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**STRUCTURE AND COMPETITIVENESS OF THE MILK AND  
DAIRY SUPPLY CHAINS  
IN THE NEW MEMBER STATES,  
IN THE CANDIDATE COUNTRIES  
AND IN THE COUNTRIES OF THE WESTERN BALKAN**

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The project aims to establish a network of experts involved in agricultural policy analysis and rural development in the New Member States, in the Acceding Candidate Countries and in the countries of the Western Balkan. More detailed information on the project can be found at [www.agripolicy.net](http://www.agripolicy.net)

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# **1 New Member States**

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## **1.1 Introduction**

The expansion of the EU added 1 million farmers with dairy herds and 4.5 million dairy cows to the Union's dairy sector, with Poland alone accounting for 730,000 farmers and 2.8 million cows.

It is immediately obvious that the overwhelming majority of new dairy farms are small. Indeed in several of the New Member States (NMS) there are a not insignificant number of producers with only one or two cows who are basically subsistence level producers. For such producers, half or more of the daily milk yield is consumed within the farm household either as liquid milk or home made cheese, butter or yoghurt. Some milk may be sold or traded to neighbours in return for other produce.

## **1.2 Two Distinct Raw Milk Production Sectors**

Of more significance is that most Acceding Countries have a noticeable division within their dairy industry into two disparate sectors – one containing a large number of small, sometimes very small, producers; the other a more commercial and market-orientated sector. Table 1 below shows the structure of the dairy herd in each of the NMS except Malta and table 2 shows the changes that have taken place over the last decade and a half. Taken as a whole, 89% of the dairy farms in the NMS contain ten or fewer cows and 47% of the cows are in these small herds. At the other extreme, 2% of dairy farmers have herds of above 100 but one out of every six cows in the NMS is in such a herd. This contrasts greatly with the situation in the older EU-MS, particularly in countries such as the UK and the Netherlands where large herds are the norm. For several of the newly acceding countries, a high proportion of the national herd could be found in very large herds during the communist regime but some of these were split up during the period of transition to market economies.

**Table 1 Dairy Farm Structure  
Numbers of Herds and of Dairy Cows in New Member States, Bulgaria & Romania 2005**

Herd Size	1 to 10	1 to 10	11 to	11 to 30	31 to	31 to	101 +	101 +	Total	Total	Cow Total (a)
	Cows	Cows	30 Cows	Cows	100 Cows	100 Cows	Cows	Cows			
	Herds	Cows	Herds	Cows	Herds	Cows	Herds	Cows	Herds	Cows	(000s)
<b>Cyprus</b>	14	49	12	239	122	8417	93	15880	241	24585	24.6
<b>Czech R</b>	719	na	657	na	544	na	1033	na	2953	na	437.1
<b>Estonia</b>	3037	12147	1997	7988	3629	14514	19463	77851	28126	112500	113.1
<b>Hungary*</b>	14537	44416	983	18567	284	16581	446	205756	16250	285320	285.0
<b>Latvia</b>	56994	107085	2100	30993	388	18820	112	28277	59594	185175	185.2
<b>Lithuania</b>	177769	349814	2875	45679	458	22242	150	45132	181252	462867	416.5
<b>Malta</b>	na	na	na	na	na	na	na	na	na	na	7.8
<b>Poland</b>	658000	1,437000	64300	991000	6900	285000	630	170,000	729830	2,883000	2754.8
<b>Slovakia*</b>	7	23	12	286	90	6624	511	161163	620	168095	198.6
<b>Slovenia*</b>	15,640	50959	3596	56606	462	19304	13	3814	19711	130683	120.3
<b>NMS</b>	904826	1,975378	76532	1,151358	12877	391502	22451	707873	1016686	4,226110	4543.0
<b>NMS %</b>	89.0	46.7	7.5	27.2	1.3	9.3	2.2	16.7	100	100	
<b>Bulgaria</b>	146980	246544	3509	50895	805	44334	36	5927	151330	347700	347.8
<b>Romania</b>	1,101229	1589208	4204	79603	689	33872	164	34382	1,106286	1,777065	1625.4

**Source:** The Various Countries' Own Statistical Bureaux except for the final column (a) which shows total dairy cows as at December 2005 as reported to the Services of the Commission.

It will be noted that the total cow numbers for Lithuania, Poland, Slovakia, Slovenia & Romania differ significantly from the two different sources and probably reflect differences of definition.

\* For Hungary, Slovakia & Slovenia, the size groups are 1 to 9; 10 to 29; 30 to 99; and 100 plus

**Table 2 Numbers of Herds and of Dairy Cows in New Member States (excluding Malta)  
1990 to 2005**

Year Country	1990		1995		2000		2005	
	Number of Herds	Number of Cows	Number of Herds	Number of Cows	Number of Herds	Number of Cows	Number of Herds	Number of Cows
Cyprus	526	22411	316	29481	257	23511	241	24585
Czech R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Estonia	47000	280000	52846	211396	34499	138000	28126	112500
Hungary	N/A	N/A	N/A	N/A	35210	360770	16250	285320
Latvia	221 885	535100	116723	274554	81793	202853	59594	185175
Lithuania	N/A	N/A	N/A	N/A	219 071	433 601	181 252	462 867
Poland	N/A	N/A	1 309 060	3 391 000	876 130	2 873 000	729 830	2 883 000
Slovakia	N/A	N/A	947	279 361	829	209024	620	168 095
Slovenia	N/A	N/A	46 312	174 276	28 588	141 574	19 711	130 683
<b>Total NMS</b>	269 411	837 511	1 526 204	4 360 068	1 276 377	4 382 333	1 035 624	4 252 225

Source: The Various Countries' own Statistics Bureau

For the small producers, raising their standards to comply with EU regulations has proved a difficult task and all countries show a substantial fall in the numbers of producers in this category since the turn of the century. In Estonia, Latvia and Hungary the numbers of herds with five or fewer cows has more than halved since 2000, in Slovenia the rate of fall is not much less. In Poland the number of farms with nine or fewer cows has almost halved since 1996 as has the total number of cows in these small herds. Before Accession, Cyprus alone had a dairy sector structure more akin to that of the EU-15.

Primarily, but not exclusively, due to the large number of small, non-commercial herds, the milk yield which is estimated to have averaged some 5000kg per dairy cow in the NMS in 2005 is significantly lower than that in the EU-15 which was around 6500 kg per dairy cow. Nonetheless the average in the NMS is rising more rapidly than that in EU-15 as NMS modernise and adopt EU standards. In 2003 the average milk yield of the NMS at 4536 Kg/cow was only 72% of that the EU-15's 6275 kg/cow as compared with 77% of the EU-15 average now. As the farm structure evolves towards larger farms and as good husbandry practice becomes more universal, the increase in average yields can be expected to continue. Problems remain but in many countries efforts are being made to encourage the further amalgamation of small herds into medium-sized farms which have a sustainable commercial future.

### **1.3 Milk Processing**

Most NMS also have a dual sector in the milk processing industry with some large scale dairy plants producing liquid milk and milk products in substantial volume, usually fully up to EU standards; coupled with a larger number of smaller dairy enterprises, often in the remoter regions usually collecting from large numbers of small scale milk producers. In several countries there are reports of milk collection from small farms being made every other day rather than daily with many of those farms lacking cooling equipment and refrigerated storage; hence posing a threat of contaminating whole deliveries. A common theme for a number of countries is the need for external finance to enable farmers and dairies alike to modernise their production and storage equipment. That is not to belittle the efforts that have been made in all the NMS to raise the standards of hygiene throughout their dairy food chain.

### **1.4 Trade**

Taken as a group, the NMS are net exporters of milk and milk products by volume though it is noticeable that a number of the counties export raw milk or basis milk products (notably cheese and butter) whilst importing higher added-value dairy products for their own consumers. There have been reports from a number of countries of either the milk producers or the processors acting opportunistically (respectively) to export or import raw milk. Save in areas close to national boundaries, where the nearest processing plant may be in the neighbouring country, there is rarely economic justification for trade on raw milk. The real problem arises from the fact that in many countries (including a few EU-15 countries) relationships within the dairy chain are not always harmonious. (As might be seen from farmers blockading dairy plants!)

## **1.5 Market Integration**

Of the ten NMS, only Cyprus, Hungary and Malta are net importing countries, the others are net exporters. The position of Cyprus and Malta is rather different from the other NMS, being islands with a substantial tourist sector, thus needing to import milk and milk products during their peak tourist season. Detailed statistics of production and trade in milk products can be seen in the attached Workbook produced by the Services of the EU Commission.

The fact that in most of the NMS both imports and exports in volume terms have been rising in the pre- and post-Accession periods and that the bulk of the two-way trade has been with other NMS indicates that within Central Europe the dairy market as a whole is well integrated. All ten NMS receive a larger volume of imports from other EU-25 MS than they do from outside the EU. All bar the Czech Republic, Hungary and Slovenia send a larger volume of exports to other EU-25 MS than they do to the rest of the world, but Lithuania and Poland also have a large volume of exports going to third countries, notably to Russia.

Whilst prices within the NMS have not yet fully adjusted to EU membership, there is evidence that in most countries they are moving towards EU-25 levels. Production standards are also moving into line with the EU-15 levels, though as can be seen from some of the country reports the levels of hygiene still lag behind in many of the remoter areas and among the very small producers.

## **1.6 Conclusion**

The NMS are all on course to fully integrate their milk and dairy sectors into the EU and there have been substantial changes within the sector over recent years. Many still face considerable problems of adjustment, particularly among small producers, who often lack refrigerated on-farm storage capacities and among smaller dairy processors who sometimes find that poor quality milk from one supplier can ruin a whole consignment. These problems will only be overcome over a period of time as lack of profitability prevents producers and processors from building up capital and weak rural financial infrastructures means that they cannot readily borrow to finance modernisation.

However, this is not to decry the efforts that have been made throughout the dairy sectors of the NMS to adjust to EU standards.

## **2 Candidate and Applicant Countries**

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### **2.1 Introduction**

Many of the issues covered in the report on the NMS apply to a greater degree within the other six countries covered by this report. Bulgaria and Romania are about to join the EU, adding another 1.25 million dairy herds containing 2.1 million cows to the EU's total (Bulgaria, 347700 and Romania, 1.8 million).

80% of Bulgaria's dairy farmers have only one or two cows and just under half the national total of dairy cows are in these very small herds. In Romania the figures are even starker with 93% of the dairy farmers and 76% of all dairy cows being in one or two cow herds. Only one in six Bosnia-Herzegovina dairy farms is over 5 hectares in size; Croatia's average dairy farm has 2.8 cows.

Turkey is among the world's 15 largest milk producers and as might be expected its dairy sector ranges from a huge number of one and two cow farms, mainly semi-subsistent, to nearly 400 farms with cow herds in excess of 100. Serbia too has some very large farms, one with some 5000 cows another with 10000, as well as the small family farms with generally only one or two cows.

### **2.2 Milk Production**

Again there is a clear division between the semi-subsistence dairy farms and the commercial ones. In Romania about 70% of the farms are subsistence holdings, with a further 25% selling less than 50% of their milk production leaving just 5% of dairy farms operating at a commercial level. Indeed the contrast between the volume of milk produced and the amount delivered to dairies or other processors is nowhere as great as in Romania. There, nearly 5 billion litres of milk are produced but only 1.1 billion delivered to dairies as can be seen from table 3 below. In Bulgaria too, a high proportion of the one and two-cow farmers are basically subsistence level farmers producing for their own family's consumption with perhaps a little trading or exchange with neighbour for other produce. This pattern is repeated in the applicant countries. In Bosnia-Herzegovina too, only a very low proportion of total milk production is collected and processed by dairies, most milk being consumed raw or turned into cheese on-farm. Turkey has a large informal sector (totaling about 70% of the milk produced) composed of family consumption, cottage industry and door to door delivery.

In all six countries, the majority of dairy farms are under-capitalised and lack on-farm refrigeration and storage facilities. Hygiene levels on these farms are some way below EU standards.

**Table 3 Milk Production and Deliveries from Farms (millions of litres) 2005**

Country	Production (mn litres)	Deliveries (mn litres)
<b>Cyprus</b>	156	144
<b>Czech R</b>	2613	2543
<b>Estonia</b>	670	571
<b>Hungary*</b>	1775	1594
<b>Latvia</b>	807	502
<b>Lithuania</b>	1896	1200
<b>Malta</b>	42	42
<b>Poland</b>	11932	8825
<b>Slovakia*</b>	1078	968
<b>Slovenia*</b>	659	508
<b>NMS</b>	21628	16897
<b>EU-15</b>	120800	114600
<b>EU-25</b>	142428	131497
<b>Bulgaria</b>	1287	803
<b>Romania</b>	4977	1109

## 2.3 Milk Processing

The major problem in all six countries is that in many rural areas farms are widely dispersed and the local road infrastructure is poor. The milk processing industry too is fragmented, with many of the smaller plants having insufficient refrigerated transport and outdated testing facilities. Whilst some of the large and medium size dairies have been modernised and fully meet EU standards, the processing sectors in most of the countries still need investment in modern processing equipment.

In addition to a number of large dairies modernised to EU standards, Turkey has a long established network of small scale processors (Mandiras) in the small towns. These play an important role in the Turkish dairy industry and have a close relation with the village communities.

## 2.4 Trade

Bulgaria is a net exporter of milk products, its exports having risen in volume terms in recent years and being roughly equal between EU-25 and third countries. Its imports have fluctuated somewhat and are overwhelmingly from the EU. Turkey is neither a large importer nor a large exporter of dairy products and the other four countries are all net importers.

## 2.5 Market Integration

Bulgaria's trade with the EU suggests that there is some degree of market integration, with its exports amounting to some 10% of its milk product production and the imports being around

10% of domestic consumption. However, as a share of total milk production, the trade with the EU in milk products is very small. In common with Romania and the applicant countries, the report from our Bulgarian colleagues talks of much more needing to be done to bring the sector as a whole up to EU standards of hygiene and performance.

Among the steps necessary to bring the candidate and applicant countries up to EU standards are actions to improve:

hygiene standards on farms;

dairy chain efficiency through increasing on-farm refrigeration and storage capacity;

the farm collection operation and on-farm testing service; and

the rural transport infrastructure.

In general the six countries have made good progress in recent years – often in rather adverse circumstance – but it would seem that it is likely to be quite a few more years before their dairy sectors as whole are operating at the standards of the EU-25.

## **Annex 1: Summary reports from the New Member States**

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### **Cyprus**

The two most striking features of milk production in Cyprus are the average dairy herd size, which is over 100 cows, and the importance of milk production from sheep and goats, which account for a third of total milk production by volume and around 40% by value. Only 36 of Cyprus's 240 dairy herds have 30 or fewer cows, whilst at the other end of the scale 19 herds have more than 200 cows. The 1990s saw the total number of dairy cows increase whilst the number of herds halved.

Rather more than half the total milk produced is sold fresh and some 40% is processed into cheese, with 25% of total milk supplies being used to produce halloumi, a traditional Cypriot cheese made from a combination of cow, sheep and goat's milk. Exports of halloumi have been rising in recent years as part of a two-way development of trade in cheese. An application for halloumi to be recognised as a Designated Product of Cyprus Origin is under preparation. If this status is granted, these cheese producers will be protected against imports and hope to be able to develop further their exports. From a milk usage as well as a balance of payments perspective, increasing halloumi exports would go some way to off-setting the rise in recent years in the imports of other dairy products.

In contrast to experience elsewhere, liquid milk consumption in Cyprus has tended to rise somewhat in the past decade, though fluctuating from year to year due to a combination of the climate and the numbers of holidaymakers visiting Cyprus. The liquid milk market is dominated by three firms selling pasteurised milk, but the processed product sector is more competitive having some 80 processors only 8 of whom process more than 2 million litres of milk a year.

Since EU-Accession, the profitability of milk production has risen, though this seems to be a function of changes in the structure and operation of the milk producers' organisation (Cyprus Cattle Producers Organization) which accounts for 80% of milk production and has used its market dominance to improve the dairy farmers' position relative to the three processing companies.

## Estonia

Milk production is the main branch of livestock farming in Estonian agriculture, aided by cheap feed from high yield grassland. The value of agricultural production in 2005 together with support was €0.507 billion with milk production providing 31% of this total.

652,400 tonnes of milk were produced in Estonia in 2004, 6.7% more than in 2003. As of 31st December, there were 116,500 cows, 1,900 animals less than in 2003. Small producers are dropping out of milk production, but large producers increased their cow numbers and met higher milk quotas in order to increase quotas further, in part aided by purchases of valuable Holstein breeding heifers from Holland and Germany. In 2004, producers received €6.6 million state aid to encourage improved cattle breeding.

In 2003, 79% of all milk produced was sold to the dairy industry, rising to 84% in 2004; 96% was elite or premium grade, and only 3% was grade I, the highest quality ever. The output of processed dairy products was about €0.246 billion in 2004. A total of 536,000 tonnes of milk were bought from dairy farms, some 40% more than total domestic consumption.

In 2005 there were 42 dairy processing entities registered in Estonia, and they employed 15% of all employees in the food and beverage industry. Prices paid for raw milk rose in the period 2000 to 2004 (€0.26/kg in December 2004), and consumer prices have increased in consequence.

In general, domestic dairy products are cheaper than imports and consumers prefer Estonian products. Domestic cheese provides 95% of turnover, processed cheese 53%, yoghurt 92% and ice-cream 81%. Estonian consumers are still very price-conscious, but there are signs that consumption of dairy products is rising. However, the dairy sector is influenced more by developments on the world market and access to foreign markets than by national consumer purchasing power. Demand for cheese and dairy products with high added value should increase on the world market as incomes in developing countries rise.

Since accession to the European Union, the value of production and exports of milk products has increased. The balance of trade in dairy products as a whole has been positive for each year, with butter as the biggest seller. Of the dairy products imported, cheese is in the top spot.

## Latvia

Dairy production constitutes on average 23% of total output of Latvian agriculture. 806770 tonnes of cows' milk were produced in 2005. The average number of milking cows reached 185,200.

In the last ten years, the number of cows fell by 35%. Increased farmgate milk prices have slowed down the reduction rate and cow numbers are expected to stabilise shortly as a result of restructuring. As the numbers of cows and herds have fallen, average yields have increased to 4364 litres per cow/year to compare with 3074 in 1995. The Latvian Brown cow is the country's predominant dairy breed accounting for 68% of Latvia's total dairy cows; their average milk yield is 4831litres.

More than half of all Latvia's dairy cows are in herds of under 10 cows, however there is consistent tendency for herds to increase in size Semi-subsistence farms (with herds of 1 or 2 cows) account for some 34% of overall cow numbers. At the other end of the size range, the number of herds with 51 to 100 cows has doubled in the period from 2000 to 2005. These ongoing structural changes in the dairy sector are expected to continue in the foreseeable future.

Latvia is more than self-sufficient in dairy production but over the last five years there was a noticeable reduction in the consumption of milk and dairy products as consumers switched to more healthy (i.e. lower fat content) food. These changes are expected to continue.

In recent years, milk processing enterprises in particular producers of butter and skimmed milk powder have benefited from various EU aid programmes; such as a "School Milk" Programme and subsidies on exports to third countries. The main dairy products exported from Latvia are cheese and skimmed milk powder; also butter and milk are exported; 96% of exports go to EU-25 countries.

Competition from imported milk products is expected to grow resulting in the emergence of a more concentrated domestic processing sector with greater product specialisation particularly in cheese production. Over the longer term, this specialisation and concentration of production is expected to be encouraged through using the market orientation measures of the EU milk and dairy CMO.

## Lithuania

The value of dairy products contributes about a quarter (26% in 2005) to the total Lithuanian agricultural output, and the sales of the milk processing industry amount to about a quarter of the total value of food products and beverages sold (26% in 2005), or 4.5% (in 2005) of the total sales of manufacturing industry. Milk and dairy products make up the largest share of agricultural and food products exports accounting for about 20% (21% in 2005).

Milk production is found predominantly on small farms; the average size of dairy farm (2.7 cows in 2005) is the smallest in the EU. However, it is not possible for producers to operate commercially on such small scale due to the much lower milk prices received and to the problems of compliance with EU veterinary and hygiene standards. Although the average size of dairy farms has increased by 35% in the past five years, the very small dairy farms pose a major challenge for the sector due to their low milk yields, high seasonality of production, low farmgate prices and the high costs of milk collection.

The dairy processing industry is one of the most concentrated and modern sectors of the food industry in Lithuania. In 2005, three groups accounted for 75–80% of the total milk processed in the country. The quality of milk produced is high, with 93% meeting EU standards in 2005 (only 52% in 2001). Some 50% of dairy products produced are exported, with cheese leading the way. Exports are rising, and especially so since EU-Accession

The consumption of milk is rising with that of fresh milk products and cheese increasing while that of butter is declining slightly. Most of the items consumed are produced locally. However, the quantities of imports are especially since EU-Accession.

Challenges at the milk processing stage are insufficient utilisation of production capacities due to the seasonality of milk supply, high milk collection costs and antagonistic relationships with milk suppliers. Since collaboration with large milk producers is more profitable, milk processors pay those producers more for their milk and offer credit for on-farm investment. Another challenge is that of improving the returns from exports by advertising and better marketing.

The government has used structural funds for early retirement for small milk producers and farm enlargement while medium and large-scale dairy farms can receive practical support under the measures of the Single Programming Document.

## Hungary

The Hungarian milk and dairy industry suffers from a number of problems, primarily resulting from its inherited structure. The processing and manufacturing part of the chain is highly concentrated: the largest 11 companies having more than a 60% market share. However, the country's processing capacity is substantially underutilised at present, whilst raw milk is being exported to neighbouring Member States.

Consumption of milk and dairy products is low in Hungary compared with other EU Member States, fluctuating between 135 and 155 kg of milk and milk-equivalents per capita in recent years. Less than 80 kg of liquid milk, around 1 kg of butter and between 6 and 8 kg of cheese are consumed per capita.

Accession has accelerated the decline in the number of dairy herds which has fallen from 35,190 in 2000 to 22,013 in 2003 and 16249 in 2005. The national herd has declined over the same period from 360770 to 309161 to 285320. Small scale producers have left the milk industry in droves; nearly 60% of the farms with only 1 or 2 cows in 2000 had either amalgamated or gone out of the industry by 2005 and half of the farms with 3 to 9 cows in 2000 similarly disappeared. In many villages all the milking cows have been slaughtered with some agricultural households switching to goats instead.

Increasing concentration of production in the dairy industry has been taking place over the last five years, accelerated by Accession with the number of processing and manufacturing companies falling from 107 in 2004 to only 60 by 2006. Despite the existence of underutilised domestic processing capacity, strong competition from abroad has led to a significant proportion of raw milk being exported to neighbouring countries. In addition, there is strong pressure from imports where more and more processed goods are coming into local markets from other EU countries, threatening the market position of local processing businesses. The quality of dairy products has improved since Accession but at the cost of the closure of many small processors and manufacturers

At the processing level, the main problem is the expense of collecting milk (often of poor quality) from the smaller farms. There is a threat that milk from any one of the smaller producers could contaminate the whole delivery. Lack of capital prevents the installation of on-farm refrigeration and storage capacity

The scale of operations in processing also presents a significant challenge. Small and medium processors are mainly contracted to smaller producers leading to higher costs and at the same time lack capital due to slow payment by producers. A lack of capital makes technical development slower and market adjustment difficult.

The challenge for the entire chain relates to price. In practice dairy prices are determined at the retail level as retailers want to keep them as low as possible. The increase in VAT in 2006 from 15 to 20% might lead to further pressure on producer prices.

## Poland

The dairy industry is of great significance in the national economy; milk production accounted for 16.8% of Poland's total agricultural production in 2005 and was the essential source of incomes and food on some 730,000 farms.

The number of dairy farms (41% of all farms) has declined by 44% and cow numbers by 50% within the last 8 years. In the main it has been the smallest farms that have ceased production and the importance of self-subsistence in milk production has decreased from approx. 22% to 15. Amalgamations have led to the growth in herd sizes which has been most noticeable in the 30 to 99 size group. The changes are reflected in a reduction of 38% in the number of farmers supplying raw milk to dairies in 2005 compared to 1996. The average milk producer now supplies some 25,000 litres annually to his dairy, though this is only one-tenth of the volume supplied per farm in the EU-15. However, the need to obtain quota could act as a barrier to further amalgamation and modernisation as one farmer's expansion will depend on another farmer being willing to sell quota.

Milk and milk product consumption is falling somewhat but production is not hence there has been an increase in exportable surplus. Consumption of milk and dairy products averages 250 litres per head compared to 320 kg in Germany and this is likely to remain the situation until consumers' incomes rise. The forecast fall in the population over the next 20 years is currently being exacerbated by large scale economic emigration of young people which may mean that total consumption does not rise very substantially.

Since 2000 the number of dairy processing plants has fallen by 36% to 267 some 65% of them being cooperatives. Over the same period the proportion of milk output going into processing plants rose from 56% to 72%. The Polish dairy industry has been the net exporter for many years. In value terms, the main export products were: milk powder, cheese, liquid milk, cream 12%, butter and yoghurt.

Dairy farmers are among the main beneficiaries of EU-Accession, mainly due to the higher milk prices obtainable under the CAP but also resulting from pre- and post- Accession modernisation and restructuring of production that improved the quality of milk. In 2005 93% of milk delivered to dairies met EU standards, while in 2000 it had been merely 46%. However, the process of further increasing concentration could be hindered by the milk quota system as to increase the volume of production it will be necessary to buy milk quota, thus raising investment costs.

The dairy sector is the only branch of the Polish food industry where the cooperative form has survived. As a result, a strong integration between manufacturers and processing is still present. In 2005, milk was processed by 171 cooperative dairies in which farmers had shares. Processors currently benefit from access to cheaper milk supplies and lower labour costs than their counterparts in the EU-15, but comparisons with the German processors show that the latter are up to four times more efficient in both technical and economic terms. Moreover as milk market integration proceeds bring more even output prices the current competitive advantage may not last.

## Slovakia

Milk production in Slovakia in 2005 amounted to 35% of total livestock output. For 10 years or more, dairy cattle numbers have been decreasing, but average yields have risen (to 5,380 l/head in 2005) due to the adoption of improved technology. In consequence, there have been fluctuations in total annual production. It is expected to increase in the long term, but there are factors likely to limit this such as the milk quota, reductions in export subsidies, the level of intervention prices and rising costs of farm inputs.

The numbers of farms producing milk has also decreased over this period. Producer prices and farmer subsidies are among the lowest four in the EU-25. Producers and processors agree that prices are low because supply exceeds domestic demand. Over the past decade the number of dairies has declined markedly and the production of milk, butter, milk spreads and fermented milk products for the market has gradually decreased.

Per capita consumption of milk and dairy products is low compared with that in other EU Member States; only purchases of cheese and curd are increasing. The low consumption is mainly due to rising prices and changing consumer tastes, especially among younger people, which the industry has not responded to sufficiently quickly.

The processing sector has been being restructured since 1990: the most recent data show declines between 2001 and 2005 of large plants from 32 to 26, and of small ones from 27 to 14. Foreign investors have gained control of this sector since 2000 and the rate at which they have closed plants has surprised local experts. There is a view that the primary aim of the entry of foreign investors into the dairy sector was not production within Slovakia, but raising the market share of milk products imported by the multinational companies. Indeed low prices of imports from neighbouring countries, in particular Poland and the Czech Republic, together with the tough negotiating stance of retailers over prices have contributed to 3 years of business losses in the dairy sector. The development of strong producer groups might be needed to improve the producers' and processors' market influence.

The transition process of the Slovak dairies went well, despite the dairies having to overcome many financial and technical problems to comply with EU hygienic regulations. As a result of increased capital expenditure by dairies in the pre-Accession years, there is now a shortage of funds for improved marketing and promotional campaigns.

Product innovation such as the introduction of pro-biotic and organic products are evidence of response to expected developments in consumer demand, but at present the new products are only available on a limited commercial scale.

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## **Annex 2: Summary reports from the Candidate Countries**

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### **Bulgaria**

Bulgaria enjoys favourable climatic conditions for the production of milk and dairy products but the economic and financial conditions faced by the industry need to be improved as do relations between milk producers and milk processors. Better information, access to financial resources, modern technology and improved extension services are all needed to raise the quantity and quality of milk and dairy products.

The milk sector is not yet ready for an active expansion on the European market. Reportedly, only about 1-2 % of raw milk meets EU standards. Many dairy farmers are too small and under-capitalised; in particular there is a lack of on-farm refrigeration and storage facilities. Milk production is dominated by small, semi-subsistent and mixed livestock farms, many with obsolete and/or faulty equipment. According to industry sources, currently 75% of milk processed at dairy plants comes from such small farms.

In recent years, thanks to SAPARD and Bulgarian State funding programmes, many processing companies have installed refrigeration equipment and sophisticated tanks in their milk collection stations. Major efforts are being directed towards investment throughout the dairy chain, from high quality genetic material through the upgrading of farms, milk collection stations and dairy processing plants to the promotion of trade, especially exports.

Relations between milk producers and dairy processors have not been good; the farmers argue that lack of competition among dairy companies has enabled them to keep farmgate prices of milk low and accuse dairies of irregularities in their payments. The farmers' costs of producing milk are rising due to increases in the prices of animal feed, fuels, chemicals, veterinary aid, etc. but at the same time the output price for milk does not change adequately. In turn dairies accuse farmers of diluting their milk and adding ingredients to artificially increase the fat content.

A particular phenomenon in Bulgaria during the last 15 years has been the widespread practice of farmers selling their dairy production directly to customers, bypassing the processing and manufacturing companies. Farmers are able to get higher prices from selling fresh milk or home-made cheese than if they sell their output to the dairy businesses.

The major problem concerning milk collection is that the number of collecting stations is insufficient to ensure collection throughout the country. Farms are widely dispersed, especially in the mountainous regions. Along with the inadequate number of collection units, proper testing facilities are absent in many collecting stations.

The outlook for export performance over the next few years is good, with the expectation that the volume and real value of net exports will rise. The expectation, too, is that as more milk producers raise the standard of their production and reach EU hygiene levels, EU-Accession will bring positive benefits for the dairy sector.

## Romania

Milk and dairy products are important in Romania as part of the national economy because milk production is a source of regular income in rural, especially mountain, areas, where it utilises the extensive pastures and hayfields. The nutritional importance of milk and dairy products (emphasised by increasing consumption) make them strategic items on the agri-food market. Consumption (excluding butter) was 234 litres of milk equivalent per head in 2005 and is expected to continue its recent rising trend as real incomes are expected to rise.

Milk production made up 42.5% of animal production and 16% of total agricultural production on average in the period 2000 to 2003. This economic importance was emphasised by the receipt of more national government income support (€71 mill) in 2006, than any other livestock sector. Additional capital grants are also available. Between 2000 and 2005, cattle and buffalo numbers increased as did milk yields per head leading to a rise in total production from 4851.8 mil to 5533 mil litres.

However, in 2006, 93% of farms had only 1-2 cows while 0.46% had 10 or more head per holding. About 70% of the farms are subsistence holdings, with a further 25% selling less than 50% of production leaving just 5% operating at commercial levels.

Farm gate prices for milk are low as farmers are in a weak bargaining position relative to the processors; hence the farmer's preference for selling direct to consumers. Financial support is available from the government and processing companies for restructuring farms and introducing new production techniques, better breeding, improved hygiene and storage, to improve the quality and quantities being delivered. Changes are also occurring with the organisation of collecting milk from farms as some of the smaller premises are closed and others modernised. However, smaller producers find their marketing options reduced.

The milk processing sector has also changed between 2000 and 2005 as smaller units have been closed down leaving just 361 of the original 831 factories in production.

Romania is a net importer of milk and its products, and while levels of both imports and exports rose between 2000 and 2005, the relative volume of the former fell from over 4 times to only 2.4 times the volume of exports.

Many of the above trends seem set to be reinforced by entry into the EU. It is considered likely that larger farmers will benefit more from the quota system than smaller producers, and the latter will lose some of the national support which they currently enjoy. Also, processing costs are higher in Romania than in EU countries, and Accession will lead to higher imports from those states. For these reasons, steps are being taken by way of state incentives to encourage improvements in technical performance and organisational structures during the transition years so as to enhance the competitiveness of this sector.

## **Annex 3: Summary reports from the Applicant Countries**

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### **Bosnia-Herzegovina**

The dairy sector is a core sector for the development of Bosnia and Herzegovina (B&H)'s agricultural production. More than 80% of the country has favourable conditions for livestock production; there is an abundance of under-used natural grassland; and there is a tradition of livestock farming which employs the majority of the rural population. However, despite having many processing plants, currently only a very low proportion of total milk production is collected and processed by dairies, most of which operate at very low capacity utilisation. Hence domestic production of milk and dairy products does not meet the needs of the population, so B-H is a net importer of dairy products.

The national farm structure, with only 16% of farms above 5 ha, is a major obstacle to faster agricultural development. The milk processing industry too is very fragmented, two thirds of milk processing plants have capacities between 2000 and 10000 litres/day, and only six dairies have capacities of above 100,000 litres/day.

The fragmented structure of both dairy farms and milk processing plants hinders the sector's development as small farmers are unable to invest in modern technology and thus raise the quantity and quality of their output and small dairies lack the capital to implement the safety standards embodied in recent B&H food law.

Average annual milk and dairy consumption at 135 litres milk-equivalent per capita is low compared to the level in other European countries and is due to low incomes in B&H. In recent years consumers' preferences have been changing fast but, due to the slow response of the dairy sector, demand is almost totally met by imported products. In supermarkets 34% of shelf space is dedicated to milk and dairy products, but only 25% is dedicated to B&H foodstuffs.

Dairies do not have sufficient refrigeration facilities to collect all the milk produced nor to collect it quickly enough. Insufficient raw milk means the dairies work at low capacity utilisation, increasing their unit costs while farmers lose the opportunity of a consistent distribution channel for their milk and a stable source of income.

In spite of many problems the dairy sector is recovering faster than most food processing sectors. Privatisation within the sector is almost complete: only one dairy is not fully privatised. Most dairies are trying to develop internal quality and safety assurance systems in order to meet the requirements of domestic and EU regulations.

The small farm and herd size structure leads to low productivity, high unit costs and poor quality milk. The present extension service is not effective in helping farmers to overcome these problems. Lack of credit facilities pose another obstacle to the sector's development. For some farms, a possible scenario is to continue co-operating with smaller dairies specialising in value-added products, or to co-operate with businesses that are able to establish strong local brands and direct marketing channels for specific, high quality, traditional products.

## Croatia

Croatia has vast natural resources for milk production and processing and there is a long tradition of these enterprises in Croatia. Cattle production contributes 14.2 % of the Croatian agricultural GDP and dairy production specifically, 7.3%.

However, as far as the economics and development of milk production are concerned, Croatia lags far behind the EU Member States. Most Croatian milk is produced on family farms and that production is expensive and insufficient to meet the needs of the dairy industry. There are a large number of small farms (2.8 cows per farm on average) with poor production capacities, 10,000 of the farms producing only 6,000 litres each per year.

Despite a declining number of cows and farms, milk production is rising. There were 239,000 milking cows in Croatia in 2005, a fall of 15,000 since 2000. By contrast, the total milk production increased by 179m litres to a total of 766 m litres over that same period.

Domestic production meets about 80% of the annual needs for milk and dairy products. Due to insufficient domestic milk production and the outdated and inadequate processing facilities, Croatia needs to import milk and dairy products. In recent years, the overall share of imported milk has decreased, but the import of high-quality dairy products has increased.

Consumption of milk and dairy products is about 170 kg/head (in milk equivalent) but is growing, with the accent on milk drinks, yogurt, UHT milk and fermented products. Also consumption of home – produced cheeses has grown significantly because of their high quality and increased presence in the market.

In the process of EU integration, Croatia needs not only to enhance the production of milk in order to ensure meeting the annual quota of processed milk (1,1 million litres) but also to improve the hygiene quality of raw milk production to meet EU standards. The system of milk collection is both complex and costly.

Croatia's industrial milk processing is in a much better condition than that of basic production. Croatia has several large and medium size dairies, created by privatisation of former socially owned operations. These dairies have been quite successful in supplying the market with an assortment of high quality dairy products that meet the EU standards. However the industry as a whole is in need of investment in modern processing equipment that will meet prescribed technical, technological and sanitary European standards.

## Serbia

Production of fresh milk accounts for nearly 1% of Serbia's GDP, despite which robust official statistics on milk and dairy products do not exist. However, the main trends in milk and dairy production in recent years have been the continuation of a long term decline in Serbia's total cattle herd, a slight increase in milk production and in the variety of milk and dairy products available in the country and the entrance of foreign producers into the Serbian market. The dairy industry is the first Serbian food processing industry that has completed the privatisation process, with a number of foreign firms taking over the major Serbian dairy plants.

Milk is produced on commercial farms, private and state owned, as well as on small family farms. The large state farms such as PKB (the Agricultural Kombinat in Belgrade with 10000 milking cows and the one in Becej (PIK) with 5000 milking cows, do not fully utilise their capacities at present due to their weak financial situation and resulting fluctuations in both the quantity and quality of milk produced. At the other extreme, family farms are usually small with generally only one or two cows, often with poor facilities, and mostly milking manually. Such farmers are often poorly educated and practice low standards of animal health resulting in low quality and quantity in milk production.

Recent years have seen an increase in hypermarkets' and supermarkets' share of milk and dairy product sales as consumers change the frequency of milk and dairy products' purchase, from daily local purchases to less frequent but larger purchases from supermarkets and there is a small but rising demand for more highly processed products.

Although there have been improvements in the milk collection system in recent years, more needs to be done such as: the more widespread provision of on-farm milk refrigeration and storage facilities; and improving the collection and transport of milk from farms. Ultimately a cost-efficient dairy processing sector needs to collect raw milk from fewer but larger farms.

Key challenges for the entire dairy food chain could be summarised as follows:

- increase in milk yields through selective breeding, education of producers, higher quality feedstuffs and improved animal housing;
- raising the quality standards of raw and processed milk and milk products to EU levels;
- improving the agricultural extension and veterinary services.

## Turkey

Turkey's milk sector is crucial for a balanced and healthy diet, the development of the dairy industry, regional development, increased agricultural productivity and rural development.

Annual milk production varies between 9.5 billion and 10.6 billion litres, making Turkey among the 15 largest world milk producers. 90 % of this is cow milk, 2 % goat milk and 8 % sheep milk. In the last 15 years in particular, the share of cow milk has continually increased whereas buffalo, sheep and goat milk production fell.

There are around 2160 processing units in Turkey of many different sizes. All the large dairies operate very modern factories up to EU standards. The long established Mandiras, small scale processors in the small towns, play an important role in the Turkish dairy industry and have a close relation with the village communities. Overall there are more than 2000 dairy plants with total processing capacity of more than 4.5 million tonnes. Many dairies are modern, well equipped, clean, professionally managed and operate to EU standards and around 50 dairies have above 100 tonnes/day capacity. However, capacity utilisation is only about 50 % as low consumption levels and the high share of the informal market constrains demand for the dairies' output.

Turkey has a large informal sector composed of family consumption, cottage industry and door to door delivery. Whereas the informal system represents about 70% of the milk produced, the industrial system consumes 30% of the milk produced, the lowest rate compared to all other EU countries.

Turkish milk producers come in 4 categories: very small farmers having 1 or 2 cows producing poor quality milk for family consumption or local sales; small producers with between 3 and 10 cows selling to local consumers perhaps via the Mandira or other small dairy; specialist milk producers with between 10 and 100 cows – these tend to be relatively young.; and intensive milk producers with over 100 cows- there are 396 such farms in Turkey, some being state farms, others private, mostly producing high quality milk.

The average national human consumption is about 140 litres milk equivalent per capita. in the form of liquid milk, fermented milk, ayran (a form of liquid yoghurt), different types of cheese and milk powder. Liquid milk consumption in Turkey is impossible to quantify precisely first because of the informal sector composed of own-consumption and streets' milk delivered even in the large cities; and second because many consumers process milk themselves traditional milk products (mostly yoghurt

Turkey is nether a large importer nor a large exporter of dairy products, the latter because its products are not competitive in price or quality; a situation that is unlikely to change in the near future.