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# DAIRY VALUE CHAIN ASSESSMENT

**USAID AGRIBUSINESS PROJECT**

**SERBIA**

**JUNE 2008**

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# EXECUTIVE SUMMARY

The dairy sector represents the largest agricultural sector by value in Serbia. The sector was valued at the farm level at about US\$630 and \$750 million in 2006 and 2007, respectively, while the value at the primary processing level jumped from \$1.3 to \$1.6 billion free on board (FOB) ex-plant. Higher prices in late 2007 dramatically pushed up the total value of the dairy subsector, which more than offset the financial losses attributed to a reduction in milk out-turn at the dairy level as a result of the summer drought that killed off pasture growth and a record heat wave that dried up lactating cows. Initial reports about the 2008 “spring milk ‘flush’” show a rebound in output and sales to the newly created export market next door in Montenegro, which have compensated for a moderate rise in imports of European Union (EU) dairy products, mostly cheese, yogurt, and powdered milk. Thus, for the first time in recent years Serbia has become a net dairy exporter, changing from a net dairy importer in 2005 at about \$1 million to a net exporter in 2007 at \$24 million—and the export growth trend is accelerating.

On the other hand, foreign trade accounts for about 4 percent of the value of the Serbian dairy industry; accordingly, by far the largest sales channel is devoted to the Serbian domestic market. Serbia’s dairy industry represents about 17 percent of the value of the overall agricultural sector, and grows to 22 percent if you include the beef sector value of about \$500 million (FOB ex-plant), which is almost entirely generated from cattle also used for milk production. For most practical purposes, no separate beef cattle herd exists in Serbia; all of the beef comes from either the “dual purpose” (meat and milk) Simmental-Fleckvieh cattle or registered Holstein-Friesian dairy cattle (or from some mix of the two breeds). Thus, from a macroeconomic viewpoint, the dairy sector’s sales of \$1.6 billion accounts for 4.8 percent of Serbia’s entire gross domestic product (GDP), placed at \$33 billion in 2007.

In spite of growing exports and an expanding domestic market, political and economic problems abound in the Serbian dairy sector. Currently, the largest dairy processor, Imlek of the Danube Food Group, has been found by the Government of Serbia’s Competition Commission to be behaving as a “monopolistic” business. The government based its case on the Serbian Monopoly Law, which applies because 1) Imlek clearly buys and processes more than 40 percent of the milk that goes through legally registered markets (that is, is subject to the value-added tax [VAT]), and 2) Imlek conducts other predatory buying and sales contractual practices with farmers and retail chains (mainly via the Delta group, which is often informally considered another monopolistic player within the Belgrade supermarket outlets). Since Imlek was legally determined—and prominently announced in the press—to be a “monopoly” in January 2008 in the middle of the presidential election campaign, Imlek and other trade sources contend that this legal proceeding was a public relations effort by officials in the ruling Government of Serbia coalition managing the Competition Commission to appeal to voters concerned about record high food prices. Despite repeated efforts by Imlek to sell its numerous processing plants to Danone and other investors, political instability and the relatively high risks have discouraged many foreign investors from purchasing Imlek or investing elsewhere in the Serbian industry, at least until a new government is formed.

Serbia’s dairy industry is adversely affected by rising costs and other macroeconomic problems, such as rising price inflation and an unusually strong Serbian dinar (RSD) vis-à-vis the euro, that diminish the sector’s ability to be internationally competitive. Compared with three years ago, the Serbian dinar is considered to be overvalued vis-à-vis the euro by 20 to 25 percent (based on Serbia’s 10–12 percent annual inflation rates and widening international trade deficit); the overvalued RSD lessens the

profitability of exports and favors the import competition. Crosscutting inefficiencies in Serbia's agricultural economy, including relatively low yields and quality control issues, continue to affect the profitability of the dairy subsector.

As in most Serbian agricultural businesses, dairy farms have low yields compared with those in most of their neighboring countries that recently joined the EU. Serbian milk yields at the farm level are 50 percent to 100 percent below the yields of dairy producers in Slovenia, Hungary, Romania, Bulgaria, and even Croatia. Worse still, Imlek and most of the other large dairy plants bought through the Government of Serbia privatization process have old equipment that is greatly in need of new investments to ensure proper quality control—even for such basic processing as pasteurization. Thus, Serbia's dairy industry still has very low yields and serious quality control problems, both of which could be easily improved with a little investment by the industry and with technical assistance from the U.S. Agency for International Development (USAID) Agribusiness Project.

Despite industry-wide problems, there are large market opportunities in the dairy sector, as evidenced by milk shipments that are now reported to be taking off in record volumes to neighboring Montenegro and Bosnia. Favorable signs include recent price declines of about 5 percent at the farm level, after reaching record highs last winter. Given these market dynamics, the USAID Agribusiness Project may work with the small and medium-sized Serbian-owned dairies to develop market-driven products for which consumers will pay a premium because of their higher quality. With per capita dairy consumption in Serbia about 30 percent below that of neighboring countries, there is much room for expansion of sales in the domestic market by targeting the increasing demand by a growing middle class for more varied yogurts, cheeses, and better-quality, low-fat dairy products.

## **USAID AGRIBUSINESS PROJECT—STRATEGY OVERVIEW**

### **ISSUE—HOW TO IMPROVE ECONOMIC GROWTH IN SERBIA'S DAIRY INDUSTRY**

Serbia has a natural competitive advantage in producing milk because of its lush pastures, good grain crops, and favorable climate. Until recently, Serbia was considered a net dairy importer, although imports are only about 3 to 5 percent of supplies—mostly EU-subsidized imports of cheeses and special “one-time” powdered milk imports (at the request of the confectionary industry after the 2007 drought). With the advent of the new Montenegrin export market, Serbia has become a net exporter of fluid milk. However, by far the biggest market for potential growth is the Serbian domestic market, which is largely protected by the maximum Government of Serbia import tariff of 30 percent ad valorem. Serbian per capita consumption of milk products is still about half of EU levels and about 30 percent below that of Croatia. Nevertheless, promoting exports of higher-quality specialty products to neighboring Balkan countries, and cheese to Russia, should have a *catalytic* impact, demonstrating approaches that can prompt a far larger number of entrepreneurs to invest in production of better-quality and higher yields of processed dairy foods.

### **THE DAIRY SUBSECTOR'S IMPORTANCE—SERBIA'S BIGGEST, BROADEST-BASED AGRIBUSINESS SUBSECTOR**

The dairy subsector is by far the most valuable in Serbia's agricultural economy, accounting for about \$2 billion of Serbia's \$6 billion agricultural GDP in 2007. Employment in the dairy sector is placed at approximately 120,000 dairy farm workers, 30,000 dairy processing plant workers, and 1,000 support service jobs. Unfortunately, about 50,000 to 80,000 small dairy farms are expected to go out of business

almost immediately after EU accession (if not before), because of the need to comply with Hazard Analysis and Critical Control Point (HACCP), EU traceability, and other food safety standards. Although the dairy milk processing sector is still dominated by the Danube Group’s Imlek consortium of processors, the 30,000 medium-sized and large agribusinesses that supply Imlek are independent and will benefit from technical assistance provided by the USAID Agribusiness Project, as well as support from agricultural business development services (ABDS). The USAID Agribusiness Project plans to focus on the medium-sized milk processors in Central and Southern Serbia, particularly those businesses that have recognized the value of technical assistance provided by the Reka Mleka project financed by the Swedish International Development Cooperation Agency and implemented by GRM International (formerly Opto International) and other organizations, where the project may already have willing partners or will gain traction from earlier assistance programs.

### **COMPETITIVE POSITION—IMPROVING VIA INVESTMENTS**

Although recent milk prices have hit records, Serbia has a long-run competitive advantage in producing milk and traditionally has had the Balkans’ lowest milk prices (averaging €0.16 to €0.18 /liter), usually 10 to 20 percent below that of Croatia, Bosnia, Macedonia, and Montenegro, and about 35 percent below EU prices (averaging €0.26/liter). Although recently some spot market milk prices reached a record high of 31–35 RSD, they are now slowly dropping as the “spring flush” of production milk hits the market. Serbia’s total milk production has not grown significantly in recent years, but there has been a dramatic shift from small farmers producing for the informal market (down about 20 to 30 percent) to the larger farms producing for the legal taxable market (up 30 to 40 percent). Unfortunately, EU, U.S., and Serbian dairy experts say that there is little that can be done to halt the worldwide trend in reducing small dairy farms. However, improving Serbia’s milk quality and yields (which are half the EU average levels) should have a demonstration effect—the success of a few firms or farmer organizations may positively affect the whole industry. For example, the Holstein and Simmental Association’s members may benefit from the project’s assistance and provide sustained business growth examples that favorably encourage growth for thousands of agribusiness at both the producer and processor levels.

### **DEVELOPMENT APPROACH—PROVIDE THE LEAD VIA EXPORTS AND INTERNATIONAL TRADE STANDARDS**

With the adoption of EU standards, Serbian exports of fresh milk, cheese, cream, kajmak, and other specialty products should grow faster than imports of cheeses from northern EU countries. This trend is expected to continue, particularly since the EU granted access to its market in February 2008 and the Russian market may be opening up for Serbian dairy products.

### **SPECIFIC PROJECT STRATEGIES—PUSH HIGHER-QUALITY MILK AND “SPECIALIZED NICHE PRODUCTS”**

#### **Goals**

To promote 20 to 25 percent sales gains, or about \$80 to \$120 million annually in growth during the next three to four years in the domestic and export markets for EU standard fluid milk and high-value processed dairy foods such as Kashkaval cheese, kajmak, flavored yogurts, and feta cheese.

## Approach

Focus on promoting sales of higher-value specialty products and branded foods to neighboring Balkan countries and the Russian markets. Promoting sales of EU quality exports should have *catalytic* impact where a small sector (exports sales) leads the larger sector (the domestic market) toward increased investments and can lead to Government of Serbia policy changes as EU and U.S. standards are adopted (not just for the export market but for the domestic market as well). The USAID Agribusiness Project should also have a demonstration impact with technical assistance and perhaps even a demonstration farm (perhaps provided by the Holstein and/or Simmental Association's membership) and/or a demonstration small to medium-sized enterprise (SME) processing plant producing niche market dairy foods for export and/or local sales.

## Activities

Raise sales via better linkages between Serbian dairy farmers and processors (while also assisting the dairy farmers to work together and negotiate better quality standards, price verifications, and contracting standards as is a generally accepted practice in the United States and EU.

- *Crosscutting Activity—Training.* Provide training on boosting yields, quality, and processing efficiencies and lowering the cost of production all along the value chain. Work with ABDS and the Government of Serbia to improve the industry's competitive position in response to the growing demand by buyers.
- *Catalytic Impact—Creating New Market Outlets.* Work with Serbian-owned dairy companies of primary processors and semi-processed (for example, fluid milk) and further processed (for example, cheese) to promote exports of value-added products to Balkan markets. Attempt to gather sufficient quantities to ramp up production of consistently high-quality products to export, such as feta cheese to Russia.
- *Systemic Impact—Activities via Agribusiness Associations.* Work toward *systemic* change in the dairy industry via producer groups such as the Serbian Holstein Cattle Producers Association, the Serbian Simmental Association, and the National Dairy Forum and/or other processors groups. Discussions with these groups have shown that industry members are willing to work with the USAID Agribusiness Project to develop training and influence trade policies by having the agribusiness associations lobby the Government of Serbia.

# INTRODUCTION TO THE SERBIAN DAIRY SUBSECTOR

Serbia is usually the lowest-cost producer in the Balkans as a result of its low grain and feed prices, plentiful pastures, and relatively low wages. However, milk yields at the farm level are still less than half of those in most European Union (EU) countries and about 30 to 40 percent below those of comparable dairy farms in Slovenia and Hungary. In fact, most dairy processors maintain the position that Serbia could easily boost its low dairy yields quickly and raise output from 1.6 billion to 2.5 billion liters in five years simply through better farm management, without expanding its cattle herd or consolidating farms.

On the other hand, farm consolidation is a worldwide phenomenon and continues unabated in the United States, EU, New Zealand, Croatia, and Serbia; about one-third of the smaller farms go out of business through buyouts by bigger farms. Unfortunately, with the old cooperative law mandating equal ownership of assets, most farm cooperatives do not work well in Serbia, unlike well-functioning dairy cooperatives in other European countries.

Given this continuing process of consolidation, often linked to foreign direct investment, farm-level employment in Serbia's dairy industry is expected to decline as part-time, "grey sector," subsistence farm jobs are replaced by employment in larger farms and processors. The Government of Serbia, Serbian agricultural universities, and the private sector expect employment in the dairy industry to expand by 30,000 full-time industry workers, while at the same time experiencing a significant reduction in the part-time "grey sector" employment (there are 150,000 farmers currently in the business, but only about 50,000 dairy farmers are legally registered).

Unfortunately, these 100,000 mostly older part-time subsistence farmers will eventually either go out of the dairy farming business or register their dairies to comply with the EU rules already being enforced in Serbia. This will switch their businesses over from the "grey economy" to the formal economy. When this happened in Spain during the 1986–1992 EU phase-in period, dairy sources estimate that almost 500,000 cows were slaughtered. The impact in Serbia is expected to be similar; however, Serbia has much better pasture conditions than Spain does and should not find EU accession to be so difficult for the dairy sector if it has time to prepare.

## MARKET CHANGES

Dairy prices skyrocketed in the latter half of 2007, in the aftermath of the Balkans' drought and heat wave of summer 2007. In addition, worldwide dairy prices rose in response to increased demand from China, India, Brazil, and other developing countries; this demand rapidly depleted existing dairy stocks of the major world exporters in EU countries, the United States, New Zealand, and Australia. Although Serbian dairy prices are only now beginning to drop slightly because of the usual seasonal "spring flush" of milk, worldwide prices are not expected to decline to pre-2007 levels. Thus, despite the summer heat wave and drought of 2007, Serbia's dairy industry is well-placed to grow because of its productive farmland in Vojvodina and the fertile valleys surrounding the main domestic market of Belgrade.

Although the dairy cattle industry usually takes many years to rebuild herds in response to new market demand, most trade sources expect Serbia's milk production to grow by 10 to 20 percent annually at the farm level for the next three to five years, assuming more normal weather conditions. Farm-level production is now being stimulated by higher prices and may quickly expand through better farm management. For example, simply spending a little more on better feed rations could boost output overnight by 10 to 20 percent. Better hygiene on the farm and mastitis antibiotic dips could boost production by 3 to 5 percent on many farms, while improving the quality grades (on somatic bacterial count). Nevertheless, it may take many years to expand production to the yield levels found in Croatia and Slovenia, mainly because the small farmers in Serbia are slow to change traditional farming practices and they account for about half of Serbia's milk out-turn. Serbia dairy farm yields often average about 10 to 12 liters daily per cow, compared with about 40 to 60 liters/cow in the EU dairy farms. EU studies show that even Slovenia and Hungary almost doubled yield in two years after joining the EU in 2004. Now, formerly less productive dairy farms in Romania, Bulgaria, and even Croatia are raising farm yields well above that of Serbia through improved farm management, better feeding, newer genetics, and Hazard Analysis and Critical Control Point (HACCP) sanitation practices.

In most years, Serbia is the lowest-cost dairy producer in the Balkans, largely because of its low-cost pasture and abundant grain crops. Although Serbia's larger dairy farms of 50 to 100 head are economical because of economies of scale, the current high prices are allowing even the smaller dairy farms to make money and look into ways to expand milk output. Dairy farmers are responding to market pricing signals and boosting output by increasing the use of higher-priced feeds that boost yields more than enough to pay for these costlier inputs (smaller farmers usually do not invest in costly grains to boost output and often just put their cattle out to pasture without paying extra for supplemental feeds). As a rule, the larger dairy farms and producer associations employ veterinarians, and only vets are allowed to perform artificial insemination in Serbia. Most importantly from a value chain approach, the larger farms are more integrated with the dairy processing industries and agricultural business development services (ABDS) and receive direct feedback from the market with quality price premiums.

Many processors and trade associations claim that the U.S. Agency for International Development (USAID) USAID Agribusiness Project has the good fortune of both being in the market at the right time and working in a region that has a rich natural dairy farming climate and pasture conditions. The industry is very capable of being revived with the current high prices, and has proven potential: Serbia fed most of the Balkans with milk and dairy products in the 1960s; Vojvodina even exported beef and dairy products to the U.S. Army based in West Germany in the 1960s and 1970s. Although most of the large state-owned dairy farms have been privatized and broken up, there is still one large state-owned farm—PIK Becej Agrokombinat, with more than 1,000 milking cows. ABDS and trade sources report that the larger dairy farms are currently expanding in Vojvodina and central areas around Belgrade and Nis, while the more distant dairies in rural areas are being consolidated as older farmers sell their businesses. The record high milk prices in late 2007 have boosted farmland prices to an average of €1,500/hectare, and the continuation of high prices expected for the next couple of years should make the selling off of these small older farms much more profitable than just 12 months ago.

Trade sources report to the USAID Agribusiness Program that a USAID program could conservatively plan to raise dairy production by 10 to 20 percent above the expected 10 to 20 percent national growth trend-line forecast by the industry and stated in reports by experts in the Agricultural Universities of Novi Sad and Belgrade. Simply boosting milk yields per cow and instituting better farm management should result in better yields. Holstein dairy cattle are very sensitive to feeding practices but yield twice as much

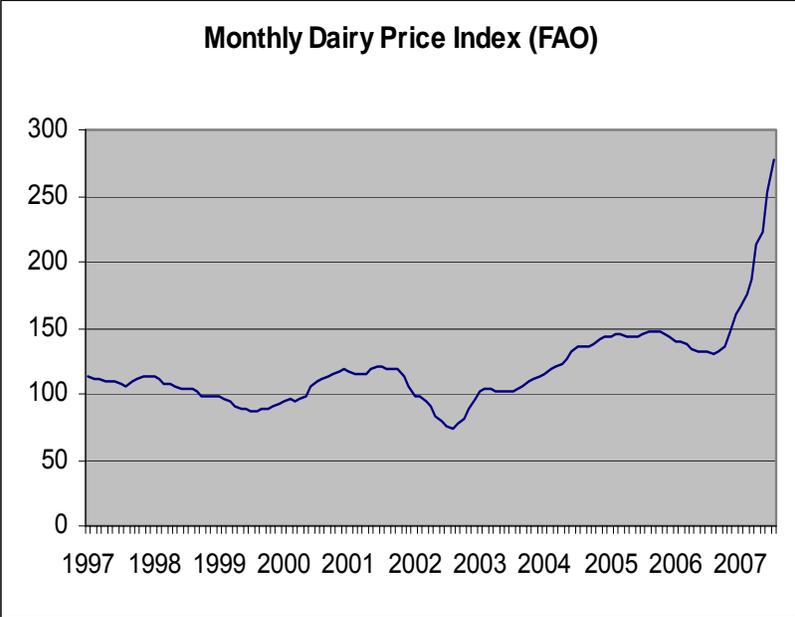
as the predominant Simmental “dual purpose” meat and milk breed; many farmers who are not used to Holstein cattle often have acidosis and other management problems that keep yields down. Through better feeding, improved breeding, better sanitation, and leveraging of resources with the private sector and the Ministry of Agriculture, Forestry and Water Management (MAFWM), the project could boost production to neighboring nations’ levels (50 to 100 percent higher yields per cow than in Serbia). For example, even using 2006 price levels, the project could readily raise the annual value of production at the farm level at least 10 percent, \$50 million, or another \$130 million at the processing level; but, given the current situation, it may well dramatically raise these earning estimates in both U.S. dollars and euros. These estimates were clearly borne out by interviews with Imlek, Somboled, the Opto International’s National Dairy Processors Forum, the Serbian Holstein Association, and the MAFWM’s Scientific Institute responsible for conducting such economic growth analyses.

**REASONS FOR WORKING IN THE SUBSECTOR**

**DEMAND RISES WORLDWIDE AND SERBIA’S EXPORT MARKET GROWS**

Global demand for dairy products rose much higher than anticipated in 2007, resulting in global dairy prices doubling over the past year (Figure 1). There are various driving forces behind this jump, including the dairy policies of main markets and droughts in main production areas. However, the most significant driver is the growing consumption by the emerging middle class in countries such as China and India.

**FIGURE 1: MONTHLY GLOBAL DAIRY PRICE INDEX**



Source: FAOSTAT.

Several international dairy market analyses show that in the next few years, meeting this growing demand in China, India, and Brazil will require extra milk output, each year, equal to the entire New Zealand milk production of 15 million tons. Farm and trade policies, reduced stocks in the EU and the United States, and limited shelf-life keep trade in dairy products limited: only 7 percent of 675 million tons produced

worldwide is exported, as estimated for 2007. High demand, high prices, and limited trade imply great opportunities for local/regional production. The growing demand for dairy products will mainly originate from developing countries where growing populations, improved economic conditions, increasing urbanization, and a shift toward “western” diet boost demand for dairy products (except skim milk powder – SMP). The Organisation for Economic Co-operation and Development anticipates that the gradual shift in world trade from supply-led bulk dairy products (such as SMP and butter) toward higher-value-added products (such as cheese) will continue over the medium term.

## INCREASED EXPORT OPPORTUNITIES

### Rising Dairy Exports

Serbia dairy exports are showing significant gains in both volume and value. International trade data reports received from national governments and incorporated into the United Nations International Trade Center (ITC) data for 2005 through 2007 indicate that all dairy categories are showing significant rising trends. Meanwhile, Serbia dairy imports from ex-Yugoslav and EU countries are significantly lower, showing a positive trade balance in dairy sector.

Serbia’s main export trading partners are neighboring countries, led by Montenegro, Bosnia and Herzegovina, Republic of Macedonia, Croatia, and Albania, where Serbia is dominating with fluid milk exports. The majority of imports, 86 percent, are from outside of the former Yugoslavia. A handful of EU countries—Germany, the Czech Republic, Slovakia, Belgium, Croatia, Hungary, France, and Italy (in descending order of importance)—account for over 90 percent of all dairy products imported into Serbia (see Table 1). Most of the imported products are hard cheeses, flavored yogurts, whey, and fluid milk products (see Table 2).

**TABLE 1: SERBIA’S DAIRY BALANCE OF TRADE IN 2005–2007**

Serbia’s Trade Partners	Trade Balance in 2005	Trade Balance in 2006	Trade Balance in 2007	Exported Value in 2007	Imported Value in 2007
<b>Markets</b>					
<b>US\$1,000s</b>					
World – Total Net All Imports-Exports by Country	-\$1,164	+\$25,711	+\$24,239	+\$45,727	\$21,488
<b>Country Balance of Trade (+/-)</b>					
<b>Export Markets:</b>					
Montenegro	\$0	+\$21,264	+\$27,453	+\$27,464	\$11
Bosnia and Herzegovina	+\$5,992	+\$7,356	+\$6,547	+\$9,264	\$2,717
Macedonia (FYRM)	+\$2,512	+\$4,919	+\$5,969	+\$6,306	\$337
Albania	+\$72	+\$82	+\$249	+\$249	\$0
<b>Import Suppliers:</b>					
Germany	-\$1,949	-\$2,493	-\$4,281	+\$68	\$4,349
Croatia	-\$1,160	-\$367	-\$968	+\$1,452	\$2,420
Czech Republic	-\$553	-\$278	-\$2,208	\$0	\$2,208
Slovakia	-\$661	-\$98	-\$2,070	\$0	\$2,070
Belgium	-\$977	-\$1,087	-\$1,828	\$0	\$1,828
Hungary	-\$525	-\$332	-\$656	+\$386	\$1,042
France	-\$212	-\$408	-\$720	\$0	\$720
Italy	-\$249	-\$482	-\$644	+\$44	\$688

Source: ITC Trade Database.

**TABLE 2: SERBIAN DAIRY EXPORT DATA 2005-2007**

Product	Export Quantities	Export Quantities	Export Quantities	Export Value	Export Value	Export Value
HTN Classification	2005	2006	2007	2005	2006	2007
	Tons			US\$1,000's		
0401 Milk & cream, not concentrated nor sweetened	9,073	30,083	32,942	\$3,915	\$15,447	\$19,686
0402 Milk and cream, concentrated or sweetened	239	930	263	\$503	\$1,990	\$1,060
0403 Buttermilk & yogurt	835	3,804	5,117	\$853	\$3,574	\$4,931
0404 Whey & natural milk products (NES)	7	40	7	\$6	\$39	\$13
0405 Butter & other fats & oils derived from milk	425	934	753	\$1,093	\$2,619	\$2,797
0406 Cheese and curd	950	3,550	3,724	\$2,479	\$10,525	\$13,499
<b>TOTAL</b>	<b>11,529</b>	<b>39,341</b>	<b>42,806</b>	<b>\$8,849</b>	<b>\$34,194</b>	<b>\$41,986</b>
Fresh Milk Equiv.	17,651	61,332	66,251	—	—	—
National Production	<b>1,602,000</b>	<b>1,587,000</b>	<b>1,500,000</b>	<b>\$400,500</b>	<b>\$507,840</b>	<b>\$750,000</b>
Percent Exported	<b>1.10%</b>	<b>3.86%</b>	<b>4.42%</b>	<b>2.21%</b>	<b>6.73%</b>	<b>5.60%</b>

### Central European Free Trade Agreement Market Opportunity

Serbia is rapidly boosting exports to its neighboring country markets of 30 million consumers under the Central European Free Trade Agreement (CEFTA). Trade within the region increased 33 percent between 2001 (at €2.7 million) and 2004, when it reached €3.5 billion (according to the latest report from the EU Commission). At the same time, trade with the rest of the world grew by 21 percent—from €30.2 billion in 2001 to €36.4 billion in 2004. Trade between the Southeastern Europe countries and the EU increased from €2 billion in 2001 to €79.8 billion in 2005, a rate of 53 percent. In trade with CEFTA member countries, Serbia had a \$1.236 billion international trade surplus by the end of November 2007 according to the Serbian Chamber of Commerce. Serbia's share in the CEFTA market is 21.3 percent. The CEFTA member countries' share in imports to Serbia was 8.1 percent; in exports, their share was 31.4 percent (Serbian Chamber of Commerce).

### Serbia Allowed to Export Dairy Products to the EU and Transit to Third Countries

In February 2008, Serbia was granted access to export dairy products to the EU and transit to other markets. By increasing demand for shipment of dairy products and cattle from the EU to China and Russia, Serbia has the opportunity to open new markets within the EU.

## RISING INCOMES AND CHANGING CONSUMER BUYING PATTERNS

Economic development, increased employment, and better living standards will drive changes in buying habits, which will consequently increase the consumption of dairy products. Changes in consumer buying patterns include:

- An increase in consumption and growth of demand for highly processed products, with less milk fat, and fruit and cereals.
- An increased share of dairy products in total consumption of animal products.
- A change in the frequency of milk and dairy product purchases, from daily local purchases to less frequent but larger purchases from supermarkets.
- An increase in hypermarkets' and supermarkets' share of milk and dairy product sales.
- Greater utilization of vehicles and cars for purchasing.
- An increase in marketing activities, particularly promotional activities of producers in the hypermarkets and other retail shops.
- An increase of consumption within the hotels and restaurants market.
- Recognition of brands to drive up consumption.

## EU QUOTA

Serbia is in the process of acceding to the EU and is working to adjust its agriculture to meet EU standards. One of the most important aspects influencing the dairy subsector is the EU quota for Serbian dairy production. Only 60 percent of total Serbian milk production is officially confirmed, and that is mainly through major industrial plants. Production within small dairy units and local processing amounts to around 40 percent of the total and is not officially confirmed. The EU quota will mainly depend on the official production of milk in Serbia. If Serbia fails to increase milk production through legal channels, the quota will be around 1 billion liters/year, whereas consumption is estimated at 1.6 billion liters/year, and showing an increasing trend. Serbia should increase production of industrially processed milk (produced through legal channels) before negotiating a quota with the EU. If it does not, Serbia will likely go from being a self-sufficient country to a net importer, with a significant loss of jobs related to the lower quota.

Serbia used only 55 percent of its installed capacity in dairies (see Table 3), so there is no processing capacity bottleneck standing in the way of growth and formalization of the dairy sector, although some of the equipment is outdated and needs replacement.

**TABLE 3: PROCESSING CAPACITIES IN SERBIA**

Year	Milk Collection for Processing Plants (liters/year)	Installed Capacity (liters/year)	Used Capacity (percentage)
2000	553,300,402	1,198,078,000	46
2001	601,459,412	1,200,078,000	50
2002	700,156,68	1,202,078,000	58
2003	709,956,691	1,204,078,000	59

Year	Milk Collection for Processing Plants (liters/year)	Installed Capacity (liters/year)	Used Capacity (percentage)
2004	761,197,491	1,209,161,000	63
2005 Est.	780,000,000	1,215,000,000	64
2006 Est.	790,000,000	1,220,000,000	65
2007 Est.	890,000,000	1,220,000,000	60

Serbia's dairy sector is strongly linked to the beef sector, using poor genetic stock for dairy purposes—predominantly the Simmental-dual purpose cattle (beef and dairy), but also a high percentage of mixed breeds (90 percent). Average milk yields are 8–12 liters/cow/day—far below potential yields and thus preventing the development of the subsector.

Serbia has a strong potential to shift small dairy producers toward commercial farming. Apart from the above opportunities to increase production by removing bottlenecks and increasing efficiency in processing, Serbia has strategic competitive advantages in dairy, including very good climatic conditions, a privatization process that is finalized, established milk quality criteria, a long tradition in dairy farming, 30 years of experience with the Holstein breed (the first Holstein cows were imported from the United States in the early 1970s), and technology similar to that of the United States in terms of general character (same feed, climate, land resources).

Furthermore, the dairy sector has opportunities in both the domestic market and the export markets for raw and processed milk products. According to the FAO, milk consumption in Serbia (excluding butter) is around 259 liters per capita (compared with Romania's 379). Small farms have a significant share of this daily consumption. They also process milk for their own needs and sell a large share of their production as cheese and cream via green market. Only a few family farms can meet required quality standards as well as produce acceptable quantities to sell milk to the dairy plants.

## STRUCTURE OF THE SUBSECTOR

Clearly, the structure of the dairy subsector is based on the milk-producing animals, largely dairy cattle. Sheep and goats milk is used to produce specialized cheeses; however, it is not included in this analysis because it comes from different farms (as well as different animals) and is a very specialized industry. Sheep and goats milk belongs to other value chain. Because more than 99 percent of the milk, cheese, yogurts, and other dairy products come from cows, this value chain analysis is limited to dairy cow-produced milk products.

This value chain analysis includes the domestic raw milk production as well as imports of dairy products. All supply chains through which raw milk flows to both domestic and export retail markets are included in the analysis.

**A note of caution regarding the data used in this report.** As is the case for other countries in the region, the availability of reliable and consistent data on the dairy subsector in Serbia is still limited and of poor quality. This is regretful, considering that there are numerous institutions charged with monitoring and reporting data (Serbian Statistical Office, Chamber of Commerce, Serbian Livestock Business Association, and so on). Table 4 provides examples of major data inconsistencies (broad data ranges).

**TABLE 4: DATA CHALLENGES IN THE SERBIAN DAIRY SUBSECTOR**

Issue	Data Range
Total milk production (formal & informal)	1.6–2 billion liters/year
Percentage of formal collection and processing	40–50%
Average production yield per cow	7–12 liters/day
Number of mini dairy plants/units	200–250
Milk share in gross domestic product	1–1.5%
Total number of dairy cows in Serbia	460,000–750,000

The team found inconsistencies in almost every report analyzed, whether prepared by local institutions or by foreign donor-funded projects. Given this starting point, estimates take into account all available sources: Serbian Statistical Office, Chamber of Commerce, Serbian Livestock Business Association, FAO, MAFWM, USAID, OPTO, and interviews with key informants in the subsector.

## PRODUCTION

There are an estimated 750,000 dairy cattle producing 1.6 million tons of milk per year in Serbia. Tables 5 through 10 provide basic summary statistics on dairy production in Serbia.

**TABLE 5: TOTAL MILK PRODUCTION IN SERBIA (FORMAL PLUS INFORMAL)**

Year	Production (liters/year)	Serbia	Vojvodina
2004	1,579,000,000	1,265,000,000	314,000,000
2005	1,602,000,000	1,254,000,000	348,000,000
2006	1,587,000,000	1,190,000,000	397,000,000
2007 (Est.)	1,450,000,000	1,100,000,000	350,000,000

There are approximately 50 large farms with an average herd size of 135 cattle, mostly located in Vojvodina and around Belgrade. The average dairy farm in Serbia, however, is much smaller—with an average herd size of only 3.5 heads. The average yield per cow is 9.7 liters/day, compared with yields of 13.2 liters/day on the large farms (Table 6). For comparison purposes, the average yield in the EU is 19.3 liters/cow/day (5,900 liters/year).

**TABLE 6: DAIRY PRODUCTION CHARACTERISTICS IN SERBIA**

Region	Average Cows per Household	Average Yield (liters/cow)	Annual Production (ton/farm/year)	Milk Production (percentage)	Herd (percentage)	Households (percentage)
Vojvodina	4.5	12.06	16.72	36%	28%	21%
Central Serbia	3.5	10.13	11.23	42%	40%	37%
South Serbia	2.5	6.75	5.01	22%	32%	42%
National	3.5	9.65	10.99	100%	100%	100%

There are significant differences between milk production in the more economically developed regions of northern and central Serbia compared to southern Serbia. Despite having the largest number of dairy households, southern Serbia has a much smaller percentage of total production due to several factors, such as unfavorable geographical conditions, small landholdings, low household incomes, and weak support institutions.

**TABLE 7: NUMBER OF DAIRY CATTLE IN SERBIA (2000–2005)**

Year	Number of Cattle		
	Cows	Heifers in Calf	Total
2000	759,484	57,854	817,358
2001	733,447	53,676	787,123
2002	699,415	52,985	752,400
2003	677,559	62,672	740,231
2004	680,692	61,321	742,013
2005	672,313	48,246	720,559
2006	670,000	48,000	718,000
2007 Est.	660,000	48,000	708,000

Table 8 indicates that: 1) the formal sector accounts for 46 percent of volume; and 2) 84 percent of production comes from the lowland areas and 16 percent from the highland areas of southern and southwestern Serbia. Not surprisingly, the majority of milk comes from the more economically developed regions of central Serbia (42 percent), followed by northern Serbia (36 percent) and southern Serbia (22 percent), as indicated in Table 6.

**TABLE 8: SERBIAN DAIRY PRODUCTION ALLOCATION (2005–2006)**

Raw Milk Production	2005		2006
	1,500,000 (tons)		1,600,000 (tons)
Sold to dairies	814,000 (54.3%)		732,000 (45.8%)
Production	Lowland	82%	84%
	Highland	18%	16%
Subsidy	Lowland	3.8 RSD/L	3.0 RSD/L
	Highland	4.5 RSD/L	4.0 RSD/L

The main trends in the dairy sector between 2000 and 2005 are the following:

- A declining trend in Serbia's total cattle population—falling by 13.4 percent from 1.246 million in 2000 to 1.079 million in 2005; with dairy cow numbers down from 759,000 to 672,000 (11.5 percent) and heifers-in-calf from 58,000 to 48,000 (16.4 percent);
- There has been a slight increase in milk production, up from 1,586 million to 1,616 million liters (1.9 percent), the increase wholly due to more cows' milk (up from 1,567 million to 1,602 million liters); sheep milk production has fallen from 19 million to 14 million liters.

Currently, there are 25 industrial dairy companies in Serbia and more than 200 small dairy units (including dairy facilities of the homecraft type, and small and medium-sized industrial dairy plants). In addition, most family farms own cows and a few also own sheep and/or goats as milking animals. Family farms make cheese and cream for their own consumption and sell the remaining milk at the local green markets.

The dairy industry is the first Serbian food processing industry that has completed the privatization process. The largest share of industrial dairy plants in Serbia has been taken over by the English investment fund Salford (now part of the Danube Food Group, DFG), which owns 15 dairy plants, including the three largest dairy plants (Imlek, Novosadska, and Suboticka) and two medium-sized dairy plants (Zemun and Impaz-Zajecar). It had earlier been reported that Salford would sell its share of the Serbian dairy industry to a large international dairy processor such as Danone or Campina. The French firm Bongren was reported to have engaged in informal discussions about purchasing Mlekoprodukt, while Somboled was bought by Croatian dairy processor Lura and subsequently sold to the French firm Lactalis, part of the Danone Group. Unimilk is a newly formed company that owns several dairies (Pancevo, Senta, Kragujevac, Nis, and Pirot). Other smaller industrial dairy plants were bought by domestic firms. Privatization brought new investments in modern technologies and an increased share of commercial farming. It was reported (and later contradicted) that because of monopoly issues Salford would try to sell its dairies in Serbia separately, so to break up its so-called “monopolistic” position. Potential buyers were reported to be Lactalis for fluid milk/yogurts and Bon Grain for cheese and butter type of products. Therefore, monopoly issues will cease to exist, but in general French companies will have the biggest share of Serbian dairy production.

**TABLE 9: DAILY PRODUCTION CAPACITY OF THE MOST IMPORTANT PLANTS**

Dairy Plants	Processing Capacity (000 liters/day)
Imlek Belgrade*	700
Mlekara Subotica	160
Novosadska Mlekara Novi Sad	150
Sremska Mlekara Sremska Mitrovica	120
Mlekara Šabac	100
Somboled Sombor	100
Mlekara Pančevo	100
Mlekoprodukt Zrenjanin	100
Niška Mlekara Niš	100

\* In 2007, Imlek Belgrade increased its processing capacity to 1 million liters/day.

Source: Ministry of Agriculture, Chamber of Commerce, and Trade Sources.

According to data published by the Dairy Department of the Serbian Business Livestock Association, the biggest 25 industrial dairy plants (which are also members of the Serbian Business Livestock Association) annually purchase and process approximately 600 million liters of milk, or some 36.6 percent of the total production of cows’ milk.

DFG processes 373 million liters of milk annually in Serbia, or 64 percent of the milk quantity purchased by all 25 industrial dairy plants combined and 23 percent of total milk production in the country. The largest dairy processor in the DFG is Imlek, which accounts for about 30 percent of all commercially processed milk in Serbia and has a capacity of 700 tons/day and an annual turnover of €130 million. Over the past three years Imlek has invested some \$45 million in its processing capacity.

However, the second pillar of the Serbian dairy industry, the Association of Private Dairy Producers, which includes the 200 small and medium-sized dairy plants, does not publish data on its members’ production or sales of dairy products. According to data on installed capacities from the Statistical Office, these small and medium-sized dairy plants can each process between 3,000 and 30,000 liters of milk per

day; assuming their average daily processing is around 5,000 liters of milk, which is the economically profitable minimum, these 200 dairy plants as a group process around 1 million liters of milk daily (365 million liters of milk annually)—almost the same amount as DFG.

Milk is produced on commercial, private, and state-owned farms, as well as on small family farms. The commercial farms usually have a far greater number of animals and possess mechanized feeding and milking systems that allow them to achieve a higher milk quality. In big state farms (such as PKB - Agricultural Kombinat Belgrade, which has 6,000–7,000 milking cows and PIK Becej, which has 1,500–2,000 milking cows), the installed capacities are not fully utilized. Because of the dire financial situation of these farms, the quality of nutrition varies excessively, resulting in fluctuations in both the quantity and the quality of milk produced. As a point of reference, PKB had 10,000 milking cows and PIK had 5,000 milking cows in the past. Private commercial farms operate with 20–100 cows. Family farms are usually small, with generally only one or two cows, often poor facilities, and mostly manual milking. These farmers are often poorly educated and practice low standards of animal health, resulting in low levels of quality and quantity in milk production.

The amount of raw milk processed in Serbia in 2006 was 2,400 tons/day (732,000 tons/year) from 72 dairies nationwide (Table 10). Dairy processing in southern Serbia represents a relatively minor portion of this national total (160,679 tons/year, or 22 percent), despite being home to 38 (53 percent) of the operational dairies.

**TABLE 10: REGIONAL DAIRY PROCESSING STATISTICS**

Regions	Producers	Cows	Tons/Year Sold to Dairies	Average Tons/Day Sold to Dairies	National Output (percentage)	Average (liters/cow)
Southern Serbia	27,047	64,157	160,679	440	22.0%	2,467
Vojvodina	13,219	58,292	260,788	714	35.6%	4,454
Central Serbia	24,111	82,569	310,435	851	42.4%	3,358
Total	64,377	205,018	731,902	2005	100%	80,931

Source: Report based on survey data from 72 operational dairies.

These statistics support the likelihood of consolidation in dairy processing with a potential end result of just a handful of large dairies dominating the market. Moreover, the large industrial dairy plants set standards and minimum delivery quantities that small farmers cannot achieve. In the future, fewer and fewer small farmers are expected to be able to meet rising quality standards for liquid milk sales and, hence, will use their surplus production for livestock feed, particularly for pigs. Many small farmers are expected to leave the industry because of high production costs. On the other hand, some small producers will probably try to increase their herd size and to modernize their milking machines and equipment for storage of raw milk in order to fulfill the quality standards and become specialized milk producers.

In terms of breed structure, the Simmental type is dominant. In Vojvodina, around large cities, and on state farms, Holstein-Friesian cattle are present as well, although there are many crossbreed cows. Simmental cattle has a long tradition in Serbia and is preferred to other breeds for three main reasons: 1) they are better suited as dual-purpose cattle for both milk and beef; 2) they adapt easily to mountainous regions; and 3) they require less care and maintenance than most other breeds. The trade-off, however, is that Simmental cattle produce less milk than Holstein cows (20–25 liters/day), the dominant breed in the

higher milk-producing region of Vojvodina. It is estimated that pure-breed dairy cows have a share in total production of only 10 percent.

## **SALES**

### **DAIRY-LEVEL SALES**

Surprisingly, 12 interviewed dairies (63 percent) say they are not experiencing a loss of market share to larger dairies such as Imlek of the DFG. The respondents indicated that this is because the large and small dairies compete for different markets. The small dairies feel that they can remain competitive on price with cost-conscious customers, while holding a competitive advantage in niche products, such as “kajmak” and cream cheese with peppers (though sales of specialized products remain marginal).

### **HOME CONSUMPTION AND “GREEN MARKETS”**

The allocation of raw milk by region indicates a higher non-commercial utilization in the economically more depressed regions, as one might expect. These regions are: the Raska and Zlatibor regions, South Serbia. Household consumption levels of milk at these milk producing farms is high. The production beyond household consumption is marketed through local and urban green markets and other small retail outlets. Most of the milk sold through these outlets is home-processed into other simple dairy products such as white cheese, kajmak, and cream. Many farmers in Zlatibor have a long tradition of cheese production, especially “‘Sjenicki’ Sir,” and sell hard white cheeses to local dairies, green markets, and other retail outlets.

### **RETAIL SHOPS AND SUPERMARKETS**

Major dairies distribute their products to both supermarkets and other retail shops. While supermarkets have a smaller market share of the food retail industry in Serbia than they do in other Eastern European countries, several domestic and a few regional supermarket chains have spread to nearly all medium-sized and large towns in Serbia. When questioned on doing business with the large supermarkets, nearly half of the dairies, except major dairies, complained of slow payment (sometimes suppliers wait six months to get paid) and very demanding contractual conditions. Other complaints voiced by the small and medium-sized supermarket suppliers are the absence of delivery quantity guarantees and the prohibitively expensive shelf space fees.

### **PRICE AND DEMAND FOR RAW MILK**

The price of raw milk varies little in southern Serbia. Dairies in all four regions pay 19–20 RSD (\$0.33) per liter (recently, raw milk prices have shot up to around 30 RSD per liter, as demand has rapidly outpaced supply). However, in mid-April 2008, Somboled reported a 2 RSD per liter farm price drop as the “spring ‘milk flush’” increased supplies. This price includes a 3 RSD government subsidy for lowland areas and a 4 RSD subsidy for highland areas. Despite some recent reductions, subsidies continue to account for a significant portion of MAFWM’s budget, €28 million in 2006 (down from €40 million in 2005) and 25 percent of MAFWM’s total annual budget. As Serbia moves politically and economically closer to the EU, milk subsidies will continue to decrease and eventually disappear. It is also expected that subsidies will shift from being based on fat content to being based on more comprehensive quality standards once the National Law on Laboratories is passed.

**TABLE 11: RAW MILK PRICES 2005**

Country	Farm Gate Price Raw Milk	Government Subsidy	Cost to Dairy
Serbia	€0.23	€0.047–€0.056	€0.17–0.18
Croatia	€0.33	€0.078	€0.25
Bosnia and Herzegovina	€0.34	€0.074	€0.26
EU Average	€0.28	0	€0.28

Comparing 2005 raw milk prices in Serbia with those in neighboring countries and the EU average, Serbia has the lowest farm-gate price, as well as the lowest subsidy of FYR countries (81 RSD/€).

## RAW MILK QUALITY

Raw milk quality is one of the most serious problems in the dairy industry. While MAFWM has established national milk quality standards, the lack of enforcement and an illogical subsidy program provide few incentives for dairy farmers to invest in quality-enhancing technology. Many dairy processors are beginning to fill this regulatory gap as they start to undertake measures required for HACCP compliance and, therefore, focus increased attention on the quality of their raw milk supply.

**TABLE 12: RAW MILK QUALITY COMPARISON**

Quality Criteria	Serbia Standard	EU Standard
Milk bacteria count	<1,000,000/ml	<100,000/ml
Somatic cells count	<400,000/ml	<400,000/ml
Protein content	>2.9%	>2.8%
Fat content	3.2%	>3%
Acidity	<7.6 pH	N/A

There is no EU standard for acidity. Acidity can vary naturally in different geographies and is generally handled at the local level. In most of Eastern Europe and Russia, this is done at the farm-gate by using 70 percent ethanol to mix with a sample of milk. If it coagulates, the milk is too acidic and will be rejected. John C. Howells, Reka Mleka (River of Milk) Project, Opto International.



# MARKETS

## THE DOMESTIC MARKET

The domestic market dominates dairy marketing. The biggest dairies work directly with major hypermarket chains, such as Merkator-Rodic, Delta Maxi, and Metro. Dairy products are also sold to retail shops and catering businesses through dairy plants or hypermarkets. Most of the informal production is sold on local green markets. In 2005, 54 percent of total milk output was sold to dairies (814,000 tons from 70,000 producers), 26 percent was consumed for household use, and 20 percent was home-processed into various products and sold in village and town green markets. In 2006, sales to dairies fell nearly 10 percentage points to 45 percent. Only the region of Vojvodina increased the quantity of milk sold to dairies. Predominant dairy products are fresh milk and yogurts, followed by variety of average-quality cheeses. Most of the high-quality cheese products are imported. However, there is an increasing trend in developing specialty types of cheese with a local origin.

**TABLE 13: DAIRY PRODUCTION BY TYPE OF PRODUCT, 2004 AND 2005**

Product	Production (tons)		Index
	2004	2005	
Sour milk and yogurt	126.487	139.942	110
Milk with additives (cocoa milk and similar)	17.311	18.906	109
Sour cream	11.922	12.587	105
Ice cream	5.945	6.207	104
Powder milk no fat	5.642	2.628	46
Soft cheese	5.502	6.438	117
Powder milk full fat	5.484	4.084	74
Hard cheese	4.419	4.846	109
Cheese paste	2.323	2.148	92
Semi hard cheese	2.248	2.869	127
Butter	2.218	3.645	164
Milk lime	1.804	2.066	114
Cream	916	786	86
Fresh cheese	681	892	130
Pasteurized and sterilized	N/A	N/A	

Without Kosovo.

Source: Serbian Statistical Office and Republic Chamber of Commerce.

The value of dairy imports in 2005 was €4.2 million, while the value of exports was €5.9 million, representing a 14 percent trade surplus for processed dairy products (Table 14). The majority of imports are from outside the former Yugoslavia. Five countries—Poland, Germany, Croatia, Belgium, and Italy—account for 75 percent of all imported dairy products into Serbia. The highest value imported products include, in decreasing order of size, flavored yogurt (23 percent of imports), whey products, fermented products, cheese, and fluid milk.

**TABLE 14: DAIRY EXPORT/IMPORT STATISTICS 2005**

Type/Unit	Import 2005		Export	
	Quantity	US\$	Quantity	US\$
Milk (lit)	3,194,000	2,765,300	146,597,000	4,353,000
Butter (t)	117	281,400	188	403,800
White cheese (t)	9	59,188	257	538,000
Cream cheese (t)	145	524,900	85	282,600
Hard cheese (t)	177	569,700	103	336,200
Total cheese (t)	331	1,153,788	445	1,156,800
Total import/export		4,200,488		5,913,600

Source: Serbian Statistical Office and Regional Chamber of Commerce.

## EXPORT MARKET

Export volumes are small and the main recipients are ex-Yugoslav countries (Montenegro, Macedonia, Bosnia and Herzegovina, and Croatia); fluid milk is the primary export commodity. Export market development is tied both to the development of new types of dairy products and to the expansion of the raw material base, quality standards, and traceability systems in raw milk production and supply (Good Agricultural Practice – GAP). Pilot projects in Serbia have already been developed and implemented on seven commercial dairy farms.

Traditionally, the leading countries exporting to Serbia are Germany, Croatia, Belgium, the Czech Republic, Slovakia, and Italy (listed in order of highest import level); they account for over 85 percent of all imported dairy products into Serbia. However, in late 2007 there was an extra import of dry powdered milk given a low duty rate by the Government of Serbia to assist the confectionary industry (which had lodged a complaint about the shortage of local milk due to the 2007 drought); imports of milk powder are usually not competitive with the local milk supplies and milk powder is normally not imported because of the 30 percent ad valorem duty on imports. In most years, leading dairy imports are hard cheeses, flavored yogurt (23 percent of imports), whey products, fermented products, cream, and fluid milk. Thus, lower-quality products are exported to regional neighbors, and Serbia compensates for its lack of domestic quality production by importing from EU countries.

To improve the competitiveness of dairy subsector, especially in terms of export, Serbia must adjust its dairy quality standards to ISO9000-2000 and to other international agreements. For export products it is also necessary to accept EU quality standards (as per EU directive 92/46, which should become the quality standard for Serbian dairy processing). In addition, Serbia must decide on deadlines for adjusting raw material production standards at farms, which will allow farmers to fit into new development practices. One option for MAFWM is to make farmer compliance with standard operating procedures in terms of milk quality and hygiene preconditions for subsidy.

**TABLE 15: DAIRY FOOD BALANCE, 2004–2007**

Milk: Production Supply and Distribution Food Balance (1,000 tons [equiv.])							
Years	Production* Farm Level (million liters)	Production Processed (million liters)	Exports (1,000 tons)	Import (1,000 tons)	Stock Changes (1,000 tons)	Consumption	
						Total (1,000 tons)	Per Capita Grams
2004 (final)	1,579	557	6	48	61	1,560	210
2005 (revised)	1,602	604	12	7	27	1,570	212
2006 (est.)	1,600	582	39	6	-18	1,585	214
2007 (est.)	1,500	500	43	10	-133	1,600	217

\* Includes on-farm consumption and informal market sales (un-taxed) at green markets.

Source: FAO STAT, Government of Serbia Statistics Office, and Trade Estimates.

## DIFFERENTIATION AND SEGMENTATION OF THE MARKETS

The domestic market is characterized by an increasing trend of consumption of fresh milk, shifting from boiled milk (mostly in the poorer regions-South-Eastern of Serbia, Sandzak) to long-shelf life fresh milk UHT (such as Moja Kravica by Imlek). Other important product categories on the domestic market are yogurts, sour creams, and (semi-) hard cheeses. Diversification in these categories and the introduction of yogurts with fruits and cereals, as well as different types of cheese and sour cream (with different percentages of milk fat) show that increased consumers' income will spur dairies to introduce new value-added products more frequently and to produce locally high-quality cheeses and different types of yogurts that are now imported.

Small dairies are producing for local markets and their products are usually marketed to the bakery industry and at lower prices to small retail shops, mainly because of lower product quality.

Apart from industrially produced and marketed dairy products, the domestic market is characterized by locally produced traditional types of cheese (fresh, short-shelf life cheese with geographic recognition, such as Zlatiborski, Mokriński) and specialty cheese (such as kajmak and sour cream with pepper). These products are regularly sold on green markets all over Serbia and represent significant market share (around 20 percent).

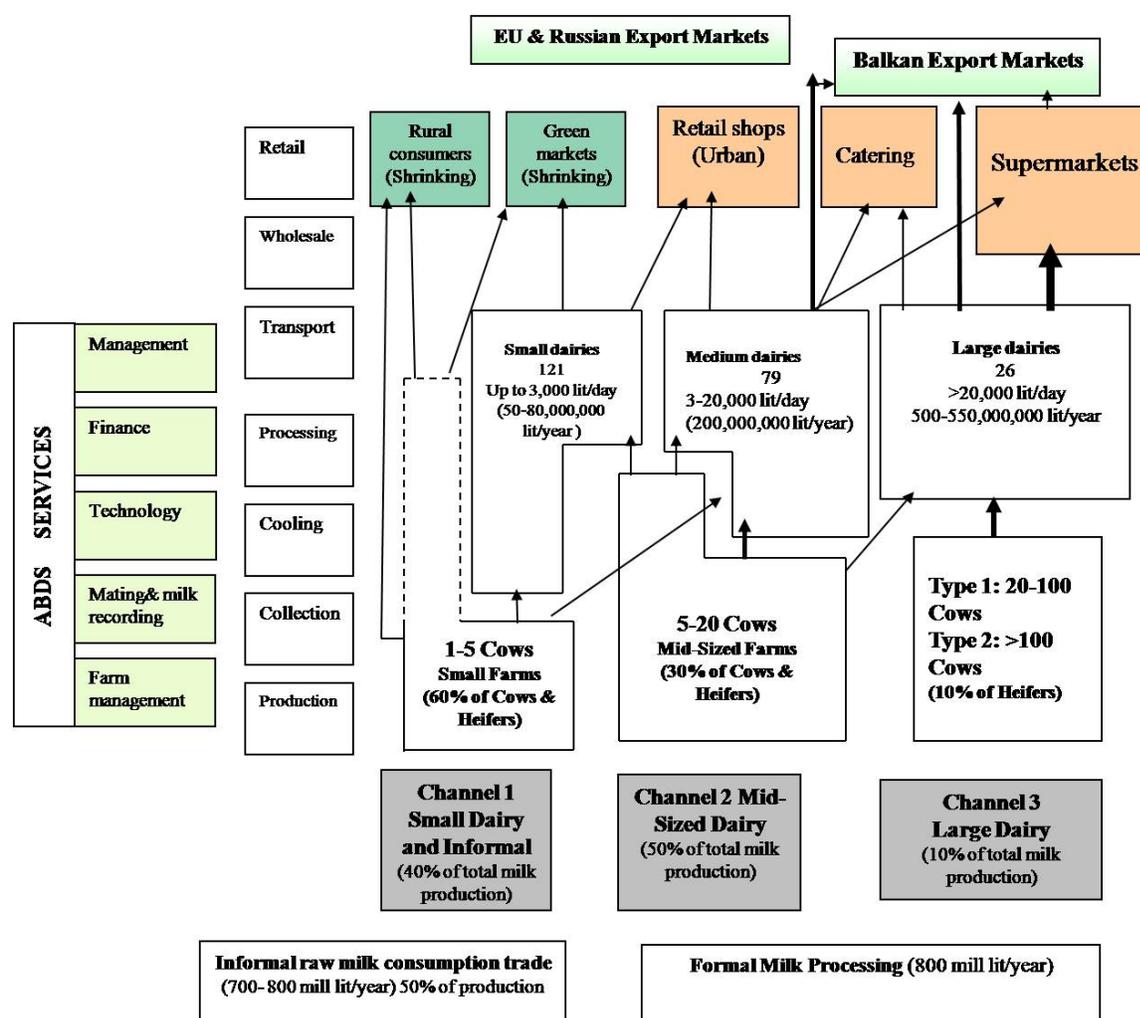


# THE SUBSECTOR MAP

## DESCRIPTION OF THE SUBSECTOR CHANNELS AND MAP

The value chain map is basically divided by source—small, medium-sized, and large farms. The milk is either sent directly to consumers on the farm or via green markets that are in the informal sector and not subject to value-added tax (VAT); previous governments tried to bring the VAT to the green markets, but without success. About half of the milk goes through the larger farms (those with more than 20 cows), but the distinction between farms with more than 20 cows and those with 5 to 20 cows is not clear. Therefore, the distinction between these two groups is not clear on the value chain map channel, or it is arbitrary because milk collection centers are usually in villages where medium-sized and large farmers may deliver to the same supply chain.

FIGURE 2: VALUE CHAIN MAP FOR THE DAIRY SUBSECTOR IN SERBIA



## DISTRIBUTION CHANNELS

We can distinguish three channels in the Serbian dairy subsector: rural raw milk, milk for processing, and milk for cheese processing.

Rural raw milk represents 40–50 percent of total milk production in Serbia, or 600 to 700 million liters per year. Milk is consumed by rural households 1) for household consumption and processing, 2) for processing in small dairy units that do not operate on a regular basis or register input supply, and 3) for calf breeding. The most common sales flow is on local green markets, where produces include fresh milk and milk products such as kajmak and cheese. Serbian law does not allow the sale of home-made products to retail or catering establishments; however, these sales are commonplace because of a lack of market supervision, especially in the economically less developed regions.

Milk for processing accounts for 700 million to 1 billion liters per year, depending on the source of information. Imlek alone had 30,000 contract-farmers four years ago, but has since decreased this to about 16,000 supplying the same quantity. Hence, many of these farms doubled in size. On average, dairy processors are supplied by farmers with five dairy cows, which is a far cry from commercial dairy farming sizes. The quality and quantity levels are not satisfactory. Quality presents a serious obstacle in the production of fresh milk and dairy products. As a result, Serbia has the highest share in UHT and boiled milk production among all dairy products locally produced. Fresh milk shelf life is only up to five days (three to four times less than in the United States) and the cheese vs. milk ratio is high at 1 kg per 11 liters of milk, which influences production costs and competitiveness. Dairy products are sold directly to retail shops, catering companies, and hypermarkets. A small share of milk products is exported, mainly to Montenegro, Bosnia and Herzegovina, and Macedonia. In less-developed regions, smaller dairies are filling the price gap and sell their products easily and at good prices to the local retail shops and bakeries.

Cheese production has potential for development both in domestic and export markets; this channel is represented mostly by (semi-) hard cheese varieties of average quality. The low-quality raw material base prevents cost-effectiveness in production and quality of final product. As a result, statistics show a high import of dairy products, including cheese (imports are 48,000 tons vs. only 6,000 tons of exports in 2004, according to FAOSTAT). This channel can be improved through the development of a continuous supply of high-quality milk, which will decrease the conversion ratio (milk/cheese). The application of standards is also a prerequisite for export markets.

Although small dairies do not feel threatened by the increasing market share of the large dairies, competition for shelf-space in regional markets has increased significantly. The leading problems facing dairy processors with respect to sales and distribution are: 1) the collection of payments from sales outlets and retailers, 2) inadequate transport vehicles, and 3) poor roads. Most dairies find it difficult to work with supermarkets, citing bad payment and contractual terms, payment delays, no quantity guarantees, and prohibitively expensive shelf-space pricing.

ABDS providers and other supporting services are not well developed in the dairy subsector and they operate on an individual basis (as opposed to working with groups of farmers). Most of the state-supported institutions (agriculture faculties, veterinary institutes, extension stations) are not market-oriented and do not provide efficient services to farmers. Private extension service providers are more efficient, but again work on an individual basis. The exception is Taurus Agro, a consulting company that has established good cooperation with Imlek and farmers in South Banat region. The company works with a group of selected farmers on GAP in farm management (feeding, hygiene, genetics, and productivity).

Milk collection, cooling, and transport are usually done by the dairy processors. However, dairy plants such as Imlek are slowly moving away from these services in order to rationalize operations. This opens a gap to be filled by either private companies or farmer organizations.

## **POINTS OF LEVERAGE**

At least three points of leverage can be distinguished:

### **PRODUCER GROUPS**

Producer organizations, such as the Simmental and Holstein Breeders Associations and Cooperatives, are main points of intervention. The USAID Agribusiness Project may assist these organizations by discussing support mechanisms for the industry with MAFWM, particularly since it is strongly supportive of reviving the industry. However, it is important to create a strong and independent farmers' association that can chart out and drive its own course. There have been examples of influence from different interested parties to control farmers' organizations. The creation of an independent farmers association was strongly recommended by U.S. Holstein Association President Doug Maddox when he visited a local Serbian association in November 2007. He stressed the need to cooperate with governmental institutions in developing a respectable entity. He also reminded farmers that their organization should be a partner to all interested stakeholders.

Upstream from the farms, the USAID Agribusiness Project may also work with the cattlemen's associations in registering dairy cattle, facilitating financing, assisting with the importation of cows and semen, and securing locally available genetics and inputs for the industry.

### **PROCESSORS**

Processors serve as another key leverage point. Processors can be divided into three groups based on their capacity: 1) more than 100,000 liters/day (such as the DFG); 2) sizes of about 5,000 to 100,000 liters/day (such as Kuc Mlekara); and 3) up to 5,000 liters/day.

### **GOVERNMENT INSTITUTIONS**

The USAID Agribusiness Project may work with Veterinary and Policy Departments that are part of the Republic and Regional Offices of the Ministry of Agriculture.



# INSTITUTIONAL AND REGULATORY FRAMEWORK

## SUPPORTING ORGANIZATIONS AND INSTITUTIONS

There are few supporting institutions in the dairy subsector. MAFWM has privatized most of the previously under-funded regional veterinarian stations (the extension stations in Serbia only cover crops, not animal products). The main supporting institutions are veterinarian stations (still not fully privatized), the agricultural universities, and the emerging private sector consultants that are being supported by the large dairies such as Imlek.

On a regional level, the Vojvodina Development Fund is financing small and medium-sized enterprises (SMEs) and farmer organizations with noncommercial loan programs. The main criteria for selection are the presence of a sound business plan and collateral guarantees. Currently, 65 percent of the fund's loan portfolio is accounted for by agriculture related projects.

## PRESENCE OF AGRICULTURAL BUSINESS DEVELOPMENT SERVICES

Mixed feed, pasture seed, and veterinarian supply sales agents provide embedded services to farmers, but the smaller-scale producers are largely left out of the process because they are seen as not being worth the effort. On the other hand, the larger farmers receive much assistance from salespeople who service their feed, veterinarian, and other needs.

One example of a systematic approach to dairy subsector development is a USAID-funded program implemented by ABDS provider Taurus Agro Consulting, which worked with a select group of dairy farmers in the Vrsac region. The results of the support program were recognized by processor Imlek, which awarded it a commercial contract to work on dairy farm management with 40 dairy farms supplying Imlek. It is expected that the contract will be renewed and broadened.

There are several cattle semen suppliers, including Semex from Canada and World Wide Sires from the United States. Import of semen is controlled by the government's artificial insemination centers (in Velika Plana, Krnjaca, Temerin, and Nis), which hampers free market movement. However, previous USAID-funded programs were able to develop private sector-based solutions to import semen.

Interviewed farmers indicated that their main sources of information about the dairy industry are the mainstream media channels, which provide news and sometimes educational programming about the dairy industry. Farmers also reported personal contacts, dairy processors, and milk collectors as important sources of information. Price and market information is provided almost daily by MAFWM. However, farmers complain that the data are often late and not very useful in their decision making.

## REGULATORY FRAMEWORK

Most of the legislative constraints mentioned by key informants related to MAFWM subsidies to dairy farmers. While dairies feel that subsidies provide a strong incentive to dairy farmers, they also believe that subsidies must be restructured around milk quality rather than fat content. Respondents complained that the subsidy system places an additional administrative burden on dairy processors, and that this should be the responsibility of MAFWM or local governments. It was also commonly mentioned that the Law on National Laboratories must be passed in order to set proper regulatory standards for dairy processors.

Although the dairy sector is opening up to competition, it took a special effort by the Government of Serbia to “promote” milk powder imports in late 2007 to keep down prices for the industrial users (mainly the confectionary industry). The sector has the highest tariff levels—30 percent ad valorem—and often has non-tariff barriers to trade, such as discretionary licenses issued for imports of dairy cattle, semen/genetics, and milk products, which require that the MAFWM Veterinarian Services (VS) issue or accept an international VS certificate, which it often does arbitrarily. Although the Government of Serbia has tried to align itself with the EU trade policy in the dairy sector, it does have the ability to be arbitrary in issuing VS sanitary and phytosanitary services certifications, and often does so. Even if it acts more transparently, importers are frequently reluctant to even try to import new items unless they have prior approval by MAFWM and the VS, which can take a very long time to “study the issue” unless some sort of incentive is available to speed up the process.

On the other hand, MAFWM has moved surprisingly quickly to register all dairy cattle, with the assistance of the EU’s European Agency for Reconstruction providing much support to the VS offices to do so. In addition, the VS must move about half of the existing farms over to the formal sector, which is not expected to happen until the last minute before Serbia may receive EU accession because informal small farms do not pay taxes. Given this situation, the dairy industry should have very low production quotas applied to it, if and when Serbia joins the EU, and this should reduce production greatly unless it is raised by the larger farms prior to EU accession, now (optimistically) estimated at somewhere between 2012 and 2015.

# SUBSECTOR DYNAMICS

## DRIVING FORCES IN SUBSECTOR GOVERNANCE AND MARKET TRENDS

The main market drivers of the Serbian dairy subsector are the processors, larger farmers, producer associations, and MAFWM. For example, the leading dairy processing group, DFG, reduced the number of its suppliers from 30,000 (which included noncommercial farms) to around 16,000 suppliers, still supplying the same volume of around 600 million liters of milk annually. Trends in Serbia are no different from those in many other countries. A shift is taking place away from small family farms with just a few cows to commercial family farms averaging up to 40 high-breed dairy cows. These commercial farms are private businesses that involve whole families and create new jobs. The increase of dairy herds will generate a need for additional seasonal employment, private consulting, extension service provision, veterinary science, and collection points. Farmers' organizations are still too weak to influence subsector development and lobby for their interests with the large processors and MAFWM.

The main trends and drivers of growth in the dairy subsector are the following:

- An increase in the variety of milk and dairy products available in the country;
- The entry of foreign producers into the Serbian market;
- Stricter conditions for the purchase of milk from smaller family farms;
- A preference for consumption of traditional Serbian specialty cheeses and cream;
- The growth of the baking industry (increase of baking products made with cheese);
- The development of the catering industry, particularly pizza restaurants;
- The development of the overall food trade and the entry of foreign food companies;
- Modernization of equipment for all phases of milk and dairy produce sales; and
- The reduction in the number of subsistence farms and the increased number of heifers per farm



# VISION FOR GROWTH

## MAJOR OPPORTUNITIES FOR ECONOMIC GROWTH IN THE SUBSECTOR

The main opportunities (proven supply gaps) in the Serbian dairy subsector are the following:

### EU QUOTA, STANDARDS, AND LEGISLATION

EU standards require the industry to expand production rapidly as EU accession nears and the EU Stabilization and Association Agreement is signed, which should provide much money to the agricultural sector in general and to the dairy subsector in particular. Serbia's increasing trade with EU member countries is driving opportunities for the dairy subsector. As Serbia is adjusting its policy toward the EU, the dairy subsector must improve its performance to be sustainable in the years to come. The necessity to increase the competitiveness of the Serbian dairy subsector follows from Government of Serbia's decision to accept requirements to decrease particular import duties for some agricultural products from the EU, among which there are powder milk (from 70 RSD/kg to 56 RSD/kg), butter (from 70 RSD/kg to 35 RSD/kg), milk creams (from 50 RSD/kg to 25 RSD/kg), and cheeses (without "Kackavalj") (from 80 RSD/kg to 40 RSD/kg). This decrease in import protection exposes the domestic dairy industry to sharper competition from EU processors. There is no alternative for Serbia's dairy subsector but to increase the number of commercial farms, improve efficiency at each level of the supply chain, and standardize all production processes.

### CONTINUED GROWTH IN DOMESTIC DEMAND

As Serbian incomes rise, the growing middle class is increasingly consuming more dairy products. Consequently, the increasing share of dairy product consumption vs. the total consumption of animal products will lead to a significant decrease of lower-price food products consumption. Another factor influencing demand is the growth of the supermarket sector.

### GROWTH IN THE MARKET FOR VALUE-ADDED PROCESSED PRODUCTS

The fast-growing middle class is rapidly increasing its consumption of more expensive dairy products. With the increase in incomes, it is expected that there will be an increase in consumption of highly processed products, with less milk fat, as well as with fruit and cereals ingredients.

### POTENTIAL GROWTH MARKET IN ORGANIC MILK

Organic milk represents a rapidly developing opportunity in both the domestic market and the export market for Montenegro, Bosnia, and Croatia during the summer vacation period along the Adriatic beach resort areas. This production traditionally is related to the rural areas in the Sandzak and Zlatibor regions, regions characterized by unpolluted natural resources. The rising trends of increased demand for organic and healthy food worldwide are well-documented. This would be a niche market because the initiatives concerning organic milk products have not yet been implemented, despite the existing resource base.

## **FAST-RISING EXPORTS**

Although the rate of growth has surprised many in the dairy industry, rising exports are coming as the result of the shortage of milk supply worldwide, as stated by the president of the U.S. Holstein Association, Doug Maddox, while visiting Serbia in November 2007. Structurally, Serbia has an advantage in the dairy subsector compared with other Balkan countries. Export volumes have not been noticeable during the past decade; however, with improved milk quality, introduction of standards in the processing sector, and launch of specialty products, Serbia has potential to increase its market share in Bulgaria, Macedonia, Montenegro, and Russia. The CEFTA trading zone offers opportunities, but is also dependant on political decisions (for example, unilateral annulment of the Agreement on Free Trade by Bosnia and Herzegovina that again introduced custom duties for milk and dairy products from Serbia). Serbia is already exploring opportunities for export to the U.S. dairy market by attending the Chicago Fancy Food Show (Subotica, Sabac, and Jersey dairies). The study performed by the U.S. Department of Agriculture (USDA) shows that Serbian cheese and cream products would be competitive in the sophisticated U.S. market.

## **CONSTRAINTS TO GROWTH**

Almost all industry sources interviewed stated that the formal industry can buy all of the milk produced via forward sales contracts, based on prevailing sales prices and quality factors (to be determined by the MAFWM VS labs, which often do not serve this function well in many parts of Serbia). Given that 1) all of the large, medium-sized, and small dairies interviewed stated that they are short of milk, and 2) all of the farmers interviewed stated that they had no problem selling milk, the constraints seem to be largely at the supply level. Nevertheless, producing end-products that are in higher demand, such as specialty cheeses and yogurts, would boost demand locally and for export to neighboring markets in Montenegro and Bosnia. The following are the major constraints to growth.

### **SUPPLY SHORTAGES**

- Nonexistent network of high-quality ABDS providers (this relates to the most common problems and limitations to growth—milk quality and yields, feeds and nutrition, cattle housing solutions, genetic stock);
- Nonexistent independent milk quality control labs (important for paying farmers based on quality) and only one laboratory for feed testing, which is crucial for farmers;
- Limited value-added product diversification in the case of the smaller dairies;
- Limited access to land (it is estimated that one hectare of farmland is required to feed one dairy cow, which poses challenges for farmers who want to double their herd sizes);
- Inefficient transport/logistics in milk supply.

### **MISSING TECHNICAL KNOWLEDGE**

Farmers need knowledge and/or training on:

- Design of dairy farms for Serbian farmers (50, 100, 200, or 500 cows) based on the U.S. model and production technology;
- Good farm management;

- Dairy product diversification and marketing;
- HACCP/ISO certification;
- On-farm standard operations practices and practical milk collection procedures for smaller dairy processing plants;
- Investment plan preparation and cash flow analyses for modern dairy farms;
- Implementation of herd management programs;
- Trade promotion.

### **CREDIT UTILIZATION**

- Lack of long-term loans for land purchase and modern farm construction;
- High interest rates for dairy farmers in particular.

### **FARMER REPRESENTATION**

- Lack of politically independent farmers groups that can lobby for their interests.

## **POSSIBLE ACTIVITIES TO ADDRESS THE MARKET CONSTRAINTS**

The following are some of the activities that the USAID Agribusiness Project could engage in to boost the competitiveness of the Serbian dairy subsector and help translate market opportunities into economic growth and employment creation.

### **SUPPORT EXISTING SME PROCESSORS ASSOCIATIONS/ESTABLISH NEW MILK DEVELOPMENT COUNCIL**

To support the growth of small and medium-sized dairies, the project would work with stakeholders to establish these subsector-wide bodies. We will leverage individual or multiple efforts, considering interventions in dairy marketing, brand development, and trade promotion.

### **IMPORT MORE HIGH-BREED HOLSTEIN HEIFERS AND DAIRY SEMEN/EMBRYOS**

After 16 years of trade restrictions, the Government of Serbia finally authorized live cattle imports and cattle semen from the United States and the EU in 2005. Working with the major stakeholders in the subsector (dairies, farmers' organizations, World Wide Sires [WWS]), the project will help improve the quality of breeds in Serbia.

### **SUPPORT PRIVATE DAIRY EXTENSION SERVICE PROVIDERS**

Extension service providers should be assisted both in terms of knowledge and in terms of the technical equipment they have at hand to support farmers/farmers' organizations in improving farm management practices, feeding, hygiene, breeding/genetics, productivity, and overall profitability. The USAID-funded Community Revitalization through Democratic Action project, for example, worked with an ABDS firm (Taurus Agro Consulting) and, by implementing a systematic approach of technical assistance, succeeded in increasing the quality and quantity of milk produced on selected farms (425 cows combined) by up to 15 percent (3–4 liters/cow) over a period of six months. At the same time, raw milk prices paid by Imlek

increased from €0.21 to €0.24 per liter, which represents an increased total income valued at €102,040, with an additional 400,000 liters that Vrsac Dairy produced and sold at the market.

This approach could be replicated under the USAID Agribusiness Project. For example, Table 16 shows the potential impact of a program involving 170 farms and 2,000 animals. The predicted impact of the program would be increased income, based on quality and increased milk safety, of at \$1.3 million.

### **IMPROVE FEED CONVERSION RATIOS**

Many producers are small operations, often using poor pastures and with little in terms of feed supplements. Clearly, the use of improved pastures for dairy heifers and better feeding will produce better milk yields. However, most farmers are not knowledgeable about the economics of paying a little more for better pasture preparations and feed ingredients, and then getting much more in terms of milk produced to increase farm profitability. The project can work with identified feed-mixing facilities nationwide.

### **SUPPORT THE CREATION OF REGIONAL/NATIONAL HOLSTEIN AND/OR SIMMENTAL ASSOCIATIONS**

U.S. Holstein Association President Doug Maddox's visit to Serbia in November 2007 was welcomed by a local Holstein Association that showed interest in increasing its capacity to promote subsector development. A strong association can influence policy decision making to support dairy subsector growth. Such an association would be a point of leverage for farmers' trainings programs as well as for the establishment of an efficient Holstein herd book and other services to dairy farmers. There are a number of dairy farmers associations in Serbia, with members including either individual farmers or cooperatives, but their organizational structures are weak and inefficient and they are without clear goals and strategy. The project should consider supporting existing farmers' organizations or decide on how to guide the process to create new ones efficiently.

### **LINK TO USDA PROJECTS AND U.S. DAIRY EXPERTISE**

The project could link Serbian farmers to U.S. dairy expertise through, for example, the USDA, the American Holstein Association, the WWS, or California Polytechnic University. This expertise would support dairy subsector development if coordinated with the main subsector stakeholders and domestic ABDS providers. Visits to the U.S. dairy industry by key stakeholders (lead farmers, farmer association representatives, ABDS providers, processors, and so on) could be an integral part of this linkage.

### **ACQUIRE AND/OR CO-DEVELOP TRAINING PROGRAMS FOR YOUNG FARMERS AND EXPERTS**

The USAID Agribusiness Project could develop programs for the young farmers, ABDS providers, and processors who can drive the future growth of the subsector, and link this training to other activities such as bringing in U.S. dairy experts and conducting demonstrations on lead farmer farms. The project can provide a broader context by establishing a Serbian 4H club modeled after (and linked to) those in other countries. This can be done in collaboration with USDA or the U.S. Holstein Association and should include visits by young Serbian farmers with their counterparts in U.S. states with climates similar to Serbia's (such as Wisconsin, Illinois, and Ohio). Training programs will be the most effective way to get results in terms of increased milk production and profitability from a strong but inefficiently used set of resources available for dairy farming in Serbia.

**TABLE 16: ILLUSTRATION OF THE POTENTIAL IMPACT OF ABDS IN DAIRY**

“Taurus” Agro Consulting Company and Network of Private ABDS Providers	No. of Farms	No. of Cows	Milk (kg.)	Milk (kg.)	Milk (kg.) After 1 Year		Price/Liter (€)		Total Value (€)		Difference (€)
					per cow/day	total/305*	per cow/day	total/305*	End 2007	End 2008	
Region											
South Banat (Vrsac, Plandiste, B.Crkva, Kovin, Pancevo)	80	1300	17	5185	19.55	5962.75	0.30	0.35	2,022,150	2,713,051	690,901
Central Banat (Zrenjanin, Secanj, Opovo, Zitiste)	20	300	16	4880	18.4	5612	0.30	0.35	439,200	589,260	150,060
Central Serbia (G.Milanovac, Cacak, Mladenovac, Zlatibor)	30	200	12	3660	13.8	4209	0.30	0.35	219,600	294,630	75,030
East Serbia (Zajecar, Boljevac, Bor)	20	100	12	3660	13.8	4209	0.30	0.35	109,800	147,315	37,515
South Serbia (Nis, Prokuplje, Leskovac)	20	100	12	3660	13.8	4209	0.30	0.35	109,800	147,315	37,515
<b>TOTAL in Euros</b>	<b>170</b>	<b>2000</b>							<b>2,900,550</b>	<b>3,891,571</b>	<b>991,021</b>
<b>TOTAL in US\$</b>											<b>1,290,000</b>

\* 305 days = the standard average number of days that cows yield milk per year.



## **FACILITATE ACCESS TO CREDIT AND THE USE OF MAFWM AND EU SUPPORT PROGRAMS**

Credit is key to dairy operations, so the project will work with banks, private ABDS providers, the Government of Serbia, and the dairy processors to help the latter and their suppliers (farmers) access loans. Farmers need to make investments in equipment, barns, cattle, and so on to expand their farm operations. Quick wins are possible by using more fully the ongoing MAFWM and local government programs. MAFWM provides special preferential five-year loan programs as well as subsidies for milk quality. The project will work with MAFWM, the Vojvodina Development Fund, and commercial banks (such as ProCredit and Hypo Alpe Adria) to facilitate investment activities in new farms, cattle, genetics, and equipment.

## **ENHANCE THE MARKET INFORMATION SYSTEM**

The current Market Information System implemented by MAFWM should be enhanced to allow for better tracking and dissemination of the trends of milk prices and prices of milk products in Serbia and abroad. Specialized agricultural TV shows should be adjusted to more specific and relevant topics in dairy production and marketing to further enable growth of the overall subsector.

## **PROVIDE TRAINING ON INTERNATIONAL STANDARDS**

The project can assist ABDS providers in introducing food safety standards (GAP, HACCP) to stakeholders in the dairy value chain—an EU requirement. Training-of-trainers sessions can be organized for local ABDS providers as well as for ministry and industry association representatives.

## **ESTABLISH DEMO FARMS**

Demonstration farms, in combination with training programs and training centers, are an effective way to communicate new practices that are necessary for long-term sustainability and productivity. It will be preferred to establish these demo farms as a part of a lead farmer's operation, rather than on a plot at a research institute. Implementing demo sites on-farm has several advantages: the initiative will take place in a real-world setting (as opposed to an unnatural "ideal circumstances" setting) and it will be far more interesting and stimulating for the farmers (thus resulting in a stronger farmer response).

## **SUPPORT THE FORMATION AND UPGRADING OF REGIONAL LABS FOR FEED AND MILK TESTING**

Milk quality and safety will be a major focus in developing the dairy supply chain. With EU accession, farms will need to produce milk according to EU standards (for example, maximum bacteria count allowed). Currently, Serbian milk quality is far below those standards. Dairy plants frequently receive milk with high bacteria counts, which affects milk quality. Milk quality also needs to be tested for each cow each month; laboratories do not have the capacity to conduct these tests. Currently, only two labs can test forage quality in Serbia and this service is expensive and inefficient. In order to assess forage and feed quality, farmers will need to test feed at least several times a year, and the current high cost of testing discourages this practice.

## **ESTABLISH A REGIONAL MILK AND BREEDING RECORDING SYSTEM**

EU and U.S. regulations require all cattle to be registered for food safety and improved quality control. Traceability, directly linked to milk safety monitoring, will be a requirement in the context of EU trade and accession. The USAID Agribusiness Project will build upon MAFWM initiatives to identify and mark all cattle. Upon milk recording, cows will obtain a registered pedigree and farmers will be able to show quality and more easily sell animals. Currently, less than 30 percent of all milking cows in Serbia are in a recording system. Supporting this activity will allow Serbia to officially track milk production and enable it to obtain a higher EU quota. We will work with MAFWM and farmer groups such as the Serbian Holstein and Simmental Associations.

## **ARTIFICIAL INSEMINATION AND EMBRYO TRANSFER TRAINING FOR TECHNICIANS AND FIELD VETERINARIANS**

Support to a faster development of dairy sector genetics will have a major impact on progress in the dairy subsector. Artificial insemination and embryo transfer training will provide veterinarians with the skills necessary to rapidly improve the productivity of dairy animals, especially when combined with improved feeding, technology, and farm management. Part of this activity will be to facilitate the linkage between producer associations and artificial insemination centers in order to enhance import of quality genetics.

## **PROMOTE FOREIGN DIRECT INVESTMENT**

The project can assist Serbian organizations such as the Chamber of Commerce and the Vojvodina Investment and Promotion (VIP) fund in promoting Serbia as a good place to invest. Foreign direct investment brings with it improvements in technology and best practices in production and management from other countries and will become a strong driver of growth in the dairy subsector.

## **BOOST PER CAPITA CONSUMPTION**

The project can assist industry-wide organizations (such as the Holstein Association) to develop and implement promotion campaigns to boost per capita consumption of dairy products in Serbia to EU levels (speed up the already ongoing trend of increasing consumption of milk and dairy products). Consumption patterns are changing fast in Serbia, with better living standards and emerging supermarket chains, and consumers tend to buy more and higher-quality products at one time, instead of shopping daily. See Table 17, which compares lower per capita consumption related to GDP vis-à-vis that of neighboring countries.

**TABLE 17: PER CAPITA GDP & DAIRY PRODUCT CONSUMPTION DRIVES SECTOR'S GROWTH**

<b>Country</b>	<b>GDP Per Capita</b>	<b>Per Capita Dairy Product Consumption</b>
Romania	2075	379
Greece	11990	374
Austria	24658	352
Croatia	4958	263
<b>Serbia</b>	<b>986</b>	<b>259</b>

Source: Food and Agriculture Organization of the United Nations (FAO), 2004.

## **WORK WITH PROCESSORS**

The USAID Agribusiness Project will work with the leading dairy processors in Serbia (DFG, Lactalis, Bon Grain) to achieve its goals of rapid, sustained, and broad-based economic growth. The project will 1) identify the most effective small-scale processing dairy plants with niche market potentials and provide them with new technologies and marketing assistance; 2) support and facilitate investment in the processing industry by helping link processors to financial institutions; and 3) work with progressive dairy processors, the regional Chamber of Commerce, and the various ministries in assessing the export market potential and the niche markets for value-added dairy products, especially with regard to the neighboring markets. The project will support the development of an export strategy, and support marketing and product development in general. The project will also help organize trade policy roundtable discussions to promote a sound enabling environment with an ability to favorably impact the Government of Serbia dairy production and trade policies.



# APPENDIX

## MARKET OPPORTUNITIES

Table 18 summarizes links market opportunities, constraints, and proposed activities to resolve these constraints, thus describing how the USAID Agribusiness Project can help boost competitiveness of Serbia dairy subsector.

**TABLE 18: MARKET OPPORTUNITIES**

Major Opportunities	Constraints Standing in the Way of Realizing the Opportunity	Specific USAID Agribusiness Project Activities
<ul style="list-style-type: none"> <li>• EU quota for Serbian dairy subsector</li> <li>• Stricter conditions for purchase of milk from smaller family farms</li> </ul>	<ul style="list-style-type: none"> <li>• High % of informal production (40–50% out of 1.6 billion liters/year produced in Serbia)</li> <li>• Small, non commercial dairy farms</li> <li>• Non-favorable loan arrangements</li> <li>• Low quality of breeding stock</li> <li>• Low quality and productivity per cow/head</li> <li>• Insufficient transport/logistics in milk supply</li> <li>• Poor extension service provision</li> <li>• Low management capacity of existing farmers' organizations</li> <li>• Nonexistent milk and feed quality control laboratories</li> <li>• GAP not applied in primary production</li> <li>• Application of quality standards at processing level</li> </ul>	<ul style="list-style-type: none"> <li>• Work with processors such as Imlek and Taurus Agro Consulting to develop a network of ABDS providers nationwide and demo farmers to implement dairy farm management practices (milk quality and yields, feeds, nutrition, cattle housing solutions, genetic stock, hygiene) with U.S. technical expertise related to the experience with U.S. Holstein Association and WWS on selected dairy farms (based on the Vrsac region model).</li> </ul> <p><b>Result:</b> ca. US\$1,300,000 in the first year, projections for Y2-Y5 will depend on the development of an ABDS network.</p> <ul style="list-style-type: none"> <li>• Provide training on international standards and legislative (EU especially) to stakeholders in the dairy value chain using ABDS providers.</li> <li>• Increase the number of commercial dairy farms through loan facilitation program with recognized partners (ProCredit, Hypo Alpe Adria banks, Vojvodina Development Fund, MAFWM) and with the support of processors.</li> </ul> <p><b>Result:</b> US\$2 million in new investments in commercial dairy farms and US\$1,500,000 in additional milk sold to dairies annually.</p> <ul style="list-style-type: none"> <li>• Import more high breed Holstein heifers and dairy semen/embryos working with processors, extension and identified advanced farmers.</li> <li>• Result: US\$2,000,000 value of new pure breed Holstein import annually and \$3 million of additional milk sold to dairies.</li> <li>• Support the forming and upgrading of regional labs for feed and milk testing.</li> <li>• Establish a regional milk and breeding recording system.</li> <li>• Support the creation of regional/national</li> </ul>

Major Opportunities	Constraints Standing in the Way of Realizing the Opportunity	Specific USAID Agribusiness Project Activities
		umbrella Holstein and/or Simmental associations; train members of the board (coop managers) in governance and marketing. <ul style="list-style-type: none"> <li>• Link the project with existing donor-funded initiatives and local institutions to address growth potentials in dairy sub sector (Serbian Investment and Export Promotion Agency [SIEPA], VIP, and MAFWM).</li> </ul>
<ul style="list-style-type: none"> <li>• Increased consumers' income and demand for dairy products</li> <li>• Developments of the food trade and entry of foreign hypermarkets</li> <li>• Import substitution</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of product diversification and quality</li> <li>• Lack of organic production</li> <li>• Lack of specialty products</li> <li>• Lack of quality raw material for improved conversion ratio and productivity (dairy products such as cheese)</li> </ul>	<ul style="list-style-type: none"> <li>• Link to U.S. dairy expertise, leveraging existing relations between U.S. Holstein Association, WWS, California Polytechnic University and model ABDS (Taurus AC), and train relevant stakeholders.</li> <li>• Boost per capita consumption working with Holstein Association in developing promotional campaigns for dairy products.</li> </ul>
<ul style="list-style-type: none"> <li>• Preferential trade agreements with Russia</li> <li>• CEFTA trade zone</li> </ul>	<ul style="list-style-type: none"> <li>• Political risk</li> </ul>	<ul style="list-style-type: none"> <li>• Support existing SME processors associations/establish new milk development council.</li> <li>• Improve feed conversion ratios by setting a model feeding with processors, extension, and farmers. Set up a model in Vrsac dairy—where the feeding program functioned well in 2004—and expand it nationwide. For example, the Vrsac dairy processes 7.5 million liters/year for cheese in conversion ratio 11 liters per 1.0 KG. With improved feeding and milk quality it will be a 10-to-1 ratio in the first year.</li> </ul> <p><b>Result:</b> US\$700,000 in savings in cheese production and additional income through the increased milk quality.</p> <ul style="list-style-type: none"> <li>• Enhance the Market Information System.</li> <li>• Promote foreign direct investment with Serbian Chamber of Commerce, SIEPA, and Vojvodina Investment Fund.</li> <li>• Help exporters with high-quality retail packaging, packaging equipment, promotion, and marketing for exports.</li> </ul>

## SWOT ANALYSIS FOR DAIRY PRODUCTION

Dairy subsector prospects are influenced by regional/geographical characteristics with a very productive farmland in the Province of Vojvodina and the fertile valleys surrounding the main domestic market of Belgrade, followed by other less productive hilly/mountainous regions of Serbia. Milk is produced on commercial, private, and state-owned farms, as well as on small family farms. The commercial farms usually have a greater number of animals; they also possess mechanized feeding and milking systems that achieve higher milk quality. Family farms are usually small with generally only one or two cows, often with poor facilities and mostly manual milking. Serbia has yields of about 10 liters/day/cow, compared

with about 20 liters/cow in the EU dairy farms, because of the Serbians' lack of financial means, poor breeding structure, small farm plots, and poor farm management practices. Table 19 lists the strengths, weaknesses, opportunities, and threats (SWOT) for the dairy subsector and Table 20 shows the general state of the Serbian dairy subsector.

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**TABLE 19: STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS**

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**Strengths**

- Foreign direct investments in dairy industry
  - Strong existing processing capacity
  - Favorable conditions to enter milk production
  - Consumer preference for domestic dairy products
  - Regionally recognized cheese types
  - Economically competitive forage production
  - Readily available labor at competitive cost.
- 

**Weaknesses**

- Small farms and segmented land holdings
  - Farmers' lack of knowledge of improved practices, such as feed formulations and herd management
  - Poor infrastructure (roads)
  - Poor quality of raw milk; poor sanitary conditions
  - Low milk yields or production per cow
  - Obsolete milking technology
  - Under-used processor capacity at current levels of production
  - Processors' lack of management know-how
  - Insufficient cold-chain capacity and poorly organized milk collection in some areas
  - Lack of quality management systems
  - Undetermined legal status of producer/farmers makes it difficult to get loans
  - Late or lack of payment to farmers for milk produced
  - Poor connection between extension services and producers and between agriculture institutions
  - Nonexistent programs to improve cattle breeding and markets for selling cattle with improved genetics.
- 

**Opportunities**

- Processing capacity available to support increased raw milk production
  - Potential to replace imported dairy products
  - Exploit the market for recognized cheese types
  - Low-cost potential to increase milk yields and quality
  - Geographic advantage for producing short shelf-life products.
- 

**Threats**

- Rural populations migrating to cities
- Aging farm population
- Poor rural sector liquidity
- Competitive equalization price supports for domestic products not likely to develop
- Institutions for quality control (export-import) and regulatory oversight are not developing adequately
- All levels of government jurisdiction will continue to delay unifying milk price and quality legislation (i.e., Serbia floor price for raw milk).

**TABLE 20: STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS**

FOOD	SIZE – ESTIMATES <sup>(1)</sup>			GROWTH POTENTIAL		MARKET FACTORS
	Product	Production: (in tons and liters)	Jobs or Participants: (workers)	Sales: Domestic & export values	Domestic Market	Export Market
Dairy – Fluid Milk	1,600 million liters	> 150,000	\$630,000,000	Yes	Yes	Potential on the export side, potential increase \$11 million
Cow Cheese	5,000 tons	> 100,000	\$50,000,000	Yes	No	Main focus in isolated areas, replace \$11 million in imports and value added sales
Yogurt (from cows)	1,000 million liters	> 100,000	\$50,000,000	Yes	No	Main focus in isolated areas, focus on value added
Goat Cheese	500 tons	> 1,000	\$150,000	Yes	Yes	Growing industry with cross border trade connections
Sheep Cheese	300 tons	> 500	\$ 50,500	Yes	Yes	Traditional Pirot Sheep Cheese may easily be boosted has good market

1/ The data from 2006 are being revised after interviews with Government of Serbia, industry representatives, and trade sources.