- long project (May 2009 – December 2012) implemented by the Regional development Agency Zlatibor on the territory of six local self governments of Zlatibor Region: Arilje, Nova Varos, Priboj, Prijepolje, Cajetina and Uzice. The project is financed by the Swiss Government through the Swiss Agency for Development and Cooperation (SDC) with an amount of 1.65 million CHF.

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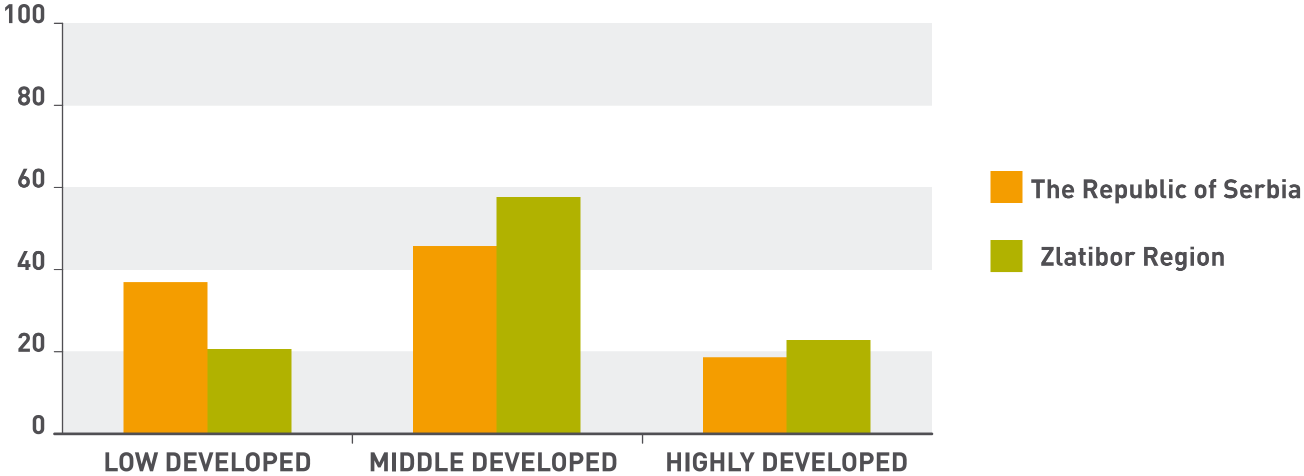
RDA Zlatibor has a facilitator role – it gives support to the major actors in the value chain with the aim to create system changes in order to ensure sustainability of the initiated process.

1.2. Why did SDC choose Zlatibor Region

Zlatibor Region is situated in the southwest part of the Republic of Serbia. It covers an area of 6,141 км2, which is 6.9% of the territory and ranks it the largest region in Serbia. According to the 2002 census, 313,396 people live in the Region, which is 4% of the total population of the country, with the population density of 51 per $км^2$. In terms of administration, Zlatibor Region includes the city of Uzice and the municipalities of: Sjenica, Prijepolje, Priboj, Nova Varos, Bajina Basta, Cajetina, Pozega, Arilje and Kosjeric.

The industry of the Region is characterised by the developed metal industry, civil engineering, trade, agriculture and forestry. The sectors of financial services, tourism and crafts are also developed. In terms of technical and technological development, the situation is as it follows:



The industry of Zlatibor Region is export oriented with a surplus in export-import activities. In 2010, Zlatibor Region had a surplus of 34 million USD in export-import trade. In export, the dominant products are those obtained in coloured metals processing (aluminium and copper), fruit, military industry products (military and sporting ammunition) and final textile products.

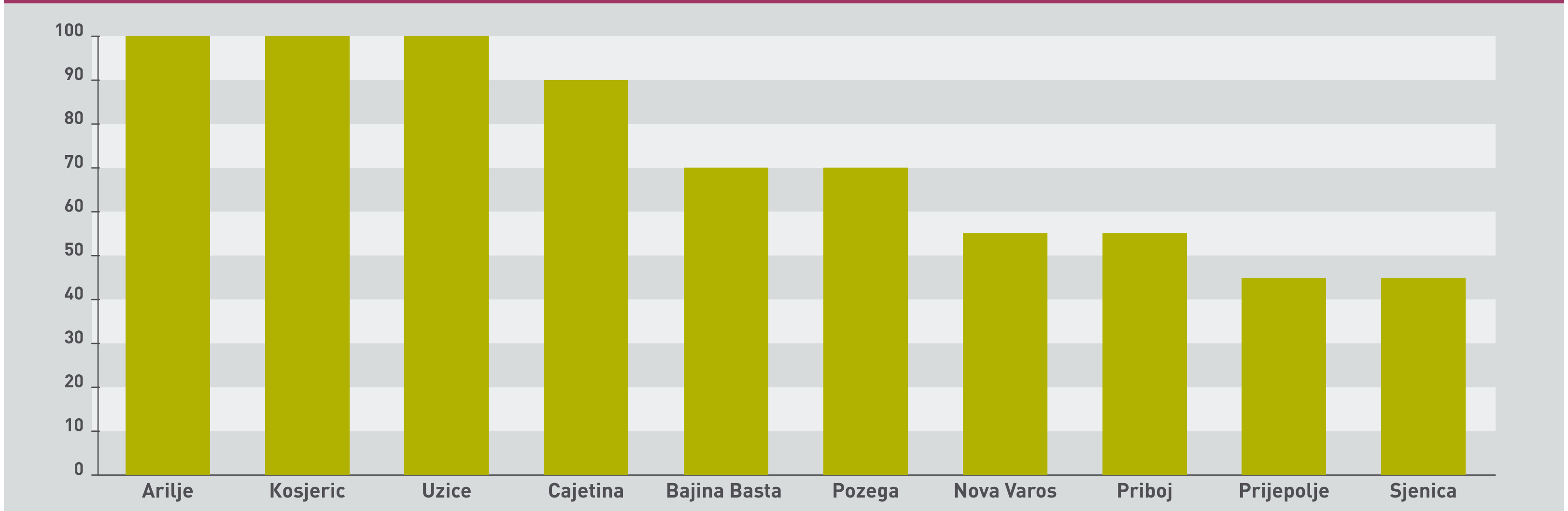
In the private sector structure, SMEs are the dominant with the participation of 84%, whereas the remaining 16% is covered by large companies. As many as 78% of small and medium enterprises work in the tertiary sector, wheras 18% of them work in the secondary sector and 4% in the primary sector.

The existing business environment is not yet stable for SMEs development, which usually deal with liquidity, profitability and competitiveness problems. These problems are particularly expressed during the world economic crisis, present, also, in Zlatibor region, but also because of the presence of gray economy, disloyal competitiveness and monetary risks. SMEs sector is dealing with a numerous problems to survive in the market game, and preserve employees.

Agricultural production is developed in accordance with the natural characteristics of the Region, and in terms of its potentials, it is still underdeveloped. Fruit-growing (plum, apple and berries), livestock production (cattle-breeding and sheep-breeding) and farming (potato) are the dominant branches. The most developed branches in agro industry are: processing of fruit by freezing it, slaughterhouse industry, meat processing and production of processed meat products, production of: milk and dairy products, brandies with protected geographical indications, herbs and forest fruits, but there are also capacities for the production of juices, fruit syrups, jams, marmalades, stewed fruit and vegetable products. In livestock production, most farms are small of up to 3-5 ha. The existing processing capacities are insufficiently used (20-30%). Zlatibor Region participates greatly in the total number of cattle and sheep in Serbia.

There are huge discrepancies in the development level of the municipalities of the Region. In terms of HDI (Human Development Index), according to the level of municipality development (and according to the categorisation which is the basis of the national policy of regional development):

LEVEL OF DEVELOPMENT OF **LOCAL SELF-GOVERNMENTS** IN ZLATIBOR REGION IN %



It is noticeable that some parts of Zlatibor region are characterised by high poverty rate, while the average unemployment rate is 32.95% (2010). The lack of adequate opportunities for income and job creation makes young people to seek for their chances in urban centres (Belgrade, Novi Sad). Migrations are the great threat to the socio-economic development of this area, and existing SMEs are dealing with the lack of qualified workforce. The average salary in the region is below the republic average. Disparities between rural and urban area regarding poverty are extremely big. Vojvodina and Zlatibor region are characterised by the biggest disparities.

Conclusion - the high migration rate (especially among the youth), high unemployment rate, low salaries (particularly in rural areas) and large discrepancies in the development of municipalities lead to the conclusion that it is necessary to have a development intervention which would create sustainable sources of income and employment in Zlatibor Region, particularly for the youth. These are the reasons for which SDC supports the PSD programme implemented by RDA Zlatibor.

1.3. Market development approach

PSD project uses the M4P approach (Making market work for poor) to the market development, which is widely accepted by development agencies around the world. PSD project is one of the projects which are becoming more and more common and which are oriented towards achieving a long-term system change in the market which would enable a source of income and employment for a large number of people. PSD is a pioneer project in Serbia which promotes this approach based on the following four elements:

Understanding of market systems: It is based on intensive research and analysis in order to develop essential understanding of the target market and identify obstacles in the environment, due to which the difference between symptoms and causes may be seen. This approach enables the project to provide clear strategic advice based on information to all the interested parties (market agents, municipality representatives, etc.).

Targeting systemic change: The focus on the causes of the problem rather than on the symptoms enables understanding of the unfavourable and/or insufficient functioning of the market, the position and capacities of different agents in both the market itself and the evironment, which makes the system change possible. This focus distinguishes PSD programme from conventional development programmes which aim at providing direct solutions to enterprises, which limits them in the range of their activity and sustainability.

Focusing on sustainability: Directing interventions towards system solutions makes sustainability the central point of this approach. The project regards sustainability in a broader sense as a possibility of the market to offer and use different goods and services by the target group even after the intervention period.

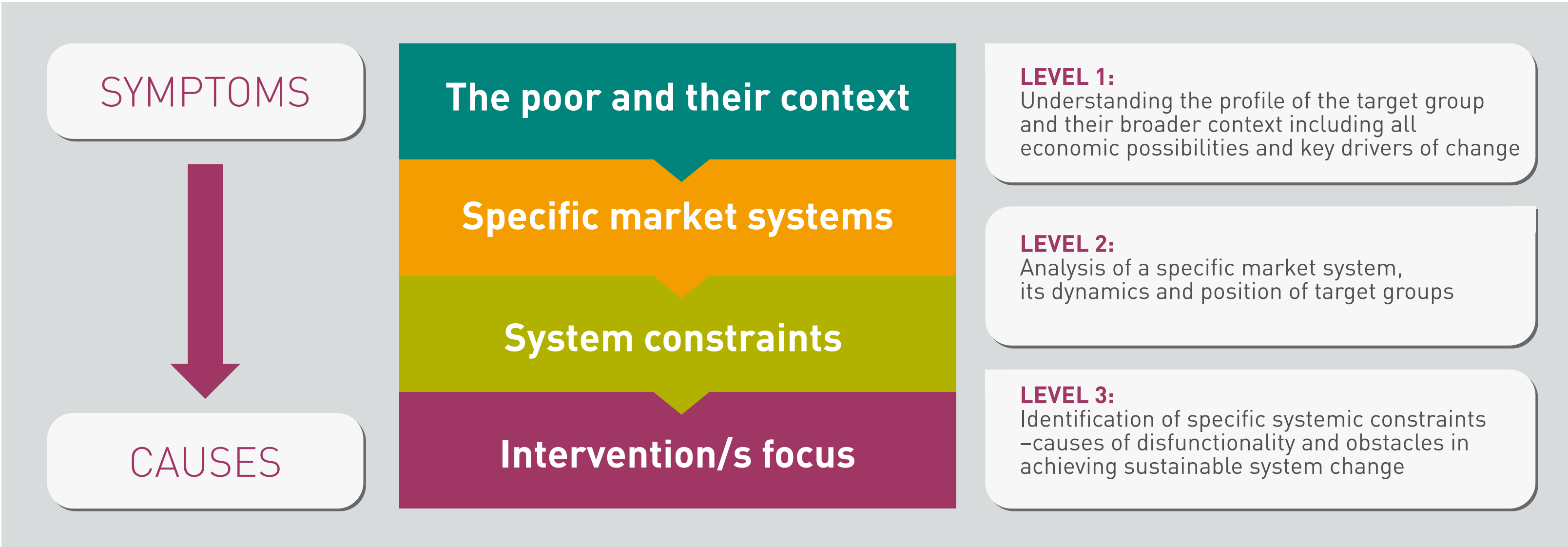
Thus the directives in work are the following two questions:

1) Who is going to be responsible for performing the key market functions in the future, and
2) How is it going to be financially sustainable

Intervention through facilitation: Through the PSD programme, RDA Zlatibor continues its strategic reorientation from a direct service provider for SMEs to a facilitator of the regional socio-economic development. This leads to its more prominent strategic role as a catalyst of the development processes in the Region, based on market research and analysis so that interested parties would be provided with strategic directives and motivated for taking over responsibility in performing particular functions. Essentially, facilitation means stimulating others for actions based on their motives and capacities. This is how the programme is supported by RDA Zlatibor in strengthening its strategic and facilitating role in the process of EU integrations.

The whole process of intervention is illustrated in the Overview. In accordance with it, the PSD project started working on the Analysis of context in target municipalities in May 2009, which aimed at better understanding of the target groups (the young, unemployed, women, the poor) and their socio-economic context. As a result of this phase, the project selected three sectors for further intervention: tourism, fruit, meat and milk

Figure 1. M4P – Principles and framework



Using a stage approach which means that interventions will be applied gradually and linked to one another, the project made a deep analysis of the market in the meat and milk sector (level 2 in the chart, whose results are summarised in this report) in order to understand the structure and dynamics of the sector as well as the difficulties which make intensive and inclusive growth impossible. As a result, the project has defined two key areas of intervention (see chapter 4), which will be the major focus of the project in the following year.

1.4 Why the milk and meat sector?

- **Relevance for local economy**

In the structure of Serbian industry, agriculture has an important position with nearly 20% of gross national product of Serbia. The need for its spatial development has been materialised with the Spatial plan of the Republic of Serbia, which defines **Zlatibor Region, being a mountainous region, as a cattle-breeding area:**

- 43% of the territory is covered in pastures of a high nutritive value for cattle-breeding;
- 30% of the territory is covered in meadows, which is a raw material base (hay) for the nutrition of cattle in the winter;
- 21% of the territory is plough land which represents potential for good results in the growth of field crops.

In accordance with the spatial orientation of agricultural production, market production of the mountainous area of Zlatibor Region consists of mixed cattle-breeding as a main branch, whereas the complementary branch is fruit-growing with an emphasis on organic production. Mountainous regions are directed towards pasture livestock production with smaller areas directed towards berry fruits. This ranks livestock production the dominant activity in the Region. It is estimated that almost 13,000 people (30% of all agricultural population), i.e. 3,700 farms (24.2% of all households) has income from livestock production as their primary activity. Over 121 litres of fresh milk (8.2% of the total production in Serbia), 4,000 t of fresh meat and 1,500t of processed meat are produced in the Region per year.

- **Profit and job creation potential**

Livestock production of Zlatibor Region is of a mixed type since it is characterised by two production directions: 1. Production and processing of milk and 2. Production and processing of meat. In Zlatibor Region, there are 17 dairies which deal with the production and processing of milk, and 44 slaughterhouses which deal with the production and processing of meat. According to the Statistical Office of the Republic of Serbia (SORS), in Zlatibor Region there are 11% of the total number of dairy cows in Serbia (481,083 cows), which ranks it first with a 4% - advantage over Raska Region, which is in the second place. This position enables the Region to have a leading competitive role in the production and processing of milk. In the Region, there is the traditional production of dairy (kajmak and cheese) and processed (smoked pork and beef ham) products which are easily recognisable and present to a large extent in the domestic market. **Zlatibor Region has a leading position in the production of beef with 8.4% of the total beef production in Serbia** while sheep and pigs are breathed for own needs and in further analysis will not be observed. In addition to all this, this region is not polluted by chemicals, which enables the production of meat and milk to be of high biological quality, with an emphasis on pasture livestock production. The potential for creating income and employment is in intensifying livestock production with an emphasis on better use of meadow and pasture potentials. With an adequate approach to the increase in primary production quality and improvement of competitiveness of traditional meat and milk products, there would be the development of the livestock fund and productivity increase on the one hand, and on the other hand, the market position would be improved, particularly of traditional meat and milk products. This would create conditions for the depopulation of rural areas and income increase with potential additional sources through connections with other sectors such as rural tourism, handcrafts, catering, etc.

- **Intervention potential**

The largest portion of livestock production is done on family farms (with a dozen of beef cattle or several dozens of pigs and sheep). Small farmers are generally of inadequate age or education, have low economic strength, low investment potential and are completely absent from the market chain based on long-term contracts between input suppliers, cattle farmers and slaughterhouses. There are no powerful associations of cattle farmers which could be partners to the Government, slaughterhouses, exporters, dairies, and which would, at the same time, have enough capacity to lobby and negotiate in order to improve conditions in primary agricultural production and contribute to the increase in profit. In the Region, there are a few recognised change agents with a significant market position. With the resources provided by PSD and the cooperation with the leaders in the production and processing of meat and milk, remarkable results could be achieved through interventions aimed at system changes and based on building up human resources in primary and secondary production, partnership and associations at the various levels of production and processing processes, spread of good production practice, protection of geographical origin and promotion of traditional regional products.

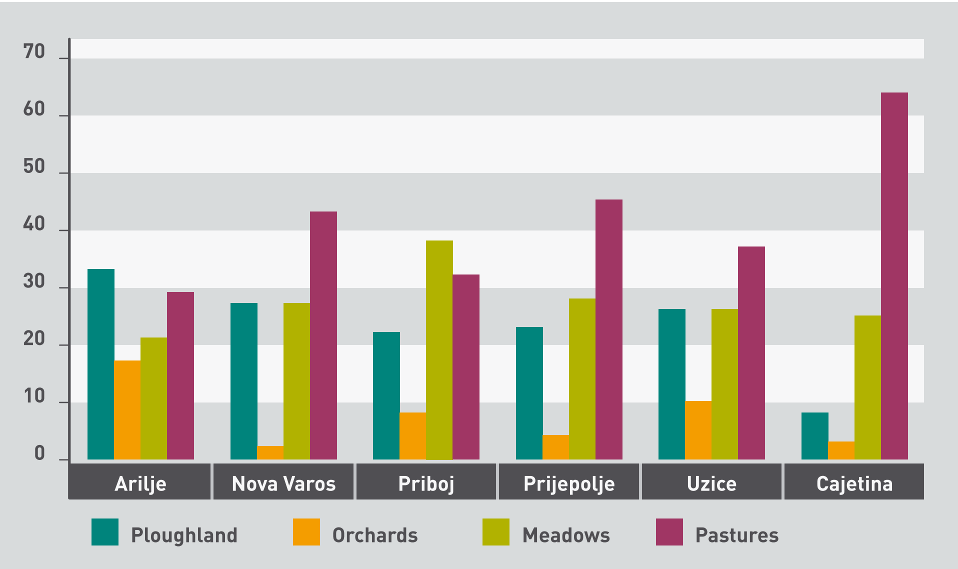
2. The analysis of livestock in Zlatibor Region

2.1 Overall trends in livestock production in Zlatibor Region

Despite excellent natural conditions for the development of livestock production, in the last 15 years in Serbia, its role in the overall industrial development has been reduced, resulting in the decline in the livestock as well as in meat and milk products. Namely, the participation of livestock production in the last year declined from 50% to 30%, which was accompanied by consumption decline in this sector.

This trend can also be observed in Zlatibor Region, which is naturally directed towards this industrial branch. Although the number of cattle per hectare is above the Republic average, the potentials for the improvement and development of the livestock production sector are far from being adequately used. The results obtained in the analysis to follow also prove this fact.

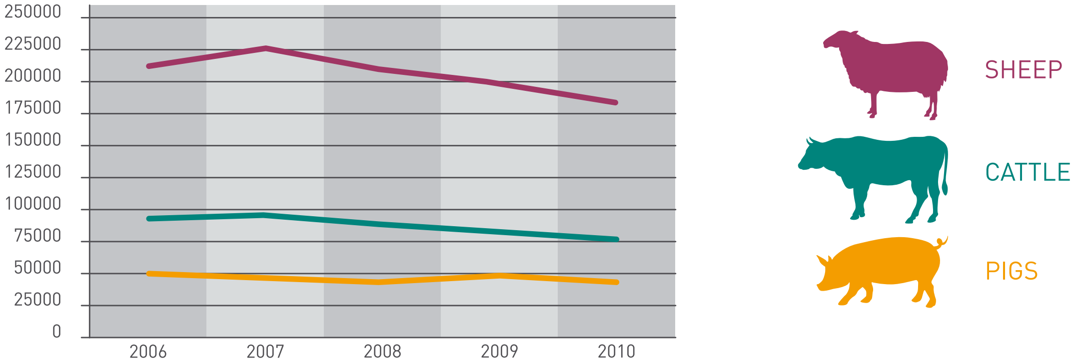
Agricultural land covers 340,101 ha of the territory of the region with the following structure in targeted local self-governments:



It is estimated that there are nearly 30,000 farms in Zlatibor Region **(55% of farms are located in target municipalities)**, of which **24% deal with livestock production as their primary activity** (3,700 in target municipalities). Livestock production is the primary source of income for 45% of farms in Nova Varos, 30% in Cajetina, 25% in Uzice, 12% in Prijepolje, 10% in Arilje and 5% in Priboj.

The animals which are dominant in the livestock production of Zlatibor Region are: cattle, sheep and pigs. Despite the fact that in Zlatibor Region there are about **8% of all the cattle in Serbia (which is by 0.01% less than in the first-ranked Macva Region)** and over 12% of the total number of sheep (first-ranked in Serbia), there has been a steady decline in the livestock in Zlatibor Region

Graph 1. Fluctuation trends in the livestock fund in Zlatibor Region in the period 2006-2010



On average, the number of cattle declines by 6,000 per year (7%), the number of sheep by 15,000 (6%), whereas the number of pigs has both positive and negative fluctuations, and, on average, remains at the same level in this period (43,000). **Thus at the end of 2010, in Zlatibor Region there were 76,149 cattle, or 12 cattle per hectare** (8.1% of the total number of cattle in the Republic), 43,343 pigs, i.e. 7 pigs per hectare (1.2%) and 182,942 sheep, i.e. 30 sheep per hectare (12.4%).

Despite the fact that Zlatibor Region is ranked first in Serbia in the number of sheep, which is the largest density, **cattle-breeding is still the most important activity in the livestock production sector,** with the income from cattle production considerably higher than the one from sheep-breeding. **10 times as much meat is obtained per cow:** about 340kg of fresh meat on average, i.e. 180kg of meat products, whereas 35kg of fresh meat are obtained per sheep, i.e. about 15kg of processed meat. In addition to this, dairy cows yield, on average, 2,300 litres of milk per cow per year (the total production in the Region is 121 million litres per year), whereas sheep yield about 23 litres (the total production in the Region is 850 thousand litres per year).

In Zlatibor Region, pork does not have an important role in the total production and processing of meat. This is mainly due to the fact that pigs are bred for family needs, whereas only a small percentage is bred for commercial purposes. In Zlatibor Region, there is no serious representative of pig production, for which one of the reasons is the inadequate production of field crops [1].

Due to the all above-mentioned reasons, pig-breeding will not be analysed in this study.

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1) On the other hand, the underdevelopment of this type of production is the result of market prices, particularly provender prices and prices of fresh meat. Since maize is the most important ingredient in pig nutrition, the change in its price has considerably affected pig production. Namely, in 2010, maize prices went up by over 100% (from 11 dinars to 23 dinars), whereas the price of a kilogram of fresh meat went up only by 10% (from 100 to 110 dinars). Frequent fluctuations in the prices of pork also contribute to the bad situation in pig-breeding. Low prices of fresh meat in the last year have led to the decline in the number of farmers who want to deal with pig-breeding, which causes minor fluctuation in the total number of pigs year after year. One of the reasons for the poor condition of pig production is also a small quantity of fresh meat, which may result from poor nutrition of pigs due to high process of provender.

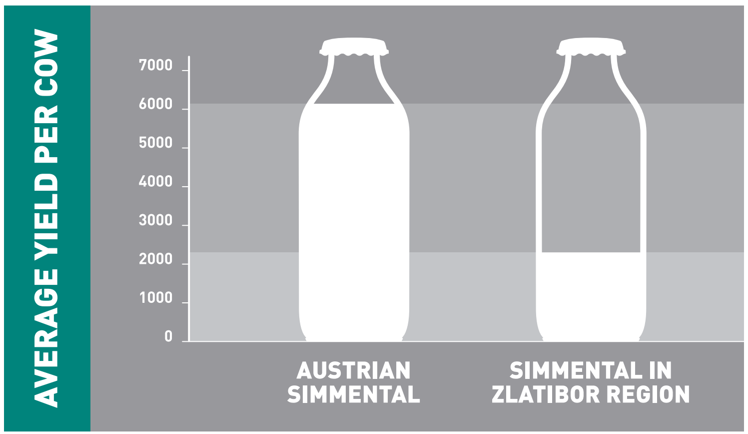
2.2 The milk and meat sector: structure, trends and dynamics

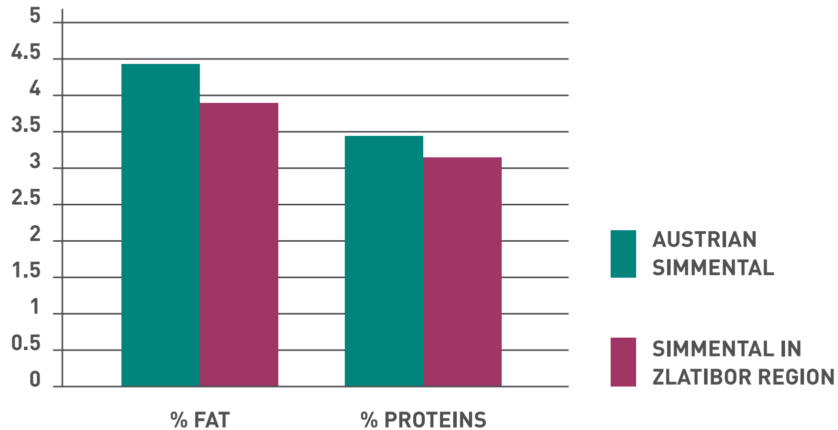
2.2.1. Trends in cattle breeding

A cattle breeding is the most important branch of livestock production in the target municipalities. According to the Statistical Office of the Republic of Serbia, on the territory of Zlatibor Region at the end of 2010 there were 76,149 cattle:

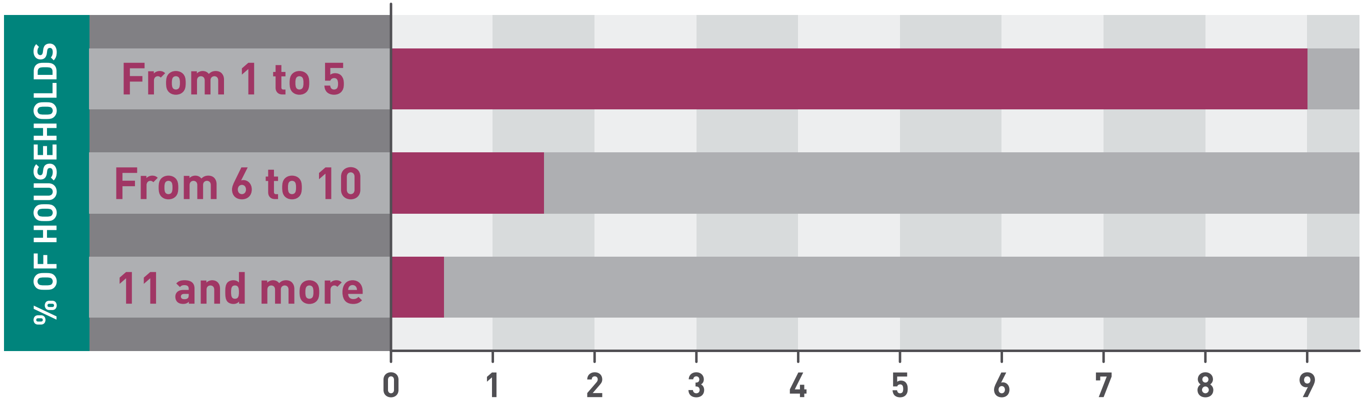
ZLATIBOR REGION	CATTLE UP TO 1 YEAR		CATTLE 1 - 2 YEARS		CATTLE OVER 2 YEARS		TOTAL CATTLE
	TOTAL	FOR SLAUGHTERING	TOTAL	FOR SLAUGHTERING	TOTAL	DAIRY COWS	
	12,271	3,334	4,849	185	59,029	53,432	76,149

The dominant breed is the Simmental which is characterised by the quality of both milk and meat. However, although it is a higher quality breed, the Simmental breed in Zlatibor Region shows differences in terms of productivity when compared to the genetically and phenol typically more advanced Austrian Simmental.





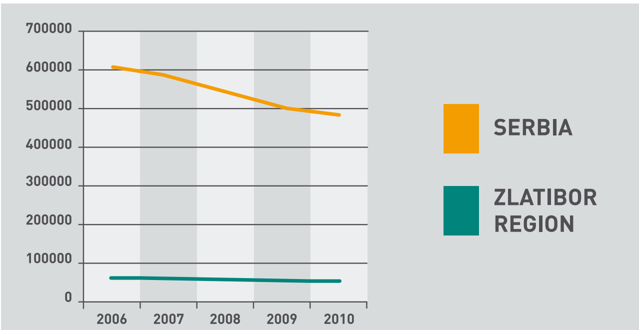
When comparing data about the productivity of the Austrian and domestic Simmentals, it can be seen that there is a possibility for improving the production of milk and milk products by selecting cattle with high genetic potential. In Zlatibor Region, the dominant farms in the livestock fund structure have up to five cattle:



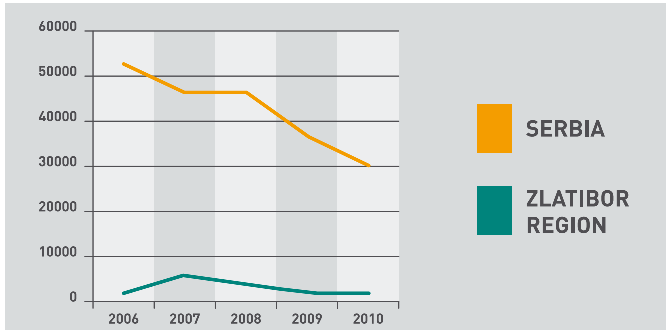
In terms of the number of cattle, the city of Uzice and the municipalities of Cajetina and Nova Varos stand out with about 10,000 cattle. In these municipalities, cattle are bred mainly for milk production. About 90% of farms which sell milk to the dairies have less than 5 cows. The largest producers with specialised production own over 20 cows and they are mostly situated in Uzice and Cajetina.

Statistics show that there is a declining tendency in the livestock fund, which can be seen in the following graphs:

Graph 2. The number of dairy cows in Zlatibor Region



Graph 3. The number of heifers in Zlatibor Region

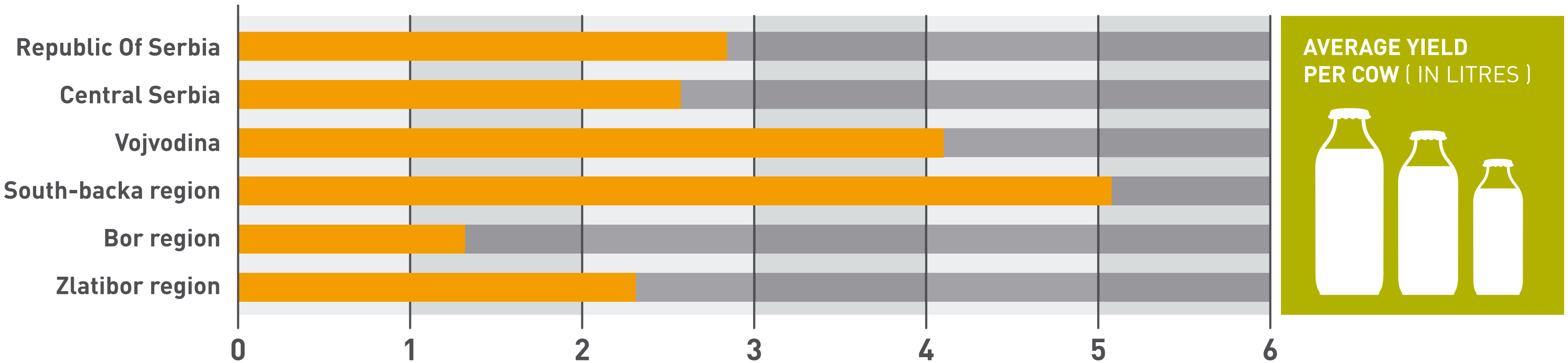


In the period 2006-2010, the number of dairy cows in Zlatibor Region declined by 15% on average (about 5% per year), whereas in Serbia it declined by 21%. This indicates a dramatic decline in the livestock and, primarily in terms of dairy cows, which is accompanied by the **decline in the number of heifers by around 30%**. This trend is a warning that it is necessary to make urgent action in order to prevent the further decline in the livestock fund. The causes and consequences of the livestock decline are shown in this analysis.

2.2.2. Milk production and processing

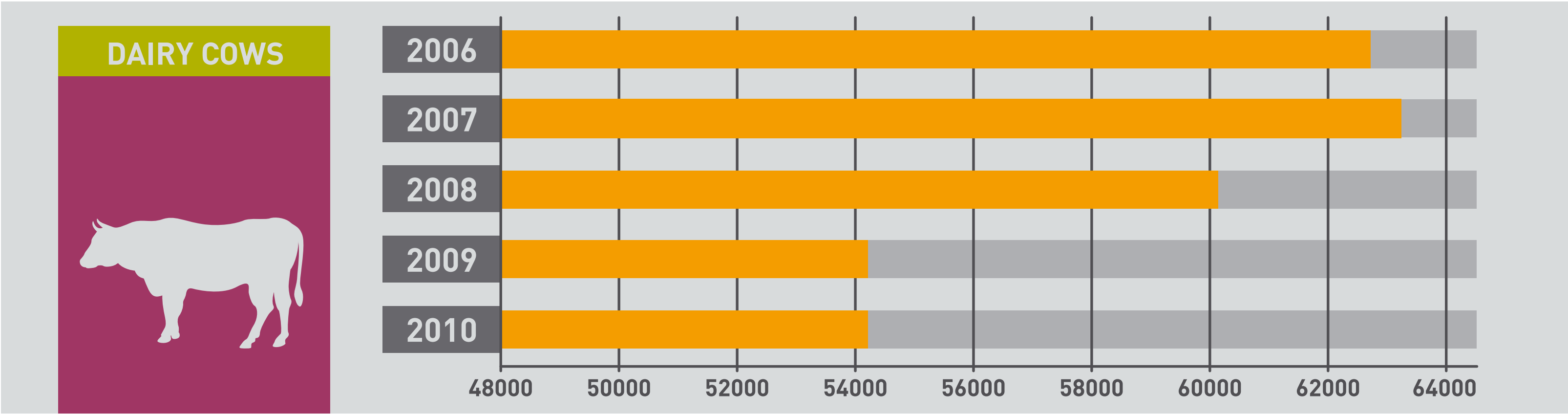
In terms of milk production, Zlatibor Region, after the city of Belgrade, ranks the first in the Republic with almost 122 million litres in 2010. With this production, Zlatibor Region makes 8.2% of the total republic production of milk.

Although Zlatibor Region ranks the first in milk production in the country, productivity per cattle is not commendable



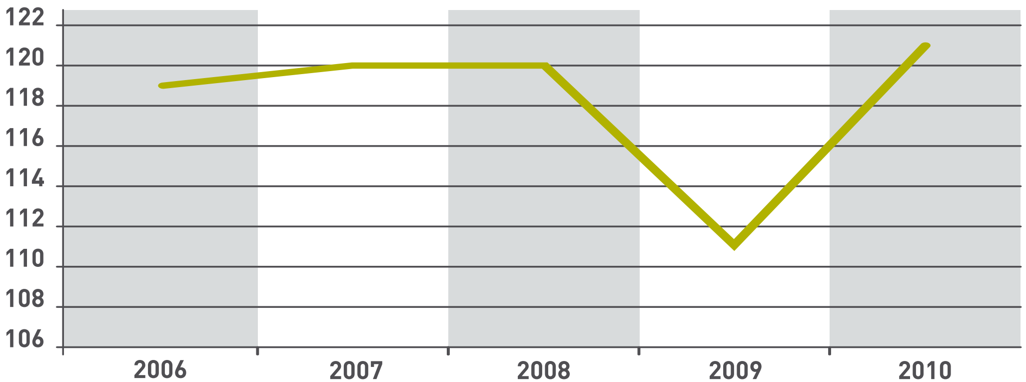
In comparison to the average yield at the republic level, in Zlatibor Region, the yield per cow is lower by 2%. In comparison to Central Serbia, the yield per cow was lower by 13%, whereas in comparison to Vojvodina, the production per cow was lower by 78%. The lowest production per cow was recorded in Bor Region, where the yield was 75% lower than in Zlatibor Region, **whereas the highest yield per cow was recorded in South Backa Region (220% higher than in Zlatibor Region).**

Trends in milk production should be observed in relation with the number of dairy cows. In last five years, it is evident that the number of dairy cows constantly declines:

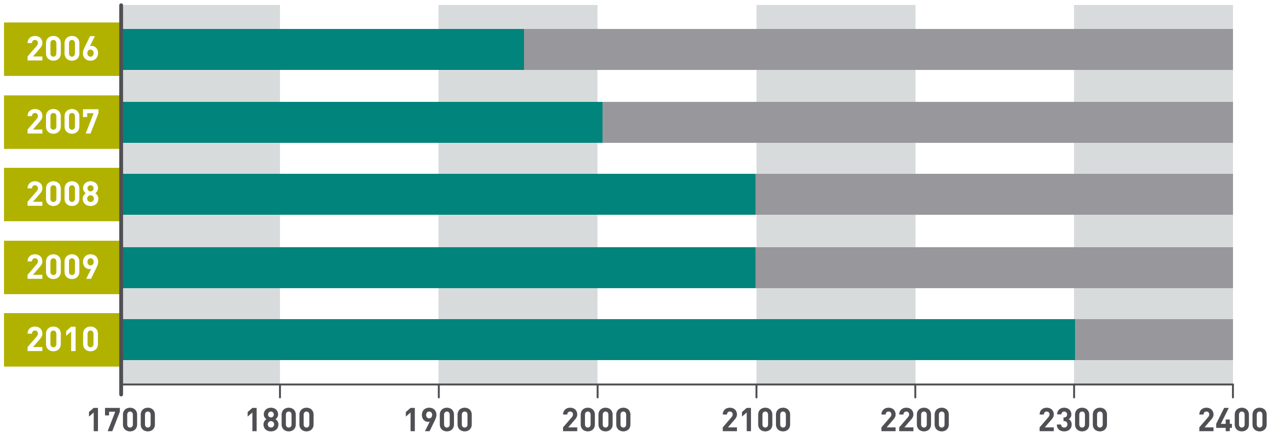


At the same time, the milk production remains at the same level. The milk production declined only in 2009 for 7,5% which is in line with the decrease in number of dairy cows for almost 9% while the production increased in 2010 and reached the level recorded in 2008.

Graph 4. Trends in milk production in Zlatibor Region (millions of litres)



It could be concluded that the **livestock structure has been improved (the participation of cattle with high genetic potential in total livestock increased)** which could be confirmed by the fact that the livestock productivity is increasing over the years:



It is, however, still unclear whether the structure of the livestock changed among small farmers or the more serious ones? In addition to this, it has to be mentioned that the functioning of the part of the market in underground economy may have caused the decline in the quality of milk by diluting it in water and due to the same production level with a reduced number of cattle? In any case, it can be concluded that the production is still extensive due to the lack of knowledge and financial means. This is supported by the fact that farms specialised in breeding dairy cows have the yields of 6,000-6,300 litres per cow.
An overall picture of the problem of decreased milk production can be observed by the analysis of the structure of farms. To sum up:

- On the territory of the target municipalities there are about 5% of specialised farms which are involved in intensive cow breeding, with adequate spatial capacities, milking equipment, lacto freezes for the preservation of milk and with an adequate knowledge about the nutrition and breeding of cattle. The milk from these farms is of high quality, with a large percentage of proteins and milk fats and with an adequate price. In addition to this, these farms are constantly working on the improvement of the genetic structure of their cows, i.e. on the development of their productivity.
- Farms with a smaller number of cows very often do not have adequate facilities for their breeding: small stables, several animal species in the same place, and all this can lead to spreading diseases from one animal to another; there is no adequate equipment for milk preservation, inadequate milking hygiene, which causes low quality of milk, and very often, due to inadequate nutrition, poorly balanced or insufficient meals, cows are of very poor health and incapable of yielding either an adequate quantity or quality of milk. It happens very often that farmers treat their animals on their own, which can be fatal for the health of cows and their productive and reproductive abilities. All this can lead to low productivity of cows, i.e. low quantities of milk. The reasons for this

are insufficient education, traditional approach to cow breeding, inadequate knowledge about animal nutrition as well as lack of financial means, which makes it impossible for farmers to get themselves involved in milk production and cattle breeding in an adequate way. Such farms are the dominant ones and there are about 70-80% of them on the target territory.

2.2.3. The milk sector market

The market of milk and dairy products should be analysed from several different aspects. **On 24.2% of the total number of farms, a cattle breeding is the dominant source of income**. On the other hand, 51.2% of farms are characterised by 'junk' production, i.e. extensive production. Due to this structure, production is partly organised in farms themselves in a traditional way, with the most important final products being kajmak and cheese. These products are sold locally, at dairy markets, via friends and acquaintances or to regular retailers, thus **using up 50% of the produced milk**. The other 50% of milk stays on farms for their own needs.

On the other hand, farms which are involved in intensive breeding of dairy cows for the purpose of milk production sell milk to dairies which organise retail on the territory of the target municipalities. On the territory of Zlatibor Region, there are no industrial dairies which buy more than five million litres of milk per year. In Serbia, there are about 20 dairies of this size, whereas the other 200 of them, including **17 dairies from the Region, buy up to 20% of the total quantity of milk.** Imlek dairy, Novi Sad dairy and Subotica dairy, whose major owner is Danube Foods Group B.V. from the Netherlands, buy almost 50% of all milk. Since their biggest competition is Sabac dairy with less than 6% participation in the market, and all the other dairies with even less than that, it is evident that Danube Foods Group does not have any real competition since none of the dairies have a developed retail network or a raw material base on the whole territory of the Republic of Serbia, but are positioned regionally close to the largest producers [2]. **Monopole enables the creation of low retail prices which discourages farmers from improving their production and production capacities.**

The dairies of the Danube Foods Group and Sabac dairy are the ones that retail milk from cooperates from Zlatibor Region, though they buy it only from the producers who have the capacity of delivering 50 litres per day (which is up to 10% of producers). Other farmers are forced to give their milk to local dairies with low capacities, which then causes low retail of only 20%. AC Zlatibor has the largest capacity of 30,000 litres per day and it buys milk on the territory of Cajetina and Nova Varos. A part of the produce in Nova Varos and the produce on the territory of the municipality of Priboj are bought by Biomlek dairy from Sjenica. On the territory of the municipality of Nova Varos, there are four dairies: PTP Zlatarka, Integral V Ltd., PPU Viskom and ZZ Zelenika plus. They partly retail milk on the territory of the municipality of Sjenica. Moravica dairy retails milk in Arilje. **All the dairies have developed processing systems, and some of the final products are pasteurised milk, yoghurt, sour milk products, cheese, cream cheeses, and pepper in cream etc**. These products are partly sold at the local market and partly at the market of Belgrade via retailers such as Mercator, Idea, Metro and others.

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2) In terms of HHI index, all of the above indicates a high market concentration and the fact that Danube Foods Group dominates the market in terms of demands. On the other hand, the market of the producers of fresh milk is of low concentration, which shows that retail market has elements of a monopole market.HHI is an index which measures demand concentration in the market. It can have values from 0 – 10,000, and concentration degree can be defined as: non-concentrated, of medium cincentration, of high concentration, of extra concentration and absolute concentration. In case of a larger number of retailers, its value moves towards 0, whereas in case of monopol with only one or a few retailers dictating market conditions, the value moves towards 10,000.

Since they are incapable of creating a leading position in the market based on continuity of delivery of products of certain quality, small producers of milk and dairy products sell their products through the retail sale of dairy products in the local market. It most often happens that small quantities of cheese and kajmak are sold in this way.

Did you know that if you poured whey over young cheese it would get the characteristics of old hard cheese? It is another little trick of small producers. The problem arises after a few days when cheese changes back to its original condition.

Market research indicates that there is the greatest demand for old hard cheeses while the green cheeses hardly find their market. Old cheese has a higher price because it loses in weight in the process of ripening (a smaller quantity of hard cheese than soft cheese can be obtained from 100 litres of milk). The loss in weight is compensated with a higher price. Despite the fact that retailers offer higher prices for hard cheese, there is not enough of it in the market because producers are afraid of making a loss and choose to make a profit through the selling of green cheese.

In addition to all this, during the tourist season, retailers are facing one more problem. In order to gain a quick profit, producers choose to distribute their products directly to tourists in the markets of larger tourism resorts. That is when retailers face a loss because of a shortage of cheese and kajmak, but the loss does not skip producers themselves. The loss results from the high prices of cheese and kajmak at which they are normally sold to foreign tourists. Potential buyers, mainly foreign tourists, refuse to buy products at the offered price whereas producers face the surpluses. This means that production is mismanaged and that there is not enough entrepreneurial enthusiasm, which then leads to the discontinuity in the delivery of adequate quality. Few producers who are involved in intensive and planned production can continuously supply the market (5% holding 11 and more cows). The most of producers, 80% of them, own 1 to 5 cows. If it is considered that it takes 100 litres of milk to produce 18-20 kg of cheese and 5 kg of kajmak, it becomes clear that, at the average annual yield of around 2.300 litres, it takes 3 to 13 days for producers to produce mentioned quantity of cheese and kajmak. This small-scale production disables producers to position in the market and retailers to achieve continuity of cheese and kajmak supply. For this reason, small-scale producers sell their products in markets where often they are not able to sell the whole produced quantity facing a loss. This is a reason why the associating among producers should be emphasised as an opportunity for market positioning so as the importance of investing in livestock genetics and cattle nutrition and breathing improvement as a precondition for quality improvement

2.2.4. Import/export of milk and dairy products

The dairies in Zlatibor Region are characterised by the production of long-life milk and it is mostly directed towards the local market. Thus, Zlatibor Region exports only 0.1% (about 40 tons) of the total export of Serbia. In 2010, **Zlatibor Region exported 40 tons of dairy products and imported 14 tons.**

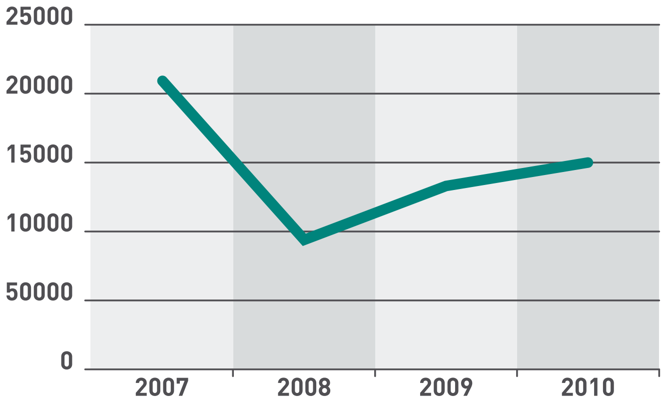
2.3. Meat production: structure, trends and dynamics

2.3.1. Trends in meat production

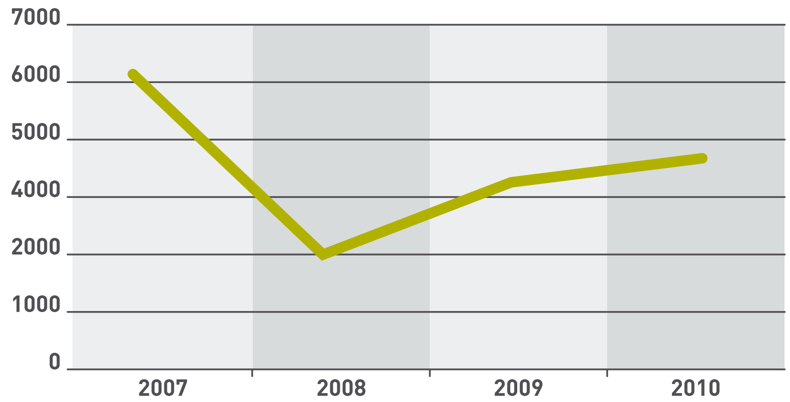
Market economic circumstances dictate the trends in meat industry, so that meat production in Serbia has been on the decrease since 1990 and makes only 1.1% of the total world production. The decline in meat production was not equally distributed among types of meat, which caused changes in the structure of meat production in the period from 1990 to 2010. In the total meat production in 1990, there was 47% of pork, 25% of beef and 18% of poultry. The production of mutton and offal in 1990 was a bit over 5%. Twenty years later these parameters changed drastically. Pork production increased to 60%, and production of beef decreased to 20%. In 2010, the percentage of poultry, mutton and offal production did not change much in comparison to 1990.

In Zlatibor Region, the situation is somewhat different. In the total meat production in 2010, there are **8% of mutton, 15% of pork and 77% of beef.** According to the number of slaughtered cattle, meat production in 2008 declined by 62%, i.e. it was 2.64 times as low as the production in the previous year. The reason for this sudden decline was the beginning of the world economic crisis and it was completely in accordance with the changes that occurred in the world market. From 2009 onwards, production increased considerably by 66%, and in 2010 there was an additional increase of 13%. This indicated slow reactions to market changes and the fact that recovery period was much longer than stagnation period. **According to this trend, it can be expected that the production level from 2007 will be achieved no sooner than in 5 years, which means that urgent action must be taken to recover meat production in Zlatibor Region.**

Graph 5. Number of slaughtered cattle



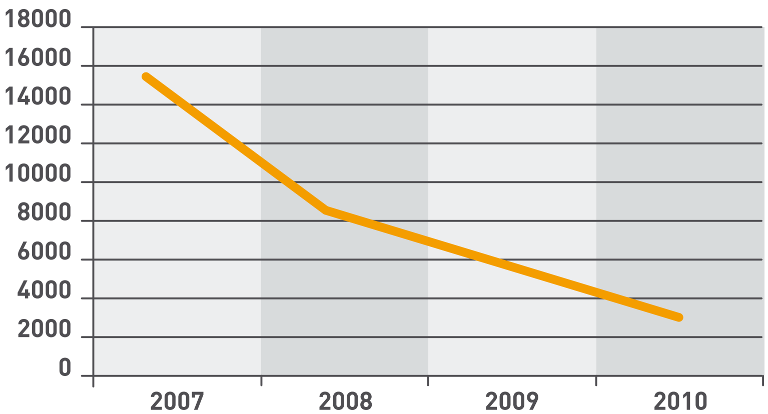
Graph 6. Trends in meat production, by category, in Zlatibor Region in the period 2007-2010



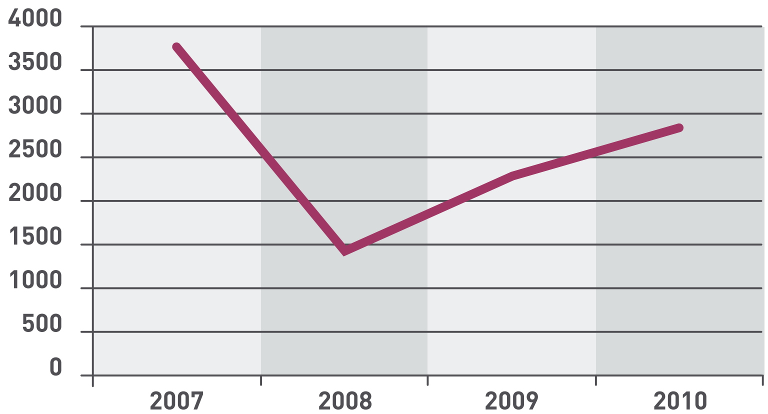
In the target municipalities, a small number of farms are involved in beef breeding and male calves are taken when their mothers stop feeding them and sold when their weight is between 120-140kg, whereas female calves are kept for the purpose of maintaining or enlarging a herd. In the target municipalities, there is a small number of farms, between 60-70, which are involved in beef breeding to the weight of 500-600kg, with the number of fattening beef cattle being 10-20, and most of these farms are located on the territories of the city of Uzice and municipality of Cajetina. Slaughterhouses buy some of the cattle in the villages of the Region and some are bought on the territories of the municipalities of Cacak, Ivanjica and Kraljevo, which shows that there are not enough raw materials, i.e. fattening cattle which can meet the needs of the slaughterhouses in the target municipalities.

On the other hand, **there was 77% of beef production in the total meat production in Zlatibor Region in 2010**. The drastic decline in beef production in 2008 was not completely compensated by 2010, but there was a 200% recovery in comparison to 2008, i.e. 24% in comparison to 2009, and it is still on the increase (**Graph 8**).

Graph 7. Trends in the number of fattening beef cattle in Zlatibor Region in the period 2006-2010



Graph 8. Trends in beef production in Zlatibor Region in the period 2007-2010



The number of slaughtered cattle which was 20,899 in 2007 declined to 9,450 in 2008. This resulted from the effects of the world economic crisis on the one hand, and on the other hand, the drought which in 2007 led to the shortage of provender and the increase of its market prices. In 2009 there was a 40% recovery in terms of the number of slaughtered cattle and production increase of up to 60% in comparison to the year before. In 2010, there was a slight increase of 13% in the number of slaughtered cattle, which indicated an increase of fresh meat per kilo and better animal nutrition.

2.3.2. Meat market

The market where meat is sold, just like the milk market, must be analysed from two different aspects. On the one hand, the market chain is very short since some animals are slaughtered on farms and a proportion of the meat is then processed into smoked pork or beef ham or is used for family needs or for sale at local markets, to friends, retailers, i.e. at official and non-official markets, which is one of the problems - **the functioning of the market in the underground economy**. On the other hand, slaughterhouses which retail cattle on the territory of Zlatibor Region, sell a portion of fresh meat and processed meat in the local market through retail shops, whereas large slaughterhouses and driers, apart from the local market, supply large retailers on the territory of Belgrade.

Major buyers of live cattle are dealers who buy cattle in villages, but also at markets and fairs. Dealers pay for the cattle on the spot. Calves are bought for restaurant needs and for the purpose of fattening them in other parts of Serbia, for slaughterhouses and meat factories etc. Dealers appear quite a lot in the municipalities of Nova Varos, Priboj and Prijepolje.

44 slaughterhouses organise meat retailing and processing, of which as many as 17 are on the territory of the municipality of Cajetina. Slaughtering capacities are between 2 and 120 cows per day, 20 to 100 pigs and 30 to 350 sheep, whereas processing capacities range from 1,000 do 385,000kg a month. ADIM Zlatibor Ltd from Cajetina stands out for its slaughtering capacity which is 120 cattle and 350 sheep a day, cutting capacity of 10,000kg a day and processing capacity which is 385,000kg a day.

Slaughterhouses mainly work to meet the needs of the local market. The largest number of slaughterhouses and meat factories perform major cutting of the carcasses and sell fresh meat in their own retail shops. Most of these shops are located in Zlatibor Region. Slaughtering nus-products are processed into processed meat products of low quality. Processed meat products are made on the basis of one's personal knowledge and very rarely upon counselling with an expert technologist. In the municipality of Cajetina, the production of the traditional processed meat products is the dominant one. The sale is done at the local market and through tourist supply of Cajetina. Packaging and marketing are almost completely neglected.

Despite considerable slaughtering and processing capacities, on the territory of Zlatibor Region there is a problem of slaughtering in the underground economy, which does not seem to exist in other parts of Serbia. It means slaughtering cattle on farms for well-known buyers. There is also slaughtering in unregistered slaughterhouses.

Meat production is closely connected to the condition of the livestock fund in Serbia and in Zlatibor Region. The fact is that the number of cattle declines by 5% per year, whereas the number of slaughtered cattle declines 2.5 times, which leads to a dramatic decline in meat production. Apart from the livestock fund, one of the major factors affecting meat production is the decline in the standard of living in Serbia, which directly affects the demands for meat. Thus, the consumption of beef in Serbia in the period 2006-2009 declined from 13.8kg per household to 8kg. This trend can be linked to the increase of prices of fresh meat and meat products, and in accordance with the growth of the price index, corresponding to the demand index, which indicates the flexibility of the meat market on the one hand, and on the other hand, the changes in the eating habits and their adjustment to the economic situation. This is supported by the fact that the consumption of chicken as the cheapest meat has risen from 10 to 18kg per capita.

Modern tendencies in the processed meat market show that consumers tend to satisfy their needs for food with flavours which combine the tradition and culture of the area they come from, without asking for the price. The pure utilitarian value of standardised and homogenous industrial food products is no longer interesting, and ultimate consumers are becoming more willing to pay an extra price for high quality traditional products which ‚come' from the past and are not ‚stained' with what rapid modernisation and globalisation bring. Despite the fact that the tourism and catering sectors are potential markets for these products and represent sources of demands for traditional products, the level of availability of these products in these markets is not at the satisfactory level. Hoteliers and producers emphasise that attributes ***traditional*** and ***domestic*** are insufficient for Zlatibor region products to be included into hotels offer. To reach hotel tables, traditional products should be certified and marked with declarations. The continuity in distribution should be guaranteed and followed with price competitiveness.

Main problem which is often emphasised is the lack of producer declarations and certificates which is, on one hand, caused by unsolved legal aspects related to the traditional production, and on the other, with obligation of applying HACCP standard which disables supply from individual producers who do not have capacities to introduces and apply this standards. **This segment is characterised by fluctuations in quality and price so as in inordinacy in supply**.

Export/import of meat

In 2010, Serbia exported 4,000 tons of beef (20 million USD), of which only 1,000 tons (a little over 6 million USD) were exported to the EU market. At the same time, about 3 tons (12,500 USD) of beef were imported. This is a very modest achievement since the Serbian export limit to EU is 8,700 tons. Serbia also exports raw materials as was the case with 1.7 million tons of maize last year, and at the same time, it imports fattening cattle and meat (which was the case in the export/import activities with FYR of Macedonia).

In the total export of beef in 2010, Zlatibor Region participated with slightly more than 30 tons (0.85%), which was a decline of 75% in comparison to 2009. In 2010, meat products were exported in the amount of 238 tons, whereas 207 tons of them were imported.

In addition to this unfavourable situation in export/import activities and livestock production in general, Serbia had to reject an offer from Russia to export 8,000 tons of meat. Serbia could not meet Russian demands since 32,000 cattle are needed to produce this quantity of meat. At the end of 2010, Serbia had a little less than 40,000 cattle for slaughtering, with 3,500 cattle from Zlatibor Region (cca. 9%).

2.4. Support functions in the livestock production sector

Veterinary stations

On the territory of Zlatibor Region there are 13 veterinary stations, whereas in the target municipalities there are 6 of them with more than 20 veterinarians who take care of animals' health. Every year, veterinary stations work in the field implementing the activities from the Programme of measures for the protection of health of animals, which comprises prevention, early detection, spread and monitoring of contagious diseases, i.e. health care control, vaccination, diagnostic examination, marking registered animals and suppression of diseases. Apart from the activities from this programme, they perform all other activities defined in the Veterinary law which refer to the welfare and health care of animals. The number of veterinary stations and the number of veterinarians working on the territory of the target municipalities is sufficient for the needs of farmers.

Services for the selection and registration of cattle

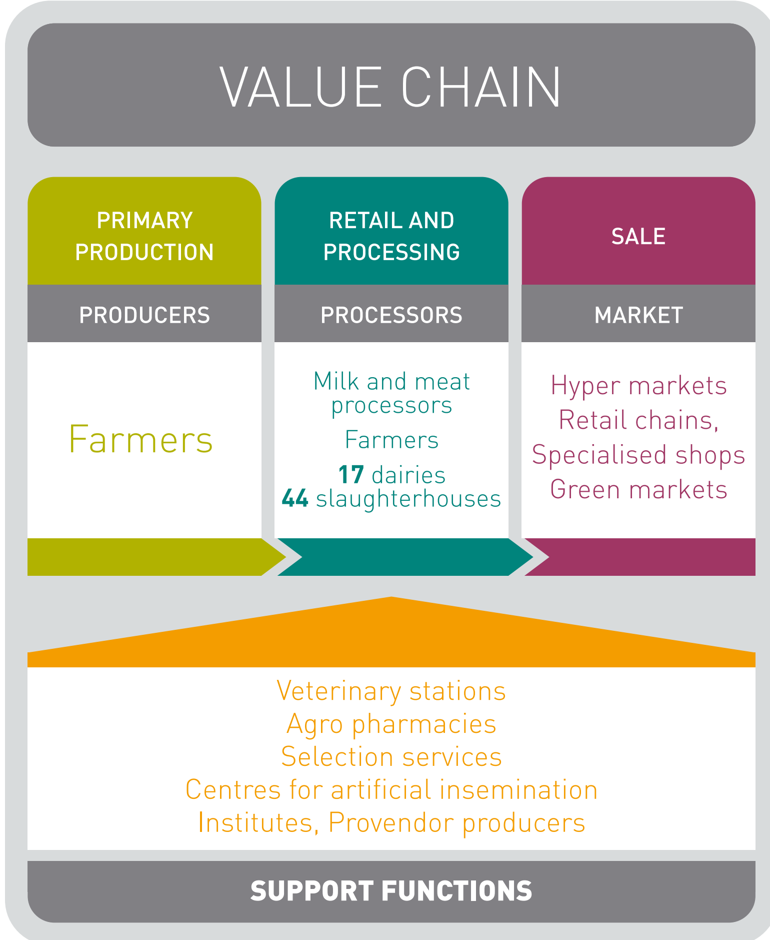
On the territory of the target municipalities, an organisation from Cajetina is authorised for the register and selection of quality cattle and it covers the territory of the municipalities of Cajetina, Nova Varos and a part of Uzice, whereas in Arilje there is a livestock production service within ICP Arilje which covers the territory of this municipality. On the territory of the municipalities of Priboj and Prijepolje, these activities are done by Strujic veterinary station. The selection and registration of cattle are performed in order to improve the breed qualities of cattle, their productive abilities in terms of larger yields. In addition to this, quality cattle registration enables farmers to get subsidies from the Ministry of agriculture, forestry and water management, which are given only for the registered cattle. These services keep records of registered cattle, their offspring, monitor their productive abilities and linear measures and give recommendations on the selection of semen for artificial insemination with the aim to improve their productivity. The number of registered cows on the territory of the target municipalities greatly differs. According to the available data, the largest number of registered cattle is located in the municipalities of Cajetina (1,123) and Nova Varos (218) and the city of Uzice (175), whereas in Arilje (21) and the municipalities of Priboj and Prijepolje (22) this number much smaller. Since the percentage of registered cattle is less than 2%, it can be concluded that the registration level is very low and that very little is done on the improvement of the genetic structure.

Centres for artificial reproduction and artificial insemination

In the target municipalities, there are no centres for reproduction and artificial insemination so that **these activities are done by veterinary stations**. Selection services and veterinary stations cooperate with veterinary and cattle centres in Velika Plana and Krnjaca, which are the leading suppliers of the semen for artificial insemination. Every other year, these centres make a plan of regionalisation according to the natural and geographical characteristics of the area where cattle are bred, on the basis of **which recommendations are given on the choice of semen for registered cattle or a wider cattle population, and all of it in accordance with farmers' demands**. The selection of semen depends on which property in cows they want to improve but also on their financial means. Apart from recommendations and deliveries of semen for artificial insemination, engineers of agriculture for animal science visit the areas where artificial insemination with semen of their bulls is performed in order to monitor the offspring of their bulls and, ultimately, to improve the genetic characteristics of cattle and their own work.

Uzice agricultural service - AS Uzice

AS Uzice is part of the Ministry of agriculture, forestry and water management of the Republic in charge of the support to the development of agriculture in Serbia and it covers the municipalities of: Uzice, Čajetina, Kosjeric, Bajina Basta, Priboj, Prijepolje and Nova Varos. Its basic objective is to improve agricultural production, crop and livestock production, to introduce new species of crops and new breeds of domestic animals, and to introduce modern technologies into agricultural production. It is partially financed from the agricultural budget of the Ministry of Agriculture and partly from the market by providing production units with commercial and expert services. Within AS Uzice, apart from services for fruit-growing and protection of crops, there is a service for livestock production with **two employees - engineers of agriculture for animal science who give advice to farmers about the selection, nutrition and breeding of cattle**. Considering the size of the territory covered by AS Uzice and the number of farms (over 20,000), and the fact that they directly cooperate with 90 farms and cover the rest of them through workshops and lectures (20 workshops and 20 lectures), it can be concluded that there are not enough counsellors working in the field.


VALUE CHAIN
PRIMARY PRODUCTION
PRODUCERS
Farmers
RETAIL AND PROCESSING
PROCESSORS
Milk and meat processors
Farmers
17 dairies
44 slaughterhouses
SALE
MARKET
Hyper markets
Retail chains,
Specialised shops
Green markets
Veterinary stations
Agro pharmacies
Selection services
Centres for artificial insemination
Institutes, Provendor producers
SUPPORT FUNCTIONS

3. Constraints for the development of milk and meat sector

The situation in the livestock production in Zlatibor Region is critical!

This is a conclusion made on the basis of current trends in the meat and milk market. Despite the fact that a lot has been said about the importance of livestock production as a segment of economic development, **market dynamics indicate that there is a constant decline in the livestock, productivity has declined and the relations in the meat and milk market have not been regulated properly**. Inadequate availability of information and a traditional approach to production cause inadequate practice in the nutrition of animals, which imminently leads to reduced productivity. Insufficient production together with a badly planned market approach, as well as a misbalance between supplies and major market demands, contribute to reduced profits and, additionally, devastate the livestock. That is why livestock production in Zlatibor Region must face a major challenge in its future development: **the provision of quality and continuity in the meat and milk sector**, whereas the causes of an unfavourable situation lie in the following factors: insufficient development and availability of the information market, insufficient investment in the development of the genetic potentials of the cattle. This chapter analyses the identified problems in the development of livestock production in Zlatibor Region in terms of the nature and causes of the unfavourable situation.

3.1. Insufficient development and availability of the information market

The success in livestock production lies in a well-balanced relationship between the effects of good production practice, production process control, high productivity and product quality improvement, and the development of each of these factors depends on timeliness and correctness of necessary information (market trends, financial and other support, principles of production organisation and sale, etc.). The drawbacks which have been identified in the previous analysis and refer to livestock production trends indicate the information market as the area where causes of inadequate performances can be found.

Who are the key agents of information?

State bodies, mainly the Ministry of agriculture, forestry and water management, should be the designers and agents of the information system in livestock production. Naturally, the Ministry should be linked with other support bodies. In reality, communication between different support bodies is minimum and information distribution channels are informal and cannot reach all the interested parties. That is why it is important to analyse the role of distribution of necessary information of each body separately, which means the role of:

- Professional agricultural agency
- Veterinary services
- Centres for artificial insemination and reproduction
- Other indirect agents (NGO Agro centre Priboj, Innovation centre for agriculture Arilje, local self-governments, media etc.)

The professional agricultural agency works directly with a small number of developed producers **whereas smaller producers (70-80% of the total number) are suppressed and usually left to themselves or to veterinary stations for which it is important to set aside considerable funds.** On one hand, this is a consequence of the lack of workforce because of which PAA could not be present in the field as much as it is necessary. On the other hand, a large number of producers lack with information on services that they could require from PAA which is a consequence of insufficient visibility and promotion of services. Information distribution is organised via lectures and workshops which involve a small number of producers, or via distribution of printed promotional material which usually does not contain all the necessary information. Thus producers are frequently deprived of information about the current possibilities of obtaining credits or financial support, as well as information about practical measures that need to be taken to organize production, and so production remains underdeveloped. Inadequate communication and information exchange between good and insufficiently developed producers also contribute to this.

Veterinary stations are thus given an opportunity to devote themselves actively to the distribution of necessary information, which is, basically, incorporated into their standard veterinary services. This practically means that a veterinarian, while providing services for which a producer has engaged him, gives adequate advice which makes information basis for the development of production processes. This is extremely important because **producers have great confidence in the veterinarians they work with**. Logically enough, a question can be asked: What is then the problem with veterinary services? One of the setbacks is the **traditional aversion towards change and insensitivity to the demands of constant education and innovation, as well as inertness and inadequate dedication of producers.** Thus, producers put their old habits above veterinary advice and production practice remains unchanged and results in further decline in the performance. Another setback is the financial situation. Insufficient funds often force producers to use the services of a veterinarian only in emergency, whereas in all other situations they dare do the work by themselves according to their own principles. An example of this is the fact that they do not use any assistance or veterinary consulting in cow delivery.

On the one hand, the information market is based on main promotional materials: brochures, flyers, leaflets, which very often do not contain the minimum information, and on the other hand, there are professional counselling services, which have a serious problem with human resources. This impoverishes the market, which means that there is a decline in productivity and in the livestock fund and that there is a complete lack of coordination with markets trends.

3.2. Cattle nutrition and breeding

Within livestock production, in terms of nutrition, meat and milk production is a highly demanding segment of livestock production, which can be seen in the efforts made by a living organism in order to meet several production requirements using nutritients from the meals: existential needs, milk and meat production, fetus development, and in young animals, the end of the development and growth phase. Nutrition has the most important role in milk and meat production. Without adequate nutrition, it is impossible to create genetic potential necessary for high production of milk and meat. That is why the reason for low productivity can be found in the nutrition practice applied by farmers.

A deeper analysis shows that the insufficiently developed market and availability of information manifested through the underdeveloped mechanism of sustainable counselling and professional support contributes to the inadequate practice in cattle nutrition. Research shows that cattle breeding is based on the stable model and that the cattle are rarely taken to the pastures. Thus, the whole nutrition system is based mainly on dry, heavy food of inadequate structure and quality in combination with industrially concentrated food (produced according to quality standards such as ZOBB). Despite the fact that the market is supplied with concentrated food and the fact that farmers purchase these products regularly, nutrition is inadequate due to the misbalance in cattle nutrition since concentrated food is mixed up with heavy food in inadequate ratios.

The traditional method of cattle nutrition is characterised by adjusting the cattle menu as the farming cultures arrive. Thus, during July when there are a lot of melons, the menu consists of watermelon and melon grinds and whole fruits; when it comes to vegetables, there are tomatoes, cucumbers, peppers; in August, there are plums; in September, there are apples, pumpkins; in October, there are corn and pumpkins until spring, turnip, etc. In addition to this, it has to be mentioned that this food is very often something that has not been sold in the green markets, they have been kept for too long so that the processes of fermentation and decomposition have already started. Since their menu is constantly changed, animals cannot adapt themselves quickly enough, which is the cause of slow growth as well as some other health problems due to digestion stress and development of some types of bacteria (Escherichia and Salmonella), which disturb animal health with their strong poisons and can even cause death.

Source: PSS

High costs of cattle nutrition are not in accordance with the retail price in the market. Thus, the costs of cattle nutrition by the end of 2010 were about 40 dinars per litre of milk, whereas the retail price was 32 dinars.

High production costs are caused by the high price of provender [3]. Due to high production costs, farmers are often forced to sell parts of their herds or to take loans so that they would be able to keep the rest of the cattle on their farms, which leads to the decline in the livestock fund. The growth of production costs in the last few years has been followed by low milk premiums given by the Ministry of agriculture, forestry and water management. At the same time, there has been an additional decline in market participation , i.e. decline in profits, which is the consequence of the reduced consumption of meat and milk by ultimate consumers. There is also the problem of geographical distance since sales venues are often located in urban areas, which considerable increases producers' purchasing costs.

3) The average price of corn was about 23 din/kg, and it was caused by the shortage in buffer stock

This is particularly common in winter months when, due to poor road infrastructure, it is often almost impossible to purchase provender. Then, in cattle nutrition, farmers resort to meals which are characterised by low nutritive value and which contribute to productivity decline.

AND WHAT DOES MODERN SCIENCE SAY ABOUT THE ADVANTAGES OF ADEQUATE CATTLE NUTRITION?

The new method of cattle and sheep nutrition might reduce the emission of gases with the greenhouse effect into the atmosphere, which has been established in a research done by scientists in Great Britain. Scientists claim that, in case these animals were fed on corn silage, peeled oats and grasses with higher sugar content, the quantity of methane they produce would be reduced. In the total emission of harmful gases into the atmosphere in Great Britain, agriculture participates with nine per cent and they are mostly gases produced by cows, sheep and goats. The research has shown that grasses with higher sugar content in provender may reduce the emission of methane by 20% per kilogram of cattle weight, and peeled oats can reduce methane emissions in sheep by 33%.

British scientists emphasize the fact that, in the long run, it would be necessary to analyze the advantages of the transformed method of cattle nutrition and its impact on the environment as well as the practicality and profitability of this innovation.

3.3.Insufficient investment in the development of genetic properties of cattle

The precondition to productivity increase as well as meat and milk quality is the development of the genetic potential of cattle. This means investing into cattle registration as a process which, with corresponding continuity and consistence, ensures the production of high quality and quantity. However, the fact that, according to available data, target municipalities have only 1,559 (2% of the total number) of registered cattle, which can be seen in the previous chapter, shows that there is insufficient investment in the development of genetic properties of cattle.

The main reason lies in the price of reproductive material, which, at the same time, reflects its quality. Because of the considerable difference between the prices of average and high quality semen (the latter being twice the price of the former), producers choose to buy cheaper semen, which makes genetic development impossible. The selection of cheaper semen of poorer quality is an insurance against risk since insemination is successful in 80% of cattle. The remaining 20% means an investment failure and a financial loss. On average, 50% of male cattle are obtained and they are then sold to slaughterhouses (which is not stimulating because the price of fresh meat is low) and 50% of female cattle which can later be involved in the further development of genetic potential. It takes about 4-5 years to obtain a high quality and highly productive cow with the risk of achieving poorer performances which do not meet the criteria for registration due to inadequate nutrition and breeding. Since there is a clear risk of failure, there is also low investment in the development of genetic potential and productivity remains at the low average level despite complete availability of reproductive material.

In addition to the selection and registration of cattle being done with the aim to improve productivity and quality of meat and milk, they are also done in order to give farmers the right to get subsidies from the Ministry of agriculture, trade, forestry and water management. They are subsidies for the development of the genetic potential of cattle, but with the condition that farmers have at least three registered cows, which can clearly be achieved only by a very small number of them. Since the need for registration goes with the need to get subsidies, farmers tend to buy one highly productive cow, whose reproduction would qualify them for the subsidies. However, due to inadequate nutrition and breeding and insufficient investment in the high quality reproductive material, development continuity is lost although it is necessary for achieve the right to register cattle. In addition to this, highly productive cattle are imported so that it often happens that low performances are achieved due to the fact that they are not capable of adjusting themselves to new living conditions (climate, nutrition method, accommodation). Apart from the lack of commitment and information, this is yet another factor that causes farmers to abandon the process of the development of genetic potential and keep the production capacities of the livestock fund at a low level.

The lack of financial support also contributes to this. Local governments used to allocate reimbursement in order to purchase high quality genetic material. However, it was also a matter of social welfare since it was based on equality of all producers, of whom the majority abandoned the good practice and thus aggravated the situation.

A deeper analysis shows that **the price is not the limiting factor in the sense in which producers' perception is**. Reproductive material is available in the market, and it can be easily obtained through veterinary stations, which are in charge of the insemination process, and investment could be valorised soon enough. In this context, it is evident those producers do not understand the importance of the development of genetic potential and that there is a lack of support from professional and counselling agencies in making the process and its advantages understandable. As a matter of fact, there are no services that should be part of the regular support provided by professional (veterinary) agencies, and which are related to raising farmers' awareness and increasing their knowledge about the advantages of investment in the genetic potential of cattle with the aim to increase productivity and quality of meat and milk.

4. Intervention strategies

In the previous chapter, the causes of the bad situation in the meat and milk sector have been analysed. With an adequate approach to these causes and by removing them, it might be possible to contribute to the development of this sector and, therefore, to the increasing of employment rate and income.

4.1. Intervention vision and logic

The objective of the PSD programme is to encourage the development of livestock production in Zlatibor Region and contribute to positive changes in the market by working on system obstacles. The creation of a long-term and sustainable system change, which will result in the development of the currently poor situation in the meat and milk sector, is based on selecting an optimum approach to problem-solving. Establishing a firm basis which all the future activities aiming at achieving a system change will depend on creating a mechanism that will make all the actors in the meat and milk sector face the identified causes of the problem and direct their future efforts towards alleviating and removing them.

The establishment of clear mechanisms for making positive changes in the meat and milk market is based on reviving the long-gone confidence among the key market actors and strengthening their mutual cooperation, which leads to:

- The creation of possibility to recognise the mutual interests of the key actors in the meat and milk sector
- Activities being directed towards initiatives which are defined as crucial in overcoming system obstacles
- The establishment of a mechanism which makes market functioning subordinate to long-term development instead of to individual short-term interests

From the practical point of view, this means that the PSD programme will support the activities which are related to building up the capacities of the key actors in the milk and meat sector so that they would be able to recognise their mutual interests and direct their resources towards sustainable business based on market principles, which clearly points at the following statements:

- The PSD programme will support the development of the system of advisory support as a mechanism which is crucial for overcoming the causes of inadequate production practice

- The PSD programme will support the activities which contribute to the increase in the availability of necessary resources/inputs, from the timely significant information, over technical and professional assistance (e.g. availability of veterinary stations) to necessary raw materials (high quality food, high quality reproductive material)
- The PSD programme will support the activities which will contribute to better valorisation of traditional milk and meat products, i.e. to strengthening the competitiveness of traditional products

In accordance with the above-mentioned facts, there are two areas of intervention:

INTERVENTION AREA	SYSTEM CHANGE	CHANGE IN THE MEAT AND MILK SECTOR	INCOME AND EMPLOYMENT
Intervention 1: Increasing the quality of primary production in the meat and diary sector	Technical and advisory support adjusted to the specific development needs of livestock sector	Increasing productivity and quality of meat and milk	**Increasing possibilities for creating jobs and income**
Intervention 2: Strengthening the competitiveness of traditional meat and dairy products	Valorization of traditional product	Adjusting production to market demands	

The proposed interventions are supposed to help in achieving a long-term system change which will enable a different approach to the primary production of meat and milk in order to obtain better quality of products in accordance with market demands. This enables an easier way of achieving sustainability in the market and, with an adequate support from advisory and professional services; it strengthens the negotiating position in relation to legislators.

4.2. Increasing the quality of primary production in the meat and milk sector

The quality is one of the most important advantages which directly influence on turnover and productivity and therefore on employment and income increase. The precondition for quality improvement in primary production lies in improvement of genetic potentials of livestock which is, on one hand, based on effective and efficient usage of high quality reproductive materials, and on the other, on improvement in practice of cattle nutrition and breeding. Therefore, it is necessary to: **establish a model for livestock genetic potentials improvement** which is based on private-public partnership between Centres for artificial insemination and reproduction (producers and distributors of reproductive materials) and veterinary stations (service providers for artificial insemination). The purpose of this partnership is to, with the support of experts in artificial insemination and reproduction (e.g. Veterinary and Agricultural faculties), develop and implement Plan for improvement of livestock genetic potentials in Zlatibor region. This Plan will lead to effectiveness and efficiency improvement in artificial insemination as a precondition for obtaining high quality cattle by using the most optimal model – pilot activities – for the improvement of livestock genetic potentials in accordance with identified situation in the Region. This, and raising awareness of producers through promotional activities and presentation of the results of pilot activities, would lead to the demand stimulation and the increasing of producers' investments into high quality reproductive materials.

1. **Establish a model of advisory support to improve practice of cattle breeding and nutrition.** On one hand, it is necessary to stimulate producers' demand for, and adequate usage of advisory services which is based on producers' capacity to recognise their own needs and the importance of advisory services. On the other hand, advisory services should be adjusted to producers' needs through the improvement of existing and creation of new advisory services. In accordance with the specification and quality of services, competencies of advisory service providers should be improved (readiness to listen, timeline for service delivery, ability to respond on a request in time, etc.). Organisation of forums could be an instrument for personal and professional development of advisory service providers. Forums enable information and experience exchange and preservation and development of high quality services. The main precondition for increasing demand and usage of advisory services is to poses the information on their availability and quality for which it is required to develop and implement promotional plan for advisory services.

2. **Create business enabling environment.** With the aim to increase availability of resources and create an environment suitable for business development (favourable local business environment), it is essential that private-public partnerships between local government units (LGU), leading producers and veterinary stations should be stimulated in order to create adequate stimulating measures for the development of livestock production by adequate planning and distribution of agro funds. On the one hand, this means building up the capacities of LGU in terms of adequate reallocation of the funds, and on the other hand, involving the powerful private sector in the development of a policy of stimulating measures so that available funds would be used as efficiently as possible. The best model will be defined through activities which will be implemented in the analysed area of intervention.

4.3. Strengthening the competitiveness of traditional meat and milk products

Trends which point at greater affinities of consumers for traditional products and their wish to learn about the history and culture of an area through them, without asking for the price, is seen as an opportunity for small and medium producers to appear in the market and offer what they are best at: products made according to traditional recipes and technologies, representing all the values of the region. Why is this important?

Identifying market demands leads to the opening of new markets. This opens up new business opportunities, trade in traditional products is getting included into regular economy and potential for increasing profits and jobs by ensuring higher prices in the market is developed. When income and employment of different economic subjects depend on the market reputation of traditional products from a specific geographical area, then the keys to success are:

1. **Cooperation between actors in the value chain.** It is necessary to support the development of the private-private dialogue among producers and distributors in order to ensure the continuity of information about market changes by defining them clearly and direct all activities towards meeting new demands. It is also important to strengthen the links between producers themselves in order to recognise mutual interests as a trigger to future joint development and an agent of negotiating capacities in relation to suppliers and distributors. It is particularly important to give huge support to establishing a private-public dialogue between producers and national institutions which would enable advocacy in the area of the development of legal matters and adjustment of regulations to the needs of traditional production.
2. **Joint standardisation of product quality.** Since market positioning of traditional products in the environment where organisational and infrastructural capacities are at a very low level, can be compared to building a house from the roof, then all the efforts must be directed first towards establishing an institutional framework which will support the development of competitiveness of traditional products on the basis of guaranteed quality and continuity in delivery. Institutionalisation of production and sale of traditional products contributes to the abandoning of the concept of mutual competition between producers and strengthens the initiatives for gathering around mutual interests. This, also, reduce the exposure to market risks. On the one hand, available resources can be allied and directed towards joint initiatives, and on the other hand, optimum level of production can be achieved. In this way, costs are reduced and more economic benefit is achieved for each individual producer and opportunities are created to achieve the critical production range which is necessary to meet the demands of distribution channels.
3. **Monitoring compliance of products with adopted production procedures**. The survival of traditional products in the market depends on the abilities and readiness of producers to maintain the quality of their products. On the one hand, this involves controlling the quality of input raw materials, and on the other hand, controlling production and the product itself in order to meet market demands. Practically speaking, it is necessary to establish an institutional mechanism for quality control in the whole production chain through the support of public-private partnerships between relevant institutions.

4. **Joint regional marketing.** The basis for a successful regional promotion is ensuring a wide participation of market actors in the development and implementation of an adequate promotion plan. With the adoption of a promotion plan, delicious traditional products with insufficiently prominent added value, tend to become part of the culture of an area and highly distinguished delicatessen, praised in the eyes of consumers who are ready to pay more for them. Promotion of traditional products has multiple effects. First of all, traditional production contributes to demographic development of a rural area because it enables stable employment and income increase and affects the rate of negative migrations. Secondly, market valorisation of traditional products contributes to the increase in the visibility of marginalised rural areas and development of other sectors, such as rural tourism, through the promotion of gastronomic tours or the development of gastronomic offers in hotels by introducing the slow-food concept, which is one of the examples.

This approach enables:

1. Opening up of new markets for the sale of traditional products such as the tourism market, which is one of the largest consumers of food products
2. Creating new market opportunities for small-scale producers of traditional products, which are basically products of handcrafts, i.e. include them in regular market frameworks
3. Creating a higher value in the market through the formalisation of a brand as an instrument to ensure the sale, income and employment, all at the same time
4. Developing recognisability of traditional products through joint regional promotion based on the widely accepted participation of producers in defining and implementing mutual interests

The PSD programme will support the process of positioning products in the market through the identification of an institution which will be the agent of the process and it will also support the identification of key partners in the implementation of activities through the engagement of necessary consultants, organisation of meetings, support for promotional activities and connections with new market segments.

What next?

The analysis of the meat and milk sector is not only an analytical overview of the circumstances, symptoms and causes which slow down its development, but it is also the basis for the implementation of future activities which will result in the improvement of the sector competitiveness as well as in the creation of possibilities for income and employment increase. The report is the result of a consulting process and wide participation of the key acotrs in the meat and milk market: producers, processors, associations, distributors and the support function agents (Agricultural service of Uzice, Cattle veterinary centres, veterinary stations, local governments). Implementation of intervention strategies will be a flexible process and it will be adjusted to the market changes so that it would contribute to an efficient creation of a sustainable market mechanism which would ultimately improve the meat and milk sector. Facilitation of meetings with key partners will contribute to their mutual bonding with the aim to recognise their mutual interests and direct further activities towards establishing a business enabling environment and buzzing competitive market with a special emphasis on the status of women in livestock production and gender equality.

ИMPRESUM

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