

**AN ASSESSMENT OF THE
COMPETITIVENESS OF THE DAIRY FOOD CHAIN
IN SERBIA**

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1 Introduction

The objective of the study was to analyse the present situation and characteristics of the dairy sector in Serbia. The aim was to assess the competitiveness of the Serbian dairy sector and identify the key constraints to improving competitiveness and possibilities of its future development considering the importance of the sector for the Serbian economy.

The methodology established is based upon internationally accepted definitions of competitiveness, which focus on the ability of individual industries to «profitably maintain or increase market share» in either domestic or international export markets. Structure, conduct, and performance concepts are combined with resource analyses in judging the competitiveness of the Serbian dairy chain. Interviews are used to further identify key constraints to competitiveness and to develop some ideas on actions required by the sector itself and suggestions for policy interventions to improve competitiveness. The study included the complete dairy chain starting with milk production (on small family farms, privatised commercial farms and state-owned agricultural enterprises and cooperatives) and ending up with processing and selling (retail).

Chapter 2 of the report deals with the current situation and conditions for milk production and processing in Serbia, whereas chapter 3 analyses some principal factors influencing competitiveness and efficiency of the dairy sector, i.e. the whole dairy chain. Considering EU countries as well as international market trends, the analysis points to the possibilities of enhancing the development of the sector (the sector's Strengths and Weaknesses, Opportunities and Threats are identified) and determining some basic suggestions for national agricultural policy measures focused on improving competitiveness of the dairy sector and preparing the dairy chain for future challenges (chapter 4). Such a SWOT analysis gives the possibility to define prerequisites and directions for the sector's future development. The recognition of key constraints leads to a series of ideas for policies that may address the obstacles to further development and help reduce the inefficiencies identified.

2 Overview of the sector

2.1 Sector definition: sector components and importance

Serbia family farms as well as commercial farms both private and state-owned are the major milk producers. Cow milk is the principle milk type produced and its share accounts for about 99% of the total milk production in Serbia. Cow milk (approx. 92%) but also most of the sheep and goat milk production predominates in the private sector, i.e. on family farms and privatised commercial farms. The share of agricultural enterprises and agricultural cooperatives (social sector) in the total milk production has been declining (from 11.2% in 1990 to about 8% in 2006). Currently there are only a few milk producers in Serbia with a prevailing ownership transformation. There are only a few state-owned farms today (PKB – Agricultural Combine Beograd, Agrovršac, ...).

A relatively small portion (about 40 %) of the total milk production is delivered to dairy plants for further processing (data of the Republic Office for Statistics). However, according to the data of the Ministry for Agriculture, Forestry and Water Management

(MAFW), but also according to some small and medium dairy plants more than half of the total milk production is delivered for further processing. The remaining portion of the milk is used on farms to feed livestock and consumed by household members. In addition, farms owning milking cows involve in the processing of milk themselves, producing cheese, cream, etc. meeting own requirements and surpluses are usually sold on green markets. Only small quantities of liquid milk (about 1 million liters) are sold on green markets as well.

Milk processing takes place in about 20 bigger (industrial) dairy plants and in approx. 230 small and medium dairy plants. According to the data of MAFW in 2007 about 800 million liters of milk were purchased, i.e. approx. 5% of the total production. According to the data of the Business Association for Livestock, i.e. Sector for Milk Production., 25 of its dairy plant members purchases and processes about 600 liters of milk annually (37% of the total milk production). Five dairy plants, members of the Danube Food Group, are the processors of most of the purchased quantities of milk (about 380 million liters), i.e. nearly 23.3 % of the total milk produced in Serbia.

Milk industry is the first food industry branch in Serbia to have undergone the process of ownership transformation. Foreign investments predominated in the process of privatisation. Most of the industrial dairy plants in Serbia were taken over by the English Investment Fund Salford – known as DFG – Danube Food Group and currently owns the three biggest dairy plants (Imlek, Mlekara-Subotica and Novosadska mlekarar) and two medium dairy plants (Zemunaska and Zajecarska). The French Firm Bongren is in the ownership of Mlekoprodukt from Zrenjanin and the Croatin Lura has taken over Somboled from Sombor. The remaining, mostly smaller dairy plants, were mostly bought by domestic firms.

Specialised shops (within the processing industry) and retail and wholesale chains have undertaken the distribution of milk and dairy products.

2.1.1 Production and value added

Milk production value was about 8% of GAO of Serbia (Table 1). There were some oscillations of the share during the period investigated, however after 2002 the trend declined. The share of the milk production value in the gross agricultural production of Serbia was lower in relation to EU (15) which amounted to about 13.2% in 2005 (Eurostat 2006). The share of milk in GAO of some EU countries ranged from 6% (Spain) to 32% (Luxembourg).

Table 1 Share of milk production in total Gross Agricultural Output (GAO)

	2001	2002	2003	2004	2005
Total GAO* (000 000 din)	271194	266401	265853	325761	330941
Share of milk pro-duction in GAO(%)	8.0	8.3	8.2	7.0	7.4

*-agriculture, game and other services included

Source: Authors' calculations and estimations were based on the data of the Republic of Serbia Statistical Office

Food and beverage industry is a relatively minor sector in Serbia with the share of about 4% of GDP, i.e. approx. 7% of GDP of Serbia and about 6% of total employment. The share of other food products (bread, baked goods, confectionary, sugar, spices,)

and drinks predominated with over 50% of GDP (material) in the food and beverage industry. This was followed by the milk and dairy products industry, the share of which was about 10% of GDP (material) of Serbia. The share of milk industry in GDP of the food and beverage industry has shown a decline amounting to 8.6% in 2005 (Table 2). The share of milk industry in total employment of the food and beverage industry amounted to 7% whereby the increase noted was after 2004 (7.6% in 2006). This has primarily been the result of a declining number of total employees in the food and beverage industry (i.e. in other sectors of the industry) in relation to the dairy industry.

Table 2 Share of Gross Domestic (material) Product (GDP) * of the dairy industry in total food and beverage industry DP

	2001	2002	2003	2004	2005
Total GD(material)P in food and beverages industry (million din.)	48313	63334	63924	74700	74753
Dairy production GD(material)P (million din)	5061	6591	5594	6798	6461
Share of GD(material)P of the dairy industry in total food and beverage industry GD(material)P - (%)	10.5	10.4	8.8	9.1	8.6
Share of GD(material)P of the dairy industry in total GD(material)P - (%)	0.91	0.94	0.69	0.66	0.60

**Gross domestic (material) product* represents the value of all final products in a period of one year distributed and spent for satisfying general and public needs, investment and reserves. For each manufacture unit, or activity, regardless whether it produces intermediate materials or final products, the value added is determined by subtracting the value of intermediate consumption (material costs) from the total value of a unit production.

Source: Authors' calculations and estimations were based on the data of the Republic of Serbia Statistical Office

2.1.2 Product flows within the sector

Figure 2.1 provides an overview of the dairy sector, its components and associated milk flows. The figure has been compiled with the use of several sources of data, including those of The Serbia Republic Office of Statistics (SROS) and the MAFW (Ministry of Agriculture, Forestry and Water Management) and consultations held with the leading experts in the field of milk production. In 2007 total milked milk production amounted to 1.548 million tons, of this about 52% was delivered to dairy plants for further processing (Fig 1.) According to SROS, in the years preceding this share was considerably lower, about 20% and it increased to about 35% in 2007. In the last few years (according to MAFW), the share rose to about 50% and in 2005 it amounted to 54%. The quantity of milked milk kept on farms was about 743 million liters, i.e. about 48%. Most of the quantity was sold on the green market as raw milk or processed on farms (25%) whereas 15% was consumed by household members. The remaining 8% of the total milk production was used as livestock feed. Fresh milk and fresh dairy products such as yoghurt and cream make up 85% of the industrially processed milk. These are followed by cheese (12%), powder milk and butter, considered the principle products of the Serbian milk industry.

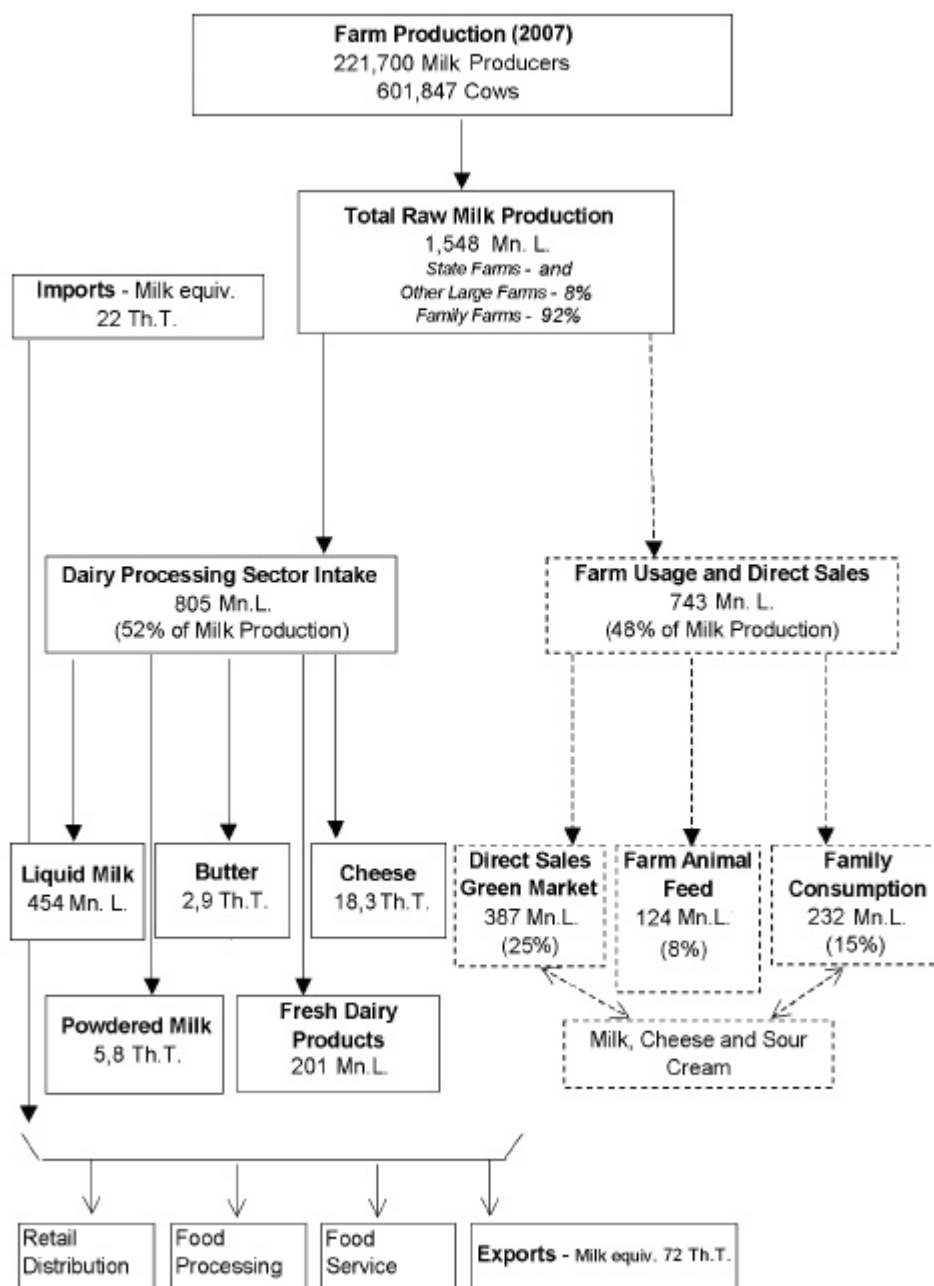


Figure 1 Overview of Serbian milk sector and milk flows, 2007

Source: Authors' estimation based on the data of the Statistical Office of Serbia; Ministry for Agriculture, Forestry and Water Management and consultations held with experts

2.2 Structural features of the dairy supply chain: present situation and trends overtime

2.2.1 Industry structure at primary level

Statistical data on the livestock fund, i.e. milking herd in Serbia are poor. There are no published data on the number and structure of farms with regard to the number of cows. It is estimated that about 221,000 farms (Table 3) are involved in milk production. Most of these farms (90%) have only 1-2 head of animals and own 66% of the total number of milking cows. On the other hand only 0.74% of the total number of milk producing farms have more than 11 milking cows and 10.6% of the total number of animals at their disposal.

Table 3 Size structure of the livestock farms at (2007)

Specification	FARMS		COWS		Average head / farm
	No. of farms	% of total	No. of head	% of total	
TOTAL	221625	100.00	602000	100.0	2.7
1-2 heads	200000	90.24	400000	66.4	2
3-10 heads	20000	9.02	140000	23.2	7
11-20 heads	1000	0.46	12000	2.0	12
21-50 heads	400	0.18	12000	2.0	30
51-100 heads	200	0.09	14000	2.3	70
>100 heads	25	0.01	25000	4.1	1000

Source : Imlek experts estimation

In Serbia total number of cows amounts to about 602 000 heads (2007) (Table 3a). A declining trend was noted over the analysed period whereby in 2006 the milking herd decreased by 157,637 heads (20.8%) in relation to 2000.

Table 3 a- Number of cows and heifers-in-calf in Serbia in 2000–2007*

Year	Number of cattle			
	Cows	Heifers-in-calf	Cows and heifers-in-calf	Total
2000	759484	57874	817358	1246226
2001	733447	53676	787123	1162035
2002	699415	52985	752400	1128245
2003	677559	62672	740231	1112164
2004	680692	61321	742013	1101951
2005	672313	48246	720559	1079020
2006	622167	52298	674465	1105988
2007	601847	46243	648090	1087077
D=2006-2000	- 157637	-11631	-169268	-155149
I=2006/00*100	79.2	79.9	79.3	87.2

*- for the period 2000-2005, situation on 15 January, and from 2006, situation on 1 December

Source : Calculated by authors– based on data taken from documentation of Agricultural Statistics for cited years, The Serbia Republic Office of Statistics, Belgrade

According to the data of the Serbian Statistical Office about 97% of total cow number are on family farms and only a small number (21,667 heads, i.e. 3%, 2007) may be found on large social farms (agricultural enterprises and agricultural cooperatives). The process of privatisation has contributed to the decline of the number of large social farms and today there are only a few left with about 10,000 milking cows.

The estimated average number of cows is 3 heads per holding which is considerably lower than in the EU-15 (about 32 heads) and EU-25 (about 14 heads) (Table 11a). The number of heads ranges from 14 in Greece to 79 in the United Kingdom (2003), i.e. 86 heads in Denmark in 2005 (Eurostat, 2008). The number of cows per holding in the new EU member states is low as well, e.g. Lithuania 2.4 and Romania 1.4 heads.

2.2.2 Industry structure at processing level

Statistical data on the processing sector, i.e. dairy industry in Serbia are poor as well. The dairy sector experts estimated a total of 250 dairy plants (of which 20 large industrial and the rest medium and small). According to MAFW in 2007 the number of registered dairy farms was 192, however their number had declined by 8% in relation to 2005. Based on the available data 27 dairy plants in Serbia process more than 10 tons of milk daily, i.e. about 80% of all the milk quantities processed in Serbia (Table 4). About 86% of dairy plants process less than 10 tons of milk per day and can thus be classified as small dairy plants. There is however one dairy plant in Serbia, Imlek-Beograd, that processes more than 200 tons of milk per day.

Table 4 – Classification of dairy plants according to daily intake

<i>tons/day</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>
<1	63	69	59
1-2	36	34	34
2-3	34	31	26
3-10	46	45	46
10-20	12	8	11
20-30	7	7	4
30-40	3	3	4
40-50	1	1	2
50-100	3	1	1
100-200	3	4	4
>200	1	1	1
Total-dairy plants	209	204	192

Source : Ministry for Agriculture, Forestry and Water Management, Draft (2008)

According to the estimation of dairy sector experts, most of the dairy plants in Serbia (about 230) may be considered small, employing less than 50 workers (Table 4a). Only 5 dairy plants have 100-200 employees, 3 dairy plants employ 200-300 workers and one dairy plant employs more than 1000 workers.

Table 4a Size distribution of dairy industry (number of employees)

Size band, in number of employees	Number of Enterprises
0-49	About 230
50-99	10
100-200	5
200-300	3
Over 1000	1

Source : Estimated by Imlek experts

Although there are a few seasonal dairy plants collecting milk in the hill and mountain regions of Serbia, most dairy plants (about 80%) operate throughout the year.

In the second stage of privatisation the investment fund from Great Britain has purchased most of the industrial dairy plants in Serbia which are now part of the system Danube Food Group (dairy plants Imlek, Novosadska, Suboticka, Zemunska and Zajecarska, Impaz). Dairy plants Lura (Somboled), Unimilk (Senta, Pancevo, Kragujevac, Niš, Pirot), Bogren (Mlekoprodukt), Šabac and more than 200 small dairy plants are part of this sector as well. The process of privatisation of the dairy industry has been completed with privatising the Kragujevac (taken over by Silbo, March 2007) and the Niš dairy plants (taken over by Kruna Komerc and Profiko).

According to the data of the Business Association for Livestock, its dairy sector, the 25 member dairy plants process more than 600 million liters of milk per year, i.e. 37% of the total, statistically recorded, milk production. Five of the Danube Food Group dairy plants process most of the delivered milk quantities (about 370 million liters), i.e. nearly one quarter of the total amounts of milk produced in Serbia and nearly half of the total milk quantities delivered.

Table 5 List of large dairy companies (top 5), with their milk intake or processing capacity

Name of the company	Ownership	Estimated intake per day	
		in liters*	As % of total intake
IMLEK – Beograd ¹⁾	Shareholding Company (AD)	600000	27.2
NOVOSADSKA MLEKARA ¹⁾	AD	200000	9.1
MLEKARA ŠABAC	AD	200000	9.1
MLEKARA SOMBOR	AD	200000	9.1
MLEKARA SUBOTICA	AD	160000	7.3
MLEKOPRODUKT ZRENJANIN	AD	120000	5.4

1) Since 2008 Imlek has been a part of Novosadska mlekarica

Imlek is by far the largest dairy company in the Danube Food Group. The intake of processing capacity of both Imlek and Novosadska mlekarica is about 800 thousand liters of milk per day.

Foreign investments played an important role in the dairy sector of Serbia, primarily in the field of specialisation, technical and technological innovations of the sector, and the application of strict quality standards. Small private dairy plants can

hardly compete with large privatised dairy plants. Foreign competitiveness has had a significant impact on domestic producers, contributing to their profitability and speciality. However, privatisation could not improve the situation in every of the dairy plants, so that some were left insolvent and the new owners could not fulfill their obligations stated in the contracts (Pancevo, Pirot, Užice dairy plants).

2.3 Production, consumption and trade developments

The supply and demand balance points to some principle trends in the production, consumption and trade (Table 6). The balance was made by the authors themselves, their estimation based on data of some relevant institutions. In Serbia the production of milked milk has been increasing since 2000, despite its stagnating 1.6 billion liters. Since 2006 export has been greater than import and Serbia is known as a net exporter of milk and dairy products. Both production and import, minus export and changes in the supplies offer sufficient quantities for domestic consumption. According to the FAO data for both Serbia and Montenegro the consumption of milk was stable and amounted to about 160 per capita of fresh milk during 2000-2003. Based on the authors' estimation total milk consumption in Serbia amounts to about 180 liters per capita which is in accordance with the data of the poll conducted by the Serbian Statistical Office. Self-sufficiency rate raised from 98.5% in 2001 to more than 103% over the past years.

Table 6 Supply/demand balance sheet on dairy products (in 000 tons equivalent of 3.5% fat milk)

	2001	2002	2003	2004	2005	2006	2007
Production	1576.4	1579.7	1576.4	1579.0	1602.0	1586.8	1548.5
Imports	17.2	24.1	17.4	26.5	17.1	14.4	22.3
Exports	6.4	6.7	10.8	9.2	22.8	72.6	72.1
Stock variation*							
Supply available	1587.2	1597.1	1583.0	1596.3	1596.3	1528.6	1498.7
Human consumption	1382.1	1391.2	1377.8	1389.9	1387.6	1322.0	1297.2
Av. Cons. Per capita	184.2	185.5	184.2	186.3	186.5	178.2	175.3
Self-sufficiency rate (%)	98.5	98.9	99.6	98.9	100.3	103.8	103.3

*- data unavailable

Source : Calculated by authors– on the basis of data taken from documentation of Agricultural Statistics for cited years, The Serbia Republic Office of Statistics (SROS), Belgrade and data of the Ministry for Agriculture, Forestry and Water Management, Draft (2008).

Milk and dairy products production

The production of milk in Serbia has been increasing until 2005. In 2007 the production declined (1.2%) in relation to 2000 (Table 6a). The production stagnated and amounted to about 1.6 billion litres. About 92% of total milk production in Serbia originates from family farms and the remaining 8% from social (state) farms (enterprises

and cooperatives). Taking into account the process of privatisation it can be concluded that the share of social farms in total milk production declined to about 5%.

Table 6a Milk production in Serbia (2000–2006)

Year	Milk production		
	Total milk production (000.000 lit)	% cow milk production on family farms	% cow milk production of social (state) farms
2000	1567		
2001	1576	92.0	8.0
2002	1580	90.8	9.2
2003	1577	91.0	9.0
2004	1579	91.8	8.2
2005	1602	91.3	8.7
2006	1587	91.9	8.1
2007	1548	91.9	8.1
D = 2006-00	- 19	-	-
I=2006/00	98.8	-	-

Source : Calculated by authors– on the basis of data taken from documentation of Agricultural Statistics for cited years, The Serbian Republic Office of Statistics (SROS), Belgrade

Table 6b Milk production and intake of processing capacity of dairy plants in Serbia during 2005-2007

	2005	2006	2007	Index (2005=100)
Milk production (million liters)	1,602	1,587	1,548	97.1
Dairy plant intake (million liters)	813	733	805	99.0
Dairy plant intake (%)	50.7	46.2	52.0	-

Source : Calculated by authors– on the basis of data taken from documentation of Agricultural Statistics for cited years, The Serbian Republic Office of Statistics (SROS), Belgrade and Ministry for Agriculture, Forestry and Water Management, draft (2008)

Based on the available data (Table 6b), of the milk produced in Serbia, 813 million liters (50.7%) were delivered in 2005 and 733 million liters (46.2%) in 2006. Of the total production in 2007, 805 million liters, i.e. 52% were purchased. The decline in the quantities of milk purchased from part of the dairy plants may be attributed to lower milk premiums in 2006 and 2007. Large producers deliver milk directly to dairy plants. In case of small producers agricultural cooperatives are go-betweens. The role of agricultural cooperatives is of major importance in hill and mountain regions with a great number of small producers (1-2 dairy cows) and small market surpluses.

According to MAFW, in the *structure of dairy products* production nearly 90% accounts for fresh milk and fresh dairy products (yoghurt, cream, ...). Fresh milk production has been noted to rise (Table 7) along with some oscillations. Fresh milk processed products production has been noted to have had a permanently rising trend and

in 2007 it was greater by 105% in relation to 2000. Generally, cheese production has been increasing, along with a slight production decline in 2007. However, its production was by 56% greater compared with the basic year. The quantities of butter and powder milk produced were noted to oscillate with an increasing trend and the 2007 production exceeded the 2000 production by 76%, i.e. 118% respectively.

Table 7 Trends in dairy production (ten most recent years)

	2000	2001	2002	2003	2004	2005	2006	2007	Index 2000 = 100
Butter t	1687	2339	2675	2307	2215	3645	2912	2970	176
Cheese products t	11700	13722	16696	15755	18781	19279	19976	18263	156
Fresh consumption milk, million L.	319	356	347	396	401	385	395	454	142
Fresh dairy products million l.	98	116	139	150	172	189	192	201	205
Powder milk t	2643	5226	4715	3768	3126	6712	4511	5773	218

Source: Calculated by authors– on the basis of data taken from documentation of The Serbian Republic Office of Statistics

Milk and dairy products consumption

No data have been published on the consumption of food commodities in Serbia after 2002. FAO data for both Serbia and Montenegro are available for the period preceding 2003. Another source are Survey on the consumption of milk and dairy products by household members of different social and economic categories (agricultural, mixed, non-agricultural) conducted by the Serbian Statistical Office until 2002. Since 2003 there have been no data on the quantities of milk and dairy products consumed only available resources and structure of utilisation of household means for certain purposes and food types, beverages with subgroup milk, cheese, eggs for households of both urban and rural regions. The data include urban and rural households but no data on the amount of milk and dairy products consumed are given .

According to FAO data, during 2000-2003 fresh milk equivalent consumed in Serbia and Montenegro was about 160 kg per capita.

According to the Survey on consumption of households conducted by the Serbian Statistical Office, the average consumption of milk per capita in Serbia during 1998-2002 declined and amounted to about 80 liters per capita (Table 7a) as well as at the level of average consumption in EU-25. Butter consumption has permanently been low and amounted to 0.1 kg. Cheese consumption declined in relation to 1998 and was approx. 8 kg. This is considerably lower compared with the EU countries.

Changes in the living standard of the population have contributed to some changes in the dairy product consumption structure and increased the share of products with low fat content, additives – cocoa, fruits, cereals, etc. Obviously, the consumption of these products in Serbia is very low as well as their share in the calory value. However, Serbia's lagging behind with regard to the share of milk and dairy products consumption (6-8% in the calory value structure) in relation to the WHO recommended nutrient values (15%) is most prominent (Božic, D., 2005).

Table 7a Average annual milk and dairy products consumption per household member in Serbia (1998-2002)

Quantity (litre,kg)	Godina Year				
	1998	1999	2000	2001	2002
Fresh milk	86.8	82.8	80.0	80.8	82.1
Yoghurt	7.8	7.9	6.7	8.4	11.8
Domestic cheese	9.1	8.2	8.6	8.3	8.2
Other cheese types (Cascaval...)	0.2	0.2	0.1	0.2	0.3
Butter	0.1	0.1	0.1	0.1	0.1
Cream, sour and sweet	1.0	0.9	0.7	0.9	0.8
Other dairy products	0.1	0.1	0.1	0.1	0.2

Source : Survey on household consumption 1998-2002, Statistical Office of Serbia

Trade

Since 2005 Serbia has been a net exporter of agricultural commodities. The net export value of milk and dairy products has significantly increased since 2006 surpassing the net import value, i.e. Serbia has become a net exporter of these products. This is primarily due to increased export to Montenegro whose market has become an exporting one for Serbia since May 2006. The share of milk and dairy products in the structure of total export of agricultural commodities increased by about 1.6% in 2000 and to more than 3% in 2006 (Table 8).

In addition, the milk and dairy product import value increased in 2007 (2-fold in relation to the previous year). The share of milk and dairy products in the import value structure of food commodities was noted to decline (from 2.4% in 2000 to 1.3% in 2006). The same value increased to 2.1% in 2007.

Tab. 8. Export and import, major destinations and origins, share of import and share of export of production (2000-2007)

	2000.	2001	2002	2003	2004	2005	2006	2007
Export (mil. USD \$)	1558	1721	2075	2756	3523	4482	6427.9	8824.8
Total Agro-food products	295.6	316.7	534.1	584.0	800.1	924.4	1265.6	1685.8
Of which Dairy*	4.7	4.8	5.2	8.9	8.6	11.8	423	54.7
Montenegro (%)			-	-	-	-	61.8	63.7
Macedonia (%)			43.5	33.8	58.9	61.3	15.5	17.1
Bosnia & Hercegovina (%)			48.8	56.9	31.7	35.8	19.3	17.1
Other countries (%)			7.7	9.3	9.4	2.9	3.4	2.1
Imports (mill. USD \$)	3330	4261	5614	7477	10753	10461	13172.3	18553.6
Total Agro-food products	286.7	453.1	548.7	654.2	855.6	772.8	905.6	1122.1
Of which Dairy*	6.8	6.4	10.7	11.5	18.2	12.4	11.6	24.0
EU (%)			96.3	89.8	74.2	76.5	84.9	77.2
Croatia (%)			1.3	6.4	8.6	12.6	5.9	11.1
Bosnia & Hercegovina (%)			2.4	1.7	9.1	6.3	5.3	10.1
Other countries (%)			-	2.1	8.1	4.6	3.9	1.6

*- refers to export and import value of milk, dairy products and eggs

Source: Calculated by authors– on the basis of data taken from documentation of The Serbian Republic Office of Statistics

The major export destinations are former Yugoslav republics, CEFTA members: Macedonia, Bosnia and Hercegovina. Since 2006 Montenegro has become the principle destination with a 60% share of total dairy exports.

Milk and dairy products are primarily imported from EU member countries (Germany, Italy, France, Hungary, Slovenia,) although there has been a decline of EU's share of these products in the import structure (from 96.3% in 2002 to 77.2% in 2007). Significant quantities of dairy products are also imported from Croatia and Bosnia and Hercegovina with an increasing trend of the share.

The export structure is mostly represented by fresh milk and fresh dairy products followed by cheese and ice cream (Table 9).

Milk and fresh dairy products predominate in the import structure followed by powder milk, cheese and ice cream.

Table 9. Import and export of dairy products (in tones)

		Consumption and fresh products	milk and fresh milk	Powder milk or concentrates	butter	cheese	ice cream
2002	Import	4900.3	724.7	384.0	617.7	1103.3	
	EU	3.704.0	709.8	384.0	584.8	858.2	
	Croatia	31.1	-	-	32.9	245.1	
	Other countries	1165.2	14.9	-	-	-	
	Export	2632.3	23.1	183.9	360.6	1419.4	
	Bosnia & Hercegovina	1601.7	17.6	135.3	166.3	470.8	
	Macedonia	1.028.3	5.5	38.8	136.4	836.3	
	Other countries	2.3	-	9.8	39.9	112.3	
2007	Import	7697.2	744.3	155.4	715.3	658.4	
	EU	3.985.3	515.0	91.3	654.1	358.8	
	Bosnia & Hercegovina	2298.2	229.3	20.0	-	235.7	
	Croatia	1612.4	-	44.1	66.4	63.8	
	Other countries	1.3	-	-	64.8	-	
	Export	38154.3	174.7	131.2	3.724.3	2913.7	
	Montenegro	25573.9	37.8	100.4	2.125.4	1763.8	
	Macedonia	6006.5	96.9	1.5	607.8	833.7	
	Bosnia & Hercegovina	6172.2	40.0	29.3	767.7	314.7	
	Other countries	401.7	-	-	23.2	1.5	

Source : Calculated by authors– on the basis of data taken from documentation of Agricultural Statistics for cited years, The Serbia Republic Office of Statistics, Belgrade

2.4 Government policy

2.4.1 Regulatory framework of the dairy sector

In Serbia there are different types of subventions (premiums, regresses, i.e. direct payments in order to support the development of milk production. Milk payments are

selective (depending on production conditions – hill or mountain regions). From 2004 onwards only registered farms delivering milk to registered dairy plants were given the opportunity to expect agro budget payments.

Table 10. Milk premiums in Serbia (2000-2007)

Year	Lowland region		Hill and mountain region	
	din/l	Euro/l	din/l	Euro/l
2000	1.1	0.019	1.1	0.019
2001	3.6	0.061	4.0	0.067
2002	4.0	0.066	4.4	0.072
2003	4.0	0.062	4.4	0.068
2004	4.0	0.055	4.4	0.060
2005	3.8	0.046	4.5	0.055
2006	3.0		4.0	
2007	3.0/2.0*		4.0/3.0*	

*- Premium decreased in April 2007

Source: Božić Dragica, Bogdanov Natalija (2006)

The high share of financial resources for milk production premiums in the agro budget structure points out the main goal in the restructure of prime agricultural production in Serbia which focuses primarily on cattle production in order to increase profitability and competitiveness. In some years (2000 and 2001) almost half of total agro budget was used for this purpose. Premiums for the production of milk, along with a high import protection have stabilised domestic production leading to self-sufficiency and market surpluses (*Božić Dragica, Muncan P., Marković D., 2003*).

The agro budget of Serbia disposes of financial resources for breeding stock premiums in order to improve livestock production, especially cattle production.

Since 2004 the agro budget financial resources amounting to about 10 million Euros have been focused on improving milk quality. The support was intended to help milk producers on small and medium farms meet their needs with regard to the purchase of milking machines, milk coolers, in order to improve milk quality and approach EU quality standards (*Božić Dragica, Bogdanov Natalija 2006*).

Financial resources for rural development, revival of both village and holdings (about 9.1 million Euro in 2005) can partly be used for promoting cattle production development, i.e. milk production included. The Serbian agro budget for the development of the processing sector, i.e. food industry, is known to be comparatively small.

Financial support of relevant governmental institutions in Serbia for the development of agriculture, intensification of production and promotion of export is very low compared with developed countries, primarily EU member countries. The Serbian agro budget despite a certain increase, is insufficient for serious financial undertakings in agriculture. Stimulative policy measures contributing to dynamic production output, promoting quality improvement, product marketing and export of food products are needed. Future integration processes, WTO requirements with regard to trade liberalisation of food products should be taken into account. These processes are however not expected to substantially impact and decrease the agro budget because its financial support is insignificantly low anyway.

2.4.2 Other dairy sector relevant policy areas e.g. competition policy etc.

High tariff rates protect the Serbian dairy sector from import and import-levy. A maximum tariff rate (30%) was imposed for strategic agricultural products which impacted other productions in the food chain and whose liberal import may have an economic and social impact (*Božić Dragica, Bogdanov Natalija 2006*)

Milk and dairy products export is stimulated by export premiums. The Serbian agro budget has had stimulative financial resources for encouraging export of food products since 2003. Export subventions are relatively modest compared with the neighbouring countries especially EU member countries. In 2005 subventions for stimulating export amounted to 7.4 million Euro (608 million dinars) and an additional 2.4 million Euro (200 Million dinars) were intended to improve export, quality control and food marketing. Export stimulus for milk and dairy products, ice cream excluded, was 20% on the export price. This list of products has not undergone any significant changes. Thanks to an open foreign market and EU trade preferences (resolution 2007/2000 EC and 2563/2000 EC) as well as the current process of privatisation chances for Serbia to export food products have grown. However, due to the lacking regulations for obtaining the certificate on milk and dairy products quality these products are still banned for export. Milk and dairy products are primarily exported to former Yugoslav Republics and having signed CEFTA the Serbian export has been left without export stimuli.

Thanks to the implementation of the solutions suggested in the DREPR project, building tanks for manure storing and use of modern equipment for handling and disposal of waste, the agriculture of Serbia may expect to approach both European and world trends in agricultural practice. The growing interest of farmers in Serbia rises but also the awareness of the need to apply modern solutions in environmental protection. In addition, domestic farmers implementing these solutions are inclined to enhance business results, gain desirable experiences and harmonise with EU practices. In this way Serbian farmers will be both fully prepared for EU accession and competitive on foreign markets. Vrbas, one of the four municipalities in Serbia with the case-study farm consisting of tanks built for storing liquid and solid manure will demonstrate advantages from introducing suggested standards. The realisation of the project will contribute to the improvement of environmental protection. About 60 Serbian farms will be included in the DREPR project.

3 Performance of the dairy supply chain

3.1 Performance at farm level

The predominant role of small family farms in the production of milk in Serbia (92 %) has already been stressed. Low output (average number of head of cattles per farm about three cows) raises numerous issues with regard to efficiency of the sector.

3.1.1 Yields

Milk production per cow represents one of the indices proving low efficiency of the sector. Although average milked milk production per cow was found to rise in Serbia, it is still low and in 2007 it was 2663 liters (see table 11). However, internal estimations of experts of the Serbian Statistical Office have shown milk performance (including total milk production per head) to be somewhat higher (about 3000 liters).

Table 11 Average annual milked milk production per cow

	Average cow milk production (lit per head)	Cow milk production (lit per head) on holdings	Cow milk production (lit per head) in agricultural enterprises and cooperatives
2000	2063		
2001	2149	2100	
2002	2259	2215	
2003	2327	2217	
2004	2350	2309	
2005	2383	2435	5965
2006	2645	2509	6134
2007	2663	2537	6037

Source: Statistical Office of the Republic of Serbia, Belgrade.

Milked milk production per head was significantly greater on state-owned farms (agricultural enterprises and cooperatives), more than 6000 liters.

Significant differences with regard to milk production according to regions were registered as well. In Vojvodina milk production per cow was significantly greater (about 3800 liters). In Serbia milk production was influenced by seasonal changes as well. Yield per cow was very high in May, e.g. by 22% more than in November.

Milked milk production per cow in Serbia is far below the EU-15 and EU-25 average amounting to 6500 liters, i.e. 6089 liters in 2003 (Eurostat, 2008). There are significant variations with regard to milk production per cow within EU member states (about 3500 l in Romania, 4470 l in Luthiania, more than 7300 l in the Netherlands and

more than 8000 l in Sweden (Table 11a). Milk production per cow in Serbia is evidently lagging behind compared with all EU-27 member states. This may be attributed to small holdings, unfavourable cattle breed, nutrition and lodging conditions.

Table 11 a Cow numbers, average herd sizes, and milk yields in the country at hand and in some selected EU member states, (2005)

Country	Dairy Cows	Average Herd Size	Average Cow Yield (liters per cow p.a.)
Serbia	672313	3.0	2383
EU-15*	19480699	31.6	6457
EU-25*	24266798	13.8	6089
Netherlands	1494570	55.9	7345
United Kingdom*	2206373	79.2	6807
Denmark	557869	85.7	8108**
Germany	42359000	38.4	6725
Sweden	393263	46.0	8152
Slovenia*	130712	6.5	5100
Lithuania	416500	2.4	4470
Romania	1626000	1.4	3587

*-data refer to 2003

** - data for 2004

Source: Documentation of the Statistical Office of the Republic of Serbia and EUROSTAT, 2008

Milk production per cow in selected EU member states has been rising with Denmark predominating (19% in 2005 in relation to 1997), followed by Sweden and Great Britain (Table 12).

Table 12 Developments in milk yields per cow p.a. – country at hand and selected countries in the EU, in a few selected years

	1997	1999	2001	2003	2005
Serbia	1935	2139	2149	2327	2383
EU-15	5681	5922	6200	6457	...
EU-25	6089	...
United Kingdom	5949	6120	6679	6807	6807
Netherlands	6675	6808	7090	7299	7345
Sweden	7124	7478	7850	8082	8152
Denmark	6814	7171	7304	7816	8108

Source: Documentation of the Statistical Office of the Republic of Serbia and EUROSTAT, 2008

3.1.2 Price

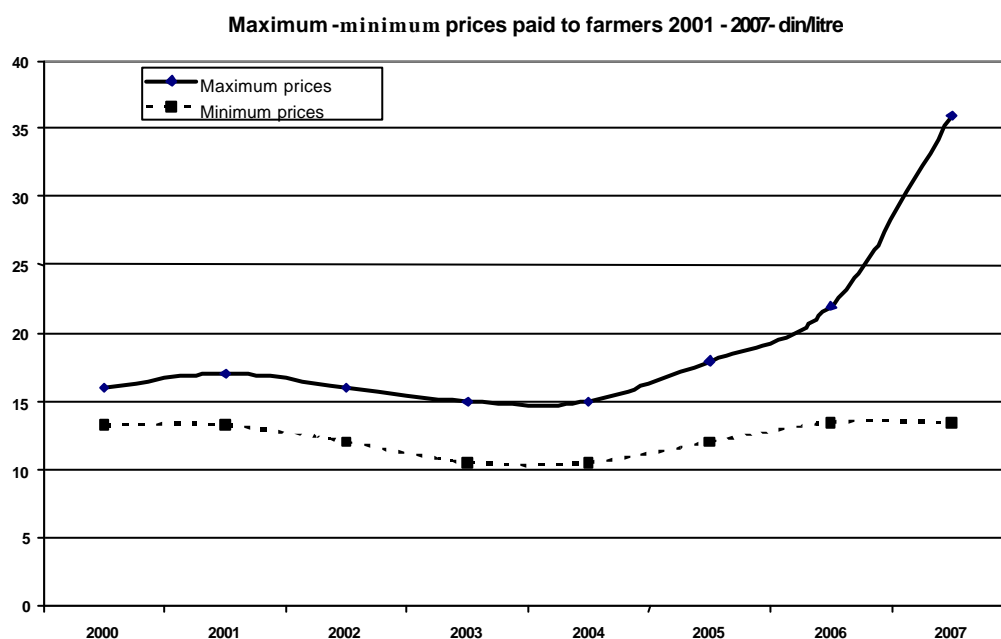
In Serbia average milk prices paid to farmers were declining during 2001-2003 (Table 13). Since 2004 prices have significantly increased. In 2007 compared with 2001 prices were nearly 70% higher. The trend continued in 2008 as well and in May the average price paid to farmers was 23.7 dinars (0.30 Euro) per liter.

Table 13 Average milk prices paid to farmers in Serbia (2001-2007)
(din/lit.)

2001	2002	2003	2004	2005	2006	2007
10.95	10.61	10.58	12.72	14.22	15.19	18.46

Source: Documentation of the Statistical Office of the Republic of Serbia

Minimum and maximum milk prices paid to farmers in Serbia during 2000-2007 are shown in Fig. 2. The trend line for minimum milk prices paid has not undergone any changes for almost 8 years. The trend line for maximum price shows a significant rise in 2007 in relation to 2006 (64%). The 30% increase of the milk price paid to farmers in August 2007 may be attributed to both deficiency in milk supply and higher feed prices.



Source : Ministry for Agriculture, Forestry and Water Management, Draft (2008).

Until 2001 in Serbia milk production was given protective, i.e. guaranteed prices. This was followed by the formation of prices depending on the conditions on the market, i.e. supply and demand. This resulted in relatively low milk prices and revolting milk producers. Being displeased with the situation the producers often protested by spilling milk in the streets. Milk is the only product of the Serbian livestock production receiving

continuous selective premiums (lowland and hill and mountain regions) from the very formation of the agro budget with the objective of promoting the production. However, the producers are unanimous in their opinion considering premiums insufficient to stimulate and promote the development of this production.

Milk prices were compared on a sample of 16 dairy plants in 8 different EU member states showing an average milk price of 29.95 Euro (100 kg) in April 2006, i.e. average for 12 months was 28.46 Euro (100 kg). Thus milk prices in Serbia for the selected period are lower in relation to EU. The same conclusion can be derived from the selling prices of raw cow milk in EU member states (Table 13 and 13a).

Table 13a Selling prices of raw cow's milk in EU (Euro per 100 kg)

	2000	2001	2002	2003	2004	2005	2006	2007
Belgium	29.99	31.69	28.98	27.04	28.74	27.56	26.94	33.75
Bulgaria	:	:	:	:	:	:	:	:
Czech Republic	21.00	22.72	26.18	24.43	24.97	:	:	:
Denmark	33.00	34.35	34.18	33.11	31.45	30.33	30.43	39.03
Germany	31.60	34.54	31.50	30.02	32.20	31.58	:	:
Estonia	17.38	20.43	17.90	18.42	24.53	25.40	24.32	26.86
Ireland	27.30	28.60	26.38	26.00	25.99	25.48	24.61	31.10
Greece	35.84	36.54	37.68	38.10	34.82	35.28	34.95	38.67
Spain	27.38	30.68	28.64	28.67	30.76	30.34	29.62	35.35
France	30.28	31.47	30.64	:	:	:	:	:
Cyprus	30.49	32.47	35.34	39.70	38.27	:	:	:
Latvia	:	:	:	:	:	:	:	:
Lithuania	14.10	16.59	15.52	14.14	16.99	19.58	20.06	29.45
Luxembourg	31.97	34.23	33.28	32.61	32.22	30.79	30.43	:
Hungary	24.23	26.70	29.73	28.16	24.99	25.91	24.15	28.88
Malta	42.71	42.93	43.29	39.90	39.95	35.82	34.47	37.27
Netherlands	32.20	34.35	32.75	31.40	30.35	30.10	29.30	34.60
Austria	28.97	33.32	31.54	29.68	29.52	29.44	29.89	33.75
Poland	18.98	20.75	18.07	15.86	18.74	22.42	23.14	27.49
Portugal	30.74	32.73	32.85	32.69	33.19	32.36	30.97	35.88
Romania	13.83	15.61	15.33	15.57	15.27	17.85	19.00	22.71
Slovenia	27.95	28.88	29.04	27.45	26.58	26.34	26.66	:
Slovakia	19.65	20.32	22.23	22.20	23.71	25.36	25.97	29.02
Finland	34.29	35.41	36.15	36.16	35.23	34.46	35.83	37.91
Sweden	35.78	32.08	33.31	36.26	32.02	30.47	30.42	32.95
United Kingdom	26.97	30.09	26.41	25.30	26.43	26.24	26.32	26.22

Source: EUROSTAT, 2008

3.1.3 Gross margins

A significant indicator of competitiveness of the Serbian dairy sector is the gross contribution margin achieved. Contribution margin at an average Serbian dairy farm (3 heads) but also at a large farm (50 heads) was analysed and the results are shown in Table 14.

Table 14 Gross margins at Serbian dairy farms (2007), value in dinar

Elements	Per head	
	Small dairy farm	Large dairy farm
Number of cows	3	50
Yield, kg/cow	3000	6000
Cultivable land (ha)	3	50
Pastures (ha)	2	0
Value in (din) per 100 l milk	2300	2500
Total income (on 100 l of milk)	2830	3030
- Milk and dairy products	2300	2500
- Heifer and weaning calf value	530	530
Total computed variable costs (on 100 l of milk)	1412	1279
Feed (total)	1243	1202
- Variable production costs of own feed	807	737
- Concentrated feed	436	465
Water	40	13
Insemination	40	20
Veterinary services and medications	56	28
Electricity	15	8
Other variable costs	17	8
Gross margin per 100 kg of milk	1418	1751
Gross margin rate (of return on milk sale)	61.6 %	70.0 %
Gross margin (total revenues less variable costs)	127620	5253000

Source: Authors' calculation

Farmers producing on average 3000 l of cow milk on small and 6000 l on large dairy farms with the milk price of 23 dinars per l on small, i.e. 25 dinars per l (better milk quality) on large dairy farms can expect:

- Gross margin on 100 l of milk amounting to 1418 d on small, i.e. 1751 dinars on large dairy farms,
- Gross margin per farm (total income – variable costs) amounting to 127,620 dinars on small, i.e. 5,253,000 dinars on large dairy farms,
- Gross margin rate on small dairy farms amounting to 61.6%, and on large dairy farms 70%.

It was impossible to make a comparison of calculations, i.e. gross margins between countries due to different currencies, different level of dependency on purchase input, difference in average farm size, different breeding and nutrition systems of cows etc. According to some sources average gross margin in EU-15 amounted to 86% in 2002 (although some countries like the Netherlands and Spain were noted to have achieved higher margins). In Serbia gross margin was lower on large dairy farms but particularly on small dairy farms.

The calculation points to some significant differences between small and large dairy farms with regard to gross margins achieved. Much better results were achieved by large farms (50 heads).

3.2. Performance at industry level

Privatisation of our economy was initiated by the end of the 1990's. It was institutionally founded on social and economic reforms and new legislation. However, all this was interrupted by war conflicts, sanctions and hyperinflation. During 1996-2000 regulations were enacted at both federal and republic level (with Serbia as part of the Federal Republic of Yugoslavia) with the aim of contributing to successful privatisation. Of the 246 companies in the dairy sector in 2000, 198 (or 80.4%) were private (Milanovic, M., 2002). At that time the newly established private companies were small (rarely medium) and their share in total production and total employment was significantly lower compared with their share in the total number of companies.

Privatisation of large dairy companies in Serbia took place in two stages: workers' shareholding method whereby 60% of social capital was distributed among workers of these dairy plants but among workers of other companies and government institutions as well both active and retired without compensation. In the second phase of privatisation auctions were organised and both domestic and foreign investors took part and became majority shareholders of our private dairy companies (Ševarlic, M. 2007). Large companies use modern technology and comply with the international quality and hygiene standards.

3.2.1. Turnover and employment in the dairy industry

During 2001-2006 total dairy industry sale was noted to rise (Table 15). Most of the sale was realised on the domestic market whereby the retail value of milk and dairy products increased 3.7 times and wholesale by about 4.4 times. Only 5% was realised on the export market which points to limited exporting chances of the dairy sector.

Table 15 – Sale value of the Serbian dairy industry (2001-2006) (millions din)

	Retail	Wholesale
2001	7396	4805
2002	10005	9819
2003	14638	9907
2004	17962	12119
2005	22933	13817
2006	27603	21124
Index(2001=100)	373	439

*- refers to milk, dairy products and eggs

Source : Calculated by authors– on the basis of data taken from documentation of Agricultural Statistics for cited years, The Serbia Republic Office of Statistics, Belgrade

Statistical data on production productivity and profitability of the Serbian dairy companies, i.e. dairy sector are hardly available. Being deficient in data on GVA for the Serbian dairy industry, data on GD(material)P – total for dairy industry and per employee were used.

In 2005 GD(material)P achieved in the Serbian dairy industry and per employee increased by about 15 and 30% respectively (Table 15a).

Table 15a Some selected performance indicators of the dairy industry

Years	GD(material)P (000 dinara)	GD(material)P Per Employee (000 dinara)
2003	5594210	778
2004	6798255	1033
2005	6460689	1020
Index(2003=100)	115.4	131.1

Source : Calculated by authors– on the basis of data taken from documentation of Agricultural Statistics for cited years, The Serbia Republic Office of Statistics, Belgrade

3.2.2.Value added and profits

The gross additional value (GVA) indicator per employee can be used in order to compare competitiveness of companies or sectors. However, being deficient in the indicator, we were obliged to use GD(material)P per employee in the Serbian dairy sector, food industry and the overall processing sector (Table 16).

Table 16 GD(material)P and profits per employee in the dairy sector, food industry and manufacturing

	GD(material)P per employee, 2005	
	2005 (000 din)	2005/2003 index
Dairy industry (15.5)	1020	131
Food industry (15)	823	125
Manufacturing (D)	637	144

Source : Calculated by authors– on the basis of data taken from documentation of Agricultural Statistics for cited years, The Serbia Republic Office of Statistics, Belgrade

GDP per employee in the dairy sector was by 24% higher from the average for the food industry on the whole and by about 60% from the average for the processing industry. During 2003-2005 GDP per employee in the dairy industry increased by 31%, food industry by 25% and the processing sector by 44%. So, this shows that productivity in the dairy industry is relatively high.

It was impossible to compare competitiveness of the Serbian dairy industry with other countries due to invalid data. EU member countries achieve higher GVA values per employee, the Netherlands 74000 Euro, Ireland 81000 (Eurostat, 2006).

3.2.3. Market share developments

The share of the Danube Food Group on the Serbian market is estimated to account for about 46% (Estimation of dairy industry experts). One can argue whether DFG holds a monopoly on the Serbian market because according to the Law on competitiveness protection, market predomination is not prohibited and if the share accounts for more than 40% it is necessary to prove the opposite. On the other hand, purchase prices prove monopoly in the dairy sector because our milk producers are known to be among those with the lowest purchase prices in the region (www. ac-broker.co.yu, 18.03. 2007). Presently, there are only a few large milk and dairy product producers and sellers on our market. In addition to the large dairy plants (IMLEK, NOVOSADSKA, SUBOTICKA, ZEMUNSKA I ZAJECARSKA MLEKARA-Impaz) incorporated in the Danube Food Group system, the role played by Lura, Unimilk, Zemunska and Zajecarska- Impaz dairy plants is significant as well. So, one could conclude that DFG holds no monopoly. However, there is no official proof for this. At the moment (February 2009) there is a process at the Serbian court regarding the monopoly and dominant position of DFG group on the Serbian market.

Both domestic and foreign investment privatised dairy plants were noted to meet the needs with regard to supply and demand for fresh milk. The share of imported products accounts for about 5% (the authors estimation) of the fresh dairy products, cheese and powder milk on the market. Delta M and Silbo are the major importers of milk and dairy products for the Serbian market.

3.2.4. Competitiveness at retail level

Dairy products produced in Serbian dairy plants are well presented in retail stores. The quality of dairy products is similar to foreign competitive products. Serbian dairy company brands are among the cheaper, especially butter and powder milk. Competitiveness of the Serbian dairy plants can be improved by increasing output and significantly raising investments in novel products. There is a too broad spectrum of produce and only specialisation in the production of a few products can raise production and sale efficacy. Imported dairy products are generally more expensive (butter, cheese,). Consumers find domestic products more likely to resemble organic food than foreign. Investments in product development and targeted marketing can help consumers acquire knowledge and improve the position on the market. Over the past years the number of supermarkets well supplied with milk and dairy products has grown. Retail is now dominated by private companies such as Delta-Maxi and Rodic. Foreign Mercator, from Slovenia, Idea from Croatia, Vero from Greece entered the market as well, creating more competition.

Table 17 Retail prices of dairy products in a supermarket in (Belgrade), date – example below: September 2008

(din)

	Pasteurised milk	UHT Cream	Butter	Fat Yoghurt	Cascaval packed cheese
Units	litre	100 gms	125gms, 65% fat	litre	Per kg (packed)
Foreign breeds	-		Meeagle-168,90	61.00	Gauda- 699.9
Products of large Serbian Company	57.90	Kremsi-Imlek 33,80	Imlek-77,60	77.90	Iriški sir-Imlek 624,50
Products of medium sized Serbian Companies	55.00	Sirko-dairy Šabac 39,90	-	81.00	Mocarela-Niš dairy -667,6

Source: Personal observation

High margins on retail milk and dairy product prices are part of retail trade and are paid by consumers: pasteurized milk (up to 15%), hard cheese (up to 30%). Retail prices of these products in retail stores were found to vary significantly due to enormous differences between rebate and margins.

Significant quantities of dairy products (primarily cream and white cheese) produced and processed on family farms are sold on green market. Fresh milk quantities sold on the market are negligible (about 1 million liters) and were found to decline in relation to 2000. Significant quantities of cheese (10000 tons) and cream (2000 tons) are sold on the green market.

Table 17 a Sale of milk and dairy products on Serbian green markets

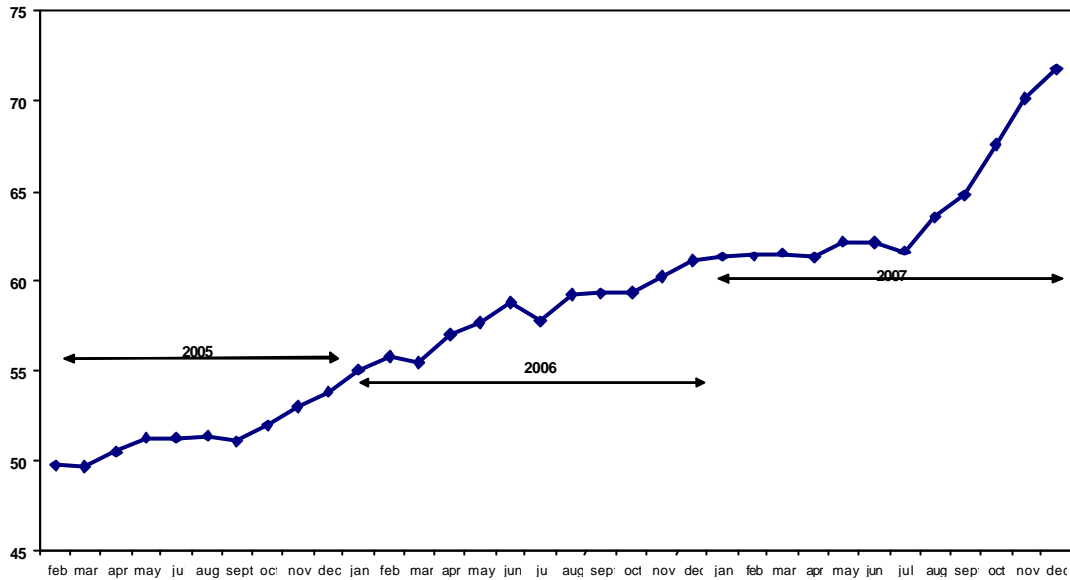
Year	Milk (000 liters)	Dairy products – tons			
		All types of cheese	Cream	Butter	Other dairy products
2000	5914	11198	2070	15,9	351
2001	1723	10954	1829	28,9	289
2002	1167	10754	1803	112	198
2003	928	9414	1799	104	152
2004	889	9068	1814	82,3	160
2005	839	9480	1667	89,5	179
2006	770	9964	1722	29,0	108
2007	831	9823	1878	31,5	86,2

Source: Data of the Serbian Statistical Office

Dairy products sold in 2006 are represented by about 70,000 tons as dairy equivalent. This makes about 9% of the 800,000 tons of milk produced but not delivered to dairy plants (according to the Republic Statistical Office). Dairy products sold on green markets are lower in price compared with those sold in retail stores. However, all the necessary prerequisites need to be fulfilled (equipment, packaging, handling,) in order to meet food safety standards. Dairy products are both controlled and sold taking into consideration regulation requirements which are continually improved. Retail prices of pasteurized milk and cream sold in retail stores, prices of white cheese in sold retail stores and green markets are given in Fig. below. Eighteen Serbian cities were included

in the study and average prices were computed in order to obtain price trends for both retail stores and green market.

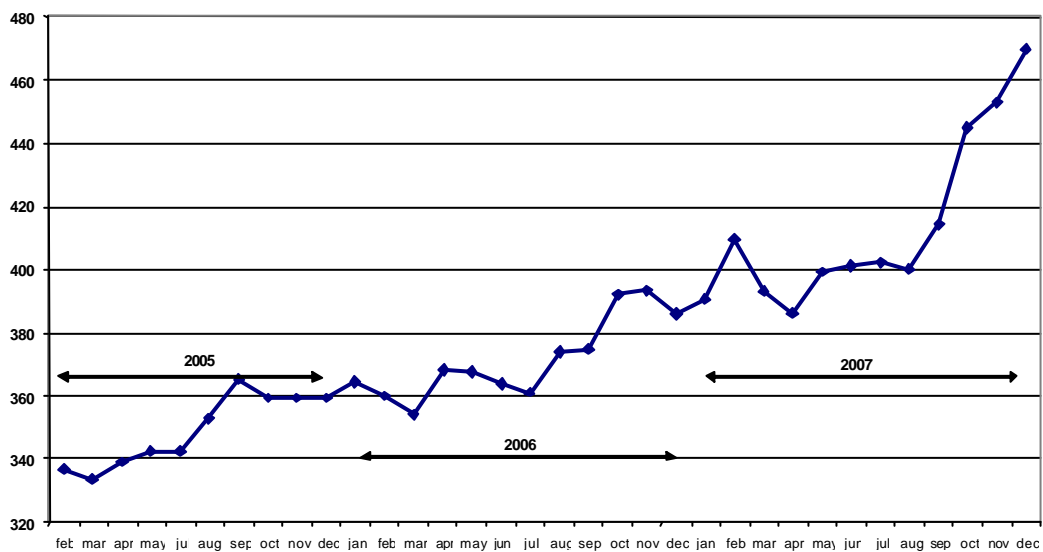
Fig. 3. Trends for pasteurised milk retail prices (dinars/liter, 2005-2007)



Source : Ministry for Agriculture, Forestry and Water Management, Draft (2008)

Prices for pasteurised milk were found to rise until the mid 2007's followed by a sudden 16% jump due to milk deficiency. During the three years total price growth was 36%.

Fig.4. Trends for cream retail prices (din./kg, 2005-2007)

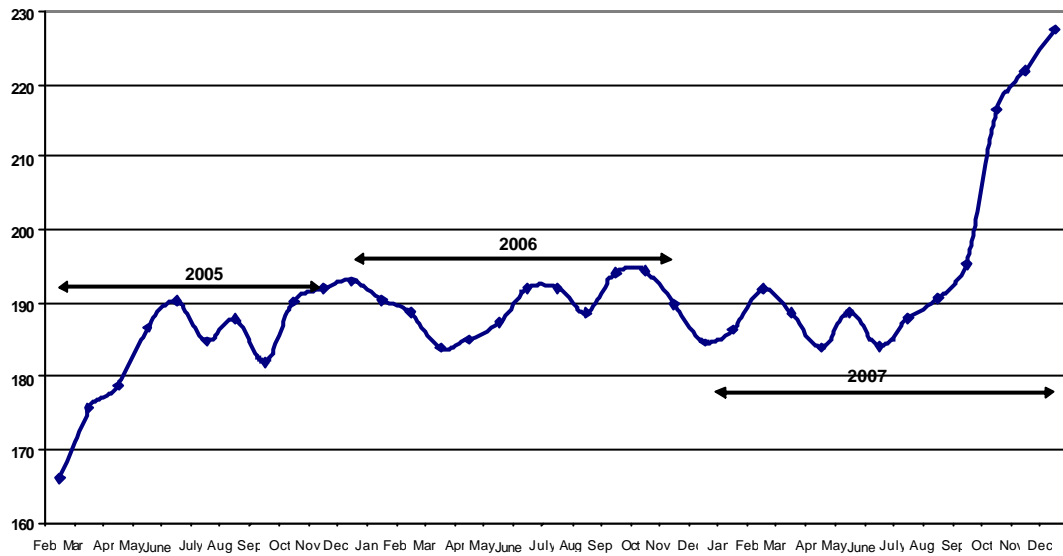


Source : Ministry for Agriculture, Forestry and Water Management, Draft (2008)

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Cream is traditionally a product of rural households and because of this industrial production lags behind. Total price growth by the beginning of 2005 was 39%, increasing by 7% in 2005 and 2006 and 22% in 2007. Its growth was most prominent in the second half of 2007, by about 17%.

Fig. 5. Trends for cheese retail prices (din./kg, 2005-2007)

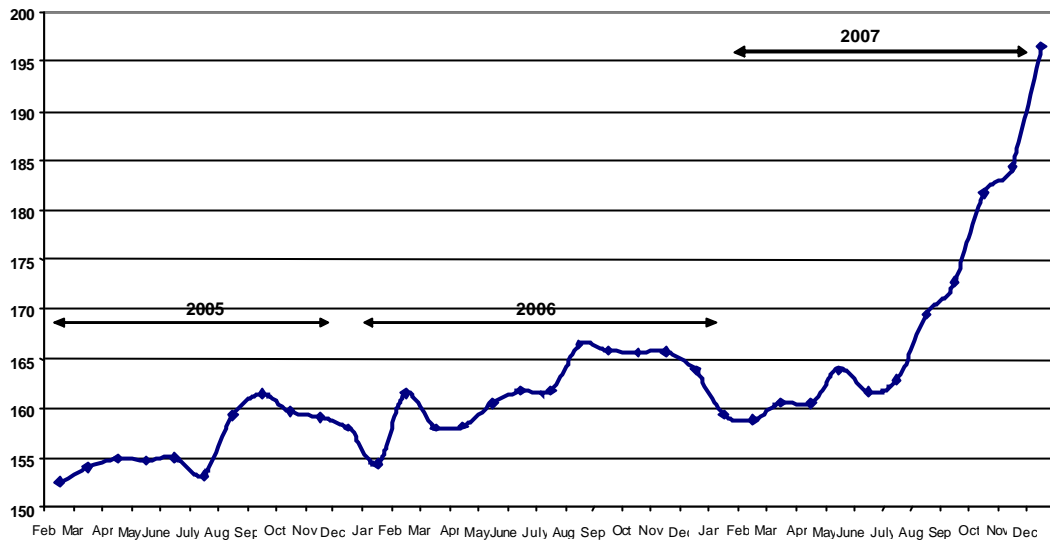


Source : Ministry for Agriculture, Forestry and Water Management, Draft (2008)

Beginning 2005 to the mid 2007 cheese retail prices were stable followed by a 23% jump.

Until 2007 white cheese prices on the green market were relatively stable followed by a sudden 24 % jump by the end of the same year (Fig. 6). During the 3-year period price differences between retail and green market prices doubled, from 12 dinars to 30 dinars per kg.

Fig. 6. White cheese price trends on green markets (din./kg, 2005-2007)



Source : Ministry for Agriculture, Forestry and Water Management, Draft (2008)

4 SWOT

4.1 Strengths and weaknesses

Based on this study the conclusions derived point to both advantages and disadvantages shaping the competitiveness of the Serbian dairy sector, taking into account the opportunities and threats for its improvement. The Serbian dairy sector faces a few **weaknesses at the macroeconomic level** such as low income, low living standard and low purchase power of the consumers and relatively high interest rates, hindering chronically the inflow of capital.

The following **disadvantages** can be illustrated at the **prime (farm) level**, i.e. milk production on farms: insufficient training and education of manpower at the expertise level for engaging in farming followed by an unfavourable age structure. Many farms face low milk production output which is followed by expensive production and low production efficiency. Extremely low milk production per cow may be attributed to low genetic potential of cows, breeding type and inadequate nutrition. (Available own feed quantities are the prerequisite for profitable production. Feed purchase tends to raise production costs making it non-profitable). Small family farms are characterised by inappropriate feed stocks for winter nutrition which has a significant impact on seasonal milk production.

Low milk quality is the result of lacking knowledge and orientation on preserving quality hygienic safety of milk but also the need to harmonize legislation in the field. The milk collecting system, i.e. farm-processing plant, is far from organised and it lacks adequate

equipment, refrigerators and milk control quality. There is also a chronic lack of capital, i.e. production investments in order to improve the technical sector. Irregular payments to milk producers and low stimulations for production investment and export characterise governmental institutions. Small farms and inability to increase holdings are the limiting factor to efficient production, as are lack of market oriented production, green market sale of dairy products .

Advantages of the Serbian dairy sector at the **farm level** are: relatively low labour costs compared with the EU, relatively low input costs, i.e. production of low-cost bulk feed, preserved land resources (soil quality and huge land areas suitable for pastures).

There are many **disadvantages** in the **milk processing sector**: a great number of dairy plants (about 20 large industrial plants and more than 200 small dairy plants). Dairy industry lacks specialisation of production, narrowing production to some products would raise production efficacy, high costs for collecting and delivering milk from the producer to dairy plant. Underdeveloped payment system for milk quality. Low productivity follows insufficient development of new products. High costs of distribution of final products and lack of information on market trends and sector development characterise the Serbian dairy industry as well. Targeted marketing and legislation are lacking primarily in the field of safe food production (acts on hygiene, adequate quality control..). Dairy industry output is too low and cannot be considered competitive at the international level. In addition to low price competitiveness (due to low productivity), both quality and marketing competitiveness are low as well.

Principal **advantages** of the **dairy processing industry** are: low labour costs, low input costs (milk); technologically well equipped, modern equipment, high expertise and trained personnel. Privatisation of the sector has been completed and foreign direct investments has contributed to the modernisation of the sector.

Also, the sector for distribution, i.e. milk and dairy products sale, retail and wholesale, is characterised by both advantages and disadvantages. In case of **green market** sale **advantages** are that farmers are paid at once, low prices for some products (cheese) for consumers with low income. **Disadvantages** are low hygienic conditions, poor product quality and high labour costs.

Advantages in case of **wholesale** are: comparatively favourable supply- relatively low prices , a broad spectrum of products, fair service standards, rising number of participants (Metro, Mercator, Vero, Idea, Tempo), efficacy compared to those participating in retail sale. **Disadvantages** are: low competitiveness and high prices for medium quality.

The main **advantage** of **retail sale** is the adequate supply of consumers with milk and dairy products. Disadvantages are inadequate equipment for preserving milk and dairy product quality (refrigerators), inability to achieving efficacy and profitability of sale.

4.2 Opportunities and Threats

There are opportunities of improving competitiveness between the domestic dairy sector and those from abroad.

At the **farm level** it is considered reasonable to focus on ensuring high-quality feed and improving hygienic conditions and animal welfare.

- Improve feed production efficiency by providing advice on proper plant feeding and fodder production
- Invest in the purchase of cattle with high genetic potential
- Invest in building and equipment for animal lodging and feed storage
- Improve milk quality by providing advice and training on hygienic conditions and procedures.
- Provide opportunities for organic milk production.

At the **processing level** it is reasonable to focus on:

- Investments in equipment and organized milk collecting plus the development of milk quality payment systems – improve milk quality and quantity.
- Investments in modern processing technology - increase quality and efficiency of production.
- Development of new products in accordance with market requirements and consumer spending power.
- Improving the legislation on merging from the standpoint of quality and safe products
- Increasing sector efficiency by restructuring, i.e. merging producers and specialization of production.
- Expanding the market by developing a distributive retailing and wholesaling network
- Creating an identifiable Serbian brand (cheese, cream kajmak....)
- Foreign direct investments focused primarily on development of sale network

Threats

Farm level

- Failure to meet Acquis requirements (quality, hygiene, animal welfare, etc.)
- Lack of alternative employment opportunities in rural areas hampers the restructuring process of farms

Processing level

- Inability to harmonize with EU standards. Failure to meet Acquis requirements (quality, hygiene, etc.).
- **Rising** trends in consumption of products with low fat content
- Changes in consumer preferences focused on organic production
- Significant competitiveness on the international market, with high quality and relatively low products prices predominating
- Highly liberalized import would imperil the sector

Threats imperilling the sector reflect on the inability to meet the growing demands with regard to strict quality standards along the dairy chain. Major competitiveness on the international market and various constraints limiting food export. Competitiveness of the sector needs to be enhanced in order to improve its position. EU accession may be postponed if Acquis requirements are not fulfilled. Domestic producers would consider themselves in an unfavourable position with tariffs abolished.

STAGE	STRENGTHS	WEAKNESSES
macro environment		Low level of consumer incomes, gives low level of consumer spending power

environment		
		High interest rates, unable capital inflow the sector chronically lacks
Farm Level	Low labourcosts	Most of the manpower in need of additional education, training and expertise schooling
	low input costs (bulk feed production)	Unfavourable age structure of farm labour
	Environmental protection	Low milk production output on most farms reduces productivity
	Long tradition in production	Low milk production per cow
		Low genetic potential of cows
		Inappropriate nutrition and insufficient supplies for winter dairy cow feed diet (small farms)
		Seasonal production
		Low milk quality
		Lack of adequate knowledge and orientation on preserving milk quality and hygienic safety
		Lack of legislation in the sector
		Poorly organised and inadequate system of milk collection
		Lack of capital, i.e. production investments
		Irregular milk producer payments
		Low financial support for production intensification
		High natural consumption and sale of dairy products on green markets
Processing		
	Low labour costs	Bulky sector – lacks concentration (huge number of dairy plants, about 250)
	Low input costs – milk (compared with EU)	Low production output Production specialisation lacking
		High costs of milk collection
	modern technology of milk processing	Low productivity and profitability
	Highly-qualified expertise and personnel	Underdeveloped milk quality payments system of some (small) processors (lack of impurity measuring and total bacterial counts)
	Privatisation completed	High costs of distribution for many enterprises
	Direct foreign investments – contributed to modernisation of the sector	HACCP certificates lacking in most dairy plants
	developed system of milk quality payment in large dairy plants	Lack of information on market trends and sector development

		Lack of targeted marketing
		Low financial support for production and export
Wholesaling and Retailing Distribution		
Green market	Ensuring payments to small producers	Poor hygienic conditions, poor hygiene of products
	Ensuring low prices for some products to consumers with low spending power	
Wholesaling	Increasing the number of participants	
	Relatively fair supply and product quality	Lack of competition
	Higher efficacy in relation to participants in retailing	High prices for medium quality
Retailing	Ensuring expansion of milk and dairy products supply	Inadequate equipment for preserving milk and dairy product quality – cooler capacities
		Inability of achieving efficient sale
STAGE	OPPORTUNITIES	THREATS
Farm level		Failure to meet Acquis requirements (quality, hygiene, animal welfare, etc.)
	Improve feed efficiency by providing advice on proper feeding plants and fodder production	Lack of alternative employment opportunities in rural areas hampers the restructuring process of farms
	Investments in the purchase of cattle with high genetic potential	
	Investments in building and equipment for animal lodging and feed storage	
	Improvement of milk quality by providing advice and training on hygienic conditions and procedures	
	Opportunities for organic milk production	
Processing level	Investments in equipment and organised milk collecting plus the development of milk quality payment systems – improving milk quality and quantity	Inability to harmonise with EU standards. Failure to meet Acquis requirements (quality, hygiene, etc.).
	Investments in modern processing technology	Increasing trends in consumption of products with low fat content
	Development of new products in accordance with market requirements and consumer spending power	Changes in consumer preferences focused on organic production

	Improve the legislation on merging and milk and dairy products quality and safety	Significant competitiveness on the international market, with high quality and relatively low products prices predominating
	Increasing sector efficiency by restructuring, i.e. merging producers	Highly liberalised import would imperil the sector
	Expansion of the market by developing a distributive retailing and wholesaling network	
	Creation of an identifiable Serbian brand (cheese, cream- kajmak...)	
	Foreign direct investments focused primarily on development of sale network	

5 Suggestions for policy recommendations

Changes in the demand and supply chain structure recorded in other European countries were found to influence competitiveness of the dairy sector in Serbia as well. In most developed European countries, self-sufficiency with regard to milk and dairy product consumption has been noted. The EU dairy sector is characterised by an asymmetrical decline of intervention prices for butter (-25%) and low fat powder milk (-15%) and broad milk quotas. The quota regime has stabilised the sector and is expected to be in force until 2015. There is a link between CAP changes and Doha consultations of the WTO and the result is expected to contribute to the improvement of the dairy sector. Consultations are primarily focused on excluding export support and reducing import protection as well as on domestic income support, an item separated from production. Development measures for increasing competitiveness of the Serbian dairy sector need to take into account trends on the international dairy market and international trade policy in order to contribute to its efficiency and profitability in prime production, processing and distribution, development of new products and investments in new market concepts.

The comparatively low competitiveness of the Serbian dairy sector may be attributed to the lack of effort and attention paid to the prime sector and milk processing sector: low production output, low average milk production per cow as a result of unfavourable cattle breed, type of breeding and nutrition but also due to an unfavourable family farm ownership structure. The processing sector faced by low labour output, lack of specialised production and targeted market ranks low in competitiveness. The need arises to take steps and change the production and market structure of the sector in order to overcome low price competitiveness (the sector is not competitive on price), and lack of quality and marketing competitiveness.

In order to contribute to the development at the primary and processing level of the dairy sector and prepare for the challenges ahead, government policies need to be focused on:

-Support policy measures - regular and higher payments for increasing production output and stimulating export, thus improving and raising competitiveness of the dairy sector.

- Technical and institutional modernization of the sector - facilitate technical and institutional modernization in order to increase productivity and efficiency of the sector, e.g. supporting research and extension services meeting farmer needs; purchasing milking and cooling equipment; ensuring animals of high-genetic potential; improving feed quality by introducing modern mechanization lines; building proper housing for animals.
- Establish market oriented export by promoting Serbian brand and local autochthonous dairy products, ensure financial means for targeted marketing, improve market research and production of products that will meet the needs of consumers from abroad (quality, standards, price competitiveness – sale prices, market competitiveness- assortment, packaging, containers).
- Production development of new dairy products will increase the value added.
- Land policy- the state may encourage land purchase and enlargement of still relatively small and scattered farm holdings by offering long-term credits, interest rate subvention and grants.
- Rural development policy:
 - investment support through Axis One for modernization of the sector, improvement of milk quality (producer training);
 - by compensatory payments to farmers in less-favourised (mountain) areas, using rural development policy measures of Axis Two; including enhancement of production associations in dairy sector.

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