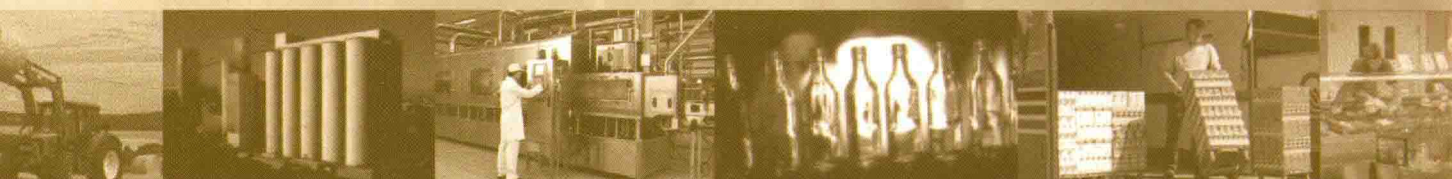


Ukraine



Improving Milk Supply in Northern Ukraine

Technical assistance to Ukraine's dairy sector

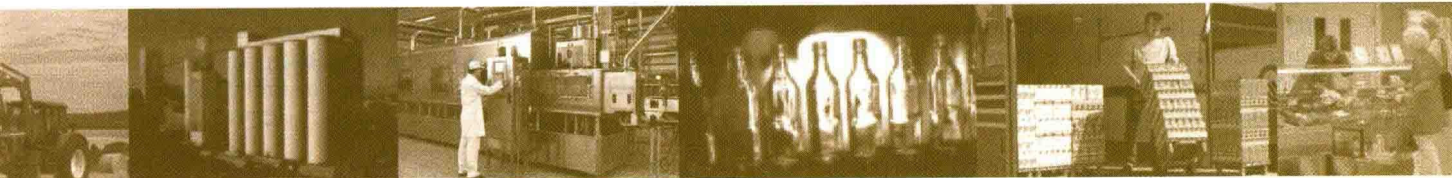


European Bank
for Reconstruction and Development



Food and Agriculture Organization
of the United Nations

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FOREWORD

Ukraine is a net exporter of milk and dairy products. However, in recent years, its dairy exports have been steadily declining as imports gradually rise. The main issue affecting the sector is the decreasing quantity and poor quality of raw material, due to the large share of milk produced by household farms.

In December 2007, the European Bank for Reconstruction and Development (EBRD) acquired 17.5 percent in one of the largest cheese producers in Ukraine, OJSC Shostka City Milk Factory, owned by the French Groupe Bel, one of the world's leading branded cheese manufacturers. In order to help this dairy processor maintain and improve its relationship with the local milk suppliers, who were facing serious quality and supply problems, EBRD called upon FAO to conduct milk sector analysis and provide rural household dairy farmers' training. The team carried out an overall analysis of the dairy sector in Ukraine to identify its constraints and opportunities and to initiate policy discussions with a wider group of stakeholders. FAO also partnered with local agricultural educators in Sumy to provide training to household farmers under the FAO/EBRD Cooperation and in partnership with Bel-Shostka, a member of Groupe Bel and an EBRD client. The present report summarizes the FAO-EBRD technical assistance project and presents the analytical work conducted in 2008-2011 to address the sector's development issues.

The project "Improving Milk Supply in Northern Ukraine: Technical Assistance to the Ukraine's Dairy Sector" aimed at improving milk supply, mainly through farmers' training on animal nutrition, dairy cattle management, sanitary issues, milk quality, logistics and the overall milk collection process and to demonstrate positive effects to dairy farmers throughout the region. It also allowed the testing of some important hypotheses regarding investment in milk production efficiency, quality, and seasonality issues by various types of milk producers under specific conditions of northern Ukraine. While most project activities were conducted in the context of EBRD's investment with Bel, conclusions are applicable to the sector as a whole. Initial findings were communicated to national professional media.

This report presents the output of the main activities implemented under the FAO/EBRD technical assistance project, including the analytical work and training activities conducted under the project between 2008 and 2011. The report consists of three chapters: Chapter 1 provides a review of Ukraine's dairy sector, Chapter 2 contains household and commercial dairy farm investment models while Chapter 3 describes rural household dairy farmer training activities in selected communities of Sumy oblast of Ukraine.

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Dmitry Prikhodko, Economist, Investment Centre, FAO, supervised the overall preparation of the report. Andriy Yarmak, Economist, Investment Centre, FAO, was the main author of Chapter 1, in particular sections on milk production, processing seasonality, supply chain, concentration and trends, leading milk producers and processors, prices, consumption, trade, quality issues, differences in technologies of milk production between Ukraine and the European Union (EU), with inputs from the Ukrainian Agribusiness Club. Sections on dairy policy were prepared by Andriy Yarmak and Dmitry Prikhodko, while sections on gender aspects, seasonality of milk prices and costs perspectives were prepared by Dmitry Prikhodko and Vasyl Hovhera, Economist, Investment Centre, FAO. Dmitry Prikhodko wrote the section on rural smallholder milk production in Turkey. Yves Baraton, International Dairy Specialist, provided background information on investment and dairy feeding costs.

Vasyl Hovhera and Dmitry Prikhodko authored Chapter 2. The initial dairy sector business models for both rural households and commercial dairy farms were prepared in collaboration with Nikolay Vernitsky, Director of ProAgro, and Valerii Karuna, Agribusiness Specialist at ProAgro.

Inna Punda, Programme Officer, Investment Centre, FAO, and Dmitry Prikhodko prepared Chapter 3 based on inputs from the Sumy National Agrarian University (SNAU), in particular from Dr Volodymyr Ladyka (Project Leader), Dr Larysa Kalachevskaya (Project Co-leader), Dr Aleksandr Sverdlikov (Dairy Cattle Management Specialist), Dr Yurii Baidevlyatov (Dairy Cattle Health and Milk Hygiene Specialist), Dr Viktor Opara (Dairy Cattle Feeding Specialist) and Sergey Guzhvenko (Specialist of Dairy Cattle Economics at the Household Level). Research assistance on trade statistics was provided by Ivan Vinkovic, Intern, Investment Centre, FAO.

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The report benefited from useful comments from Ekaterina Krivonos, Economist, Trade and Markets Division, FAO; Yoshiko Ishihara, Rural Sociologist, Investment Centre, FAO; Lisa Paglietti, Economist, Investment Centre, FAO; and Andriy Rozstalnyy, Animal Health and Production Officer, FAO Regional Office for Europe and Central Asia.

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ACRONYMS AND ABBREVIATIONS

AR	Autonomic Republic
BC	Bacteria count
DSTU	Ukrainian National Standard
EBRD	European Bank for Reconstruction and Development
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FOB	Free on board
FSU	Former Soviet Union
IRR	Internal rate of return
JSC	Joint stock company
LLC	Limited liability company
MARA	Ministry of Agriculture and Rural Affairs of Turkey
MT	Metric tonne
MY	Marketing year
NPV	Net present value
OECD	Organisation for Economic Co-operation and Development
ROR	Rate of return
SNAU	Sumy National Agrarian University
SCC	Somatic cells count
SSS	State Statistics Service of Ukraine
UAH	Ukrainian hryvnia (Ukrainian national currency)
UHT	Ultra high temperature
USA	United States of America
USD	United States Dollar
VAT	Value-added tax
WTO	World Trade Organization

EXECUTIVE SUMMARY

Chapter 1 - Ukrainian dairy sector review

Chapter 1 of the report provides an overview of Ukraine's dairy sector.

Production

Cow milk constitutes 98 percent of all milk produced in Ukraine with the remaining 2 percent of milk coming from goats and sheep. Milk production has experienced a decline since the country's independence in 1991 and this agricultural sub-sector is one of the few where this trend has not abated. In spite of this, Ukraine remains an overall net exporter of dairy products.

During the early transition period of 1990-2000, rural households¹ increasingly resorted to subsistence farming and food self-sufficiency and added to the number of cows they held. In 2000, however, the number of cows per rural household started to decrease. In 2009, milk production of commercial farms increased for the first time since the 1990s, but continued to decline at household farms. Despite this shift in milk production trends by different farm types, rural households still account for about 80 percent of all milk produced.

As opposed to dairy cattle inventories, the productivity of dairy cows in Ukraine has been increasing since the mid-1990s, reflecting the sector's improvements in feed conversion and more rational use of farm resources as compared with Soviet times. In 2002-2003, milk yields exceeded levels achieved in the late 1980s during the time of Soviet Ukraine. Average cow milk productivity increased by an impressive 48 percent (nearly 10 percent per year) from 2000 to 2005. Commercial dairy farms increased productivity by 86 percent (17 percent per year) and rural household farms by 23 percent (5 percent per year) during the same period. In 2010, average milk yield per cow for all types of farms was about 4 000 kg/year in Ukraine, or slightly above milk yields in the Russian Federation (3 800 kg) but below these in Poland (4 800 kg), Belarus (4 600 kg) and Western Europe (6 700 kg) according to FAOSTAT data in 2010. However, taking into consideration the favourable climate and availability of both arable land and pastures in Ukraine, there is still significant room for cow productivity growth in Ukraine.

Shifting supplier preferences of milk processors

Poor milk quality has been one of the main constraints on dairy market development. It has an immediate effect on both domestic consumption and exports, especially cheese exports. Therefore, milk processors tend to turn to commercial dairy farms which have historically produced better quality milk than rural households.

¹ - Rural households farms ("households") are defined in this report in line with Ukraine's official statistics definition as several persons or one person, who live together in the same building (or its part), share common costs of living and food, and so on, and who reside in the rural areas. This category also includes those who are registered as private entrepreneurs and those who are not registered.

Ukraine has traditionally exported cheese, butter, dry milk and other dairy products, although the domestic milk processing industry has often raised concerns regarding the deficit of fluid milk supply. While rural households in Ukraine continue to be the main producers of milk, the structure of fluid milk purchases by processors has shifted in recent years towards milk produced by commercial farms², which accounted for 53 percent of all milk processed in 2010 as compared with 37 percent in 2006. The share of commercially produced milk in total processing already reached 58-60 percent in 2011, and will likely continue to increase at the expense of milk produced by the household sector in the future.

Milk consumption

Per capita milk consumption in Ukraine is about equal to that of the Czech Republic, Poland and Spain, and is higher than in Slovakia. The nature of consumption differs, however, as an average Ukrainian consumes less hard cheeses and other value-added dairy products, but consumes more fluid milk, soft/curd cheese and other homemade dairy products. Today, the per capita cheese consumption in Ukraine is only about a quarter of that in neighbouring Poland or France. Therefore, Ukraine's dairy sector has good domestic market growth perspectives assuming that consumer incomes will continue to increase.

Trade

The Ukrainian dairy products market is estimated at about USD 2.0-2.5 billion per year. Another USD 0.5 billion of revenues originate from the exports of dairy products, mainly cheese. The domestic milk processing sector remains highly dependent on the Russian market as 36 percent of all produced cheese, equivalent to about 20 percent of all milk processing volumes in Ukraine, is exported to the Russian Federation. In the light of trade disputes with the Russian Federation and, most recently, with the Customs Unions of Belarus, Kazakhstan and the Russian Federation, the Ukrainian industry needs to revisit its strong dependence on one single market and explore other export markets.

Dairy policy

Ukraine's policy towards the dairy sector has evolved from negative support in 2002-2007 to slightly positive support in 2008-2010, according to the Organisation for Economic Co-operation and Development (OECD) data. However, the country's sugar and pig farmers have been supported far more generously than dairy farmers in Ukraine. The comparisons of transfers to dairy producers in Ukraine, OECD countries and the Russian Federation, clearly shows that the dairy farmers in Ukraine receive less support, which can be attributed specifically to milk, than their colleagues in other countries. While transfers from government and consumers to milk producers average 30-40 percent of the latter's gross revenues in OECD countries and 10-15 percent in the Russian Federation, the Ukrainian dairy producers receive almost zero support.

2 - Here and below in this report "commercial farms" are farms which are registered as legal entities in various forms ("farm", LLC, OJSC, etc.) and produce milk for the purpose of selling it mainly to processors and, in few rare cases, at the fresh market.

There is no consistent policy towards the dairy sector in Ukraine. The existing state support programmes, in particular the *State Programme for the Development of Milk Husbandry*, are largely disconnected from the current dairy market, setting milk production targets aimed at supplying 380 kg of dairy products (in fluid milk equivalent) per person per year. This production-oriented model of state support linked to milk production or cattle numbers is not likely to work in the future.

Ukraine's commitment to ban sales of fresh milk and milk products produced by households at the retail level, including in open-air markets and other retail outlets, when the country joined the WTO in 2008, creates another uncertainty. A complete ban on milk sales by households at the open air markets/retail trade level will be difficult to enforce by the current implementation date of 1 January 2015, considering existing dairy market realities. Policymakers will likely need to revisit the issue of household milk sales with a longer implementation period and compensation for lost rural income as a result of such a ban.

Considering the above, the problems of poor milk quality and low milk cow productivity at the household level can only be resolved through a combination of proper state support policies and joint efforts of milk processors and education institutions in providing training to rural household farmers. The Government can also strengthen the regulation of sales and use of antibiotics that are frequently found in milk procured from household farms in Ukraine; and increase the focus of public agricultural education programmes on services to smallholder producers. In turn, processors can invest in the milk collection infrastructure so as to separate milk depending on its quality and introduce price premiums to reward rural households that produce higher quality milk.

Gender considerations

Rural women are key players in milk production in Ukraine as they are largely responsible for cow milking and care. In this context, improving women's knowledge of milk quality and feeding is crucial to improving overall household income received from milk. Professional training of rural women of working age on dairy cattle feeding, management, health and cow milking hygiene, would allow them to improve their own dairy cow productivity and potentially enable them to find employment in commercial dairy farms in the future.

Chapter 2 - Testing investment feasibility of various dairy production systems

Chapter 2 of the report provides insights on the economics of dairy farm investment in Ukraine.

Focus on rural household milk producers

Rural households face multiple constraints in milk production, poor access to credit services and high interest rates (resulting in minimum use of farm machinery and investment versus family hand labour), limited availability of quality forage and concentrate feedstuffs, poor knowledge of animal nutrition and ration balancing. Recent FAO studies³ confirmed that small-scale milk producers could compete with large-scale, capital-intensive "high-tech" dairy farming.

3 - For more details, see: www.fao.org/docrep/012/i1522e/i1522e00.htm.

There are 5.3 million rural households in Ukraine out of which nearly 2 million raise cattle. The average age of a household head is about 56 years old. However, retirees (people older than 64) raise nearly 34 percent of the cattle owned by rural households. This reveals the largely subsidiary nature of milk production by rural households as retirees often engage in dairy farming to supplement their pension income, reduce purchased food or contribute to the costs of educating their family members.

Rural household dairy farm size

According to the four specific cases reviewed under this project, the investment needs to conduct technical modernization and improve milk quality by rural household dairy farms range from UAH 75 650 (USD 9 465) to UAH 375 700 (USD 46 963) per household. For a 2-4 cow household farm, the minimum price to recoup the investment required for technical modernization exceeds UAH 5.5/kg as compared to UAH 3.7/kg, the average market price at the time of this analysis. In other words, the minimum farm gate milk price required for a viable investment in household dairy farm modernization was almost 50 percent above the market price.

Although milk processors in Ukraine are prepared to pay price premiums for better quality milk received from rural household farms, a 50 percent milk procurement price increase is not realistic for processors as their margins are limited by a number of factors, including consumer willingness and ability to pay more for dairy products and stiff competition in export markets for processed dairy products (cheese, butter, dry milk, etc.).

Only 10-12 cow dairy farms have the potential to generate a rate of return on investment above the opportunity cost of capital according to the calculations of the FAO team at current prices. However, such farms would face existing environmental and sanitary constraints set forth by applicable Ukrainian regulations. For instance, the livestock premises for a 10-12 dairy cow farm, including heifers and calves, would have to be moved outside the existing household premises in villages in order to ensure compliance with sanitary and environmental regulations. Moving the farm outside of the rural community would unavoidably further increase investment and operating costs for such household/family dairy farms as they would need to invest in new infrastructure (water and electricity supply), transportation to the new livestock premises, guarding livestock and cover other related costs. This may explain why milk production in Ukraine has not become a commercial activity for household farms and the future perspectives of milk production by rural households, the most important group of milk producers in Ukraine, are uncertain.

Addressing milk production seasonality

Milk processors would prefer that some rural households switch the currently prevailing cow calving period from March–April to September–October to somewhat reduce milk production variability throughout the years. Therefore, the FAO team researched if households would benefit from higher milk prices during the October–March (low milk production - high milk price season) period as compared with related feeding costs increases in winter. The results of the analysis revealed that switching to cow calving in October would probably allow rural households to receive higher income per cow per year than the current income level (UAH 6 634 vs. UAH 5 973). However, considering higher feed costs in winter, farmers' return on feed cost would still be higher with

the currently prevailing calving period. The current dairy herd feeding allows farmers to take full advantage of cheap pasture feeding at the time of peak milk productivity and potentially receive higher margin on feed costs: 157 percent per year in April as compared with 132 percent per year in the case of the October calving period.

At the time of this analysis, the average weighted annual milk price would have to increase by about 20 percent (from about UAH 2.48 to 2.98 per litre) to incentivize some households to change the existing calving period, herd management practices, and related farming and daily life routines in order to smooth out seasonal milk production variability.

Household dairy farmers in Ukraine have few incentives to invest in improved milk quality or increased milk production as it is difficult to address milk production and quality constraints from an investment point of view. One of the main reasons is that milk production can hardly be considered a normal commercial activity for an ageing rural population in Ukraine.

Commercial milk production by large dairy farms has expanded in recent years with farmers attracted by strong demand from processors for high-quality milk. Investment models developed under this project for 250 and 500-cow farms (provided in Chapter 2 of this report and its Annexes), show that commercial dairy production can be a viable business from an investment perspective.

Chapter 3 - Training of rural household dairy farmers

Chapter 3 of the report summarizes the achievements of the training activities conducted under the project.

Areas of training

A series of milk supply chain problems were identified at the initial stage of this project through a survey conducted by the Sumy National Agrarian University in three rural communities of the Sumy oblast: (i) the presence of antibiotics was detected in some milk samples; (ii) raw milk purchasing price was not differentiated according to milk quality; (iii) a number of other issues related to feed quality, feeding rations and milking hygiene.

Cooperation between rural households has been considered as a possible option to address milk production constraints. This is especially true in the area of milk marketing and services (i.e. milk sales through a cooperative collection point, collective feed procurement, etc.). However, the rural households interviewed in the three pilot communities showed that the number of respondents who would consider cooperating with their neighbours varied from zero to a maximum of 35 percent.

Role of milk processors in training

Processor-linked farmer training therefore focused on group trainings on issues related to dairy herd feeding, economics and health. Individual training was also provided. As evidenced by the project, responsible milk processors can provide useful consultancy and training services to household milk producers and improve access of existing public agricultural extension by these rural communities via their milk collection points.

Immediate impact of training

The regular monitoring of milk safety indicators carried out in the course of project implementation demonstrated the immediate impact of training on milk quality. Average somatic cells count (SCC) in milk samples collected before training was 298 300 per cubic centimetre. It was half of that number after farmer training. The milk samples taken at rural household level also demonstrated an increase in fat and protein content. Although the number of rural households who took part in the milk quality monitoring can be considered as representative, the long-term effects of farmer training could not be assessed within the project.

TABLE OF CONTENTS

Foreword	v
Acknowledgements	vii
Acronyms and abbreviations	ix
Executive summary	xi
1. Ukrainian dairy sector review	1
Snapshot of Ukraine's dairy market: supply and demand balance for milk and main dairy products.....	1
Fluid milk	1
Cheese.....	2
Butter.....	3
Dry milk	4
Milk production	4
Regional concentration of milk production	9
Seasonality in the dairy business	18
Milk and dairy products supply chain in Ukraine	24
Milk production concentration and trends.....	28
Leading milk producers and processors	34
Milk prices	35
Consumption of milk and dairy products	39
Trade policy for dairy products	44
Exports and imports of dairy products	45
Milk quality issues	50
Differences in the technology of milk production in Ukraine and the EU	54
State policy in the dairy sector	57
Rural smallholder milk production: the case of Turkey.....	63
Consideration of gender aspects	65
2. Investment in milk production in Sumy oblast, Ukraine	71
Introduction	71
Investment in modernization of rural household dairy production	72
3. Training of rural household dairy farmers and knowledge dissemination in Sumy oblast, Ukraine	93
Milk quality monitoring	103

Annex 1: Modelling of investment in rural household dairy farms	111
Annex 2: Questionnaire used by the Sumy National Agricultural University in the survey of rural household milk producers.....	144
Annex 3: Training videos on dairy farming	148
Annex 4: Training brochures on dairy production and feeding recommendations.....	149
Annex 5: Knowledge dissemination.....	150
Annex 6: Foreign trade statistics on main dairy products in Ukraine	151

1. Ukrainian dairy sector review

Snapshot of Ukraine's dairy market: supply and demand balance for milk and main dairy products

Fluid milk

Cow milk is the most important form of milk produced in Ukraine. In 2008-2010, cow milk constituted 97.8 percent of all milk produced in Ukraine with goat milk accounting for 1.9 percent and sheep milk accounting for 0.3 percent according to FAO Stat. This milk does not enter industrial milk processing; therefore, this report focused primarily on cow milk production and processing.

It is a common opinion among Ukraine's milk processors that there is a deficit of milk supply in the country. This opinion is often shared by industry experts and agricultural officials who believe that the per capita consumption of milk and dairy products (in fluid milk equivalent) should average 380 kg per year.⁴ Taking into consideration Ukraine's population of 45.6 million people, this consumption target is unrealistic, as it would require at least 17.3 million tonnes of milk per year as compared with current milk production of 11.2 million tonnes. Current consumption levels average 205 kg per person (2011), while the country continues to be a net exporter of milk with a positive trade balance of about 700 000 tonnes (see Table 1).

The Union of Dairy Companies of Ukraine believes that total milk production in Ukraine is actually 3.7-4.0 million tonnes lower than official estimates due to lower milk production at household dairy farms. However, such a drastic underestimation of production is unlikely considering that Ukraine's official statistics derive their estimates of milk production by rural households through a sample survey.⁵ Observations of milk production by households during the course of this project in Sumy oblast, Ukraine, also correspond with the official statistics, though the three communities polled do not constitute a representative sample of milk production in the entire country.

4 - Per capita consumption of milk and dairy products peaked at 373 kg (fluid milk equivalent) in 1990 prior to the break-up of the Soviet Union. It has since declined continuously and approximated 205 kg/person/year in 2011 according to official statistics.

5 - The official sample survey covers all regions and districts of Ukraine. This survey covered 29 200 (or 0.5 percent) rural households, representing 2.0 percent of the agricultural land area of households. Forty-two percent of the households surveyed have dairy cattle and 40 percent have dairy cows. The selection of households was carried out in two stages according to a probability proportional to their size (PPS) by land area. In 2010, one hectare of surveyed households represented 50.9 ha of household populations on average in Ukraine.

Table 1. Supply and demand balance of milk and milk products in fluid milk equivalent in Ukraine, thousand tonnes

Fluid milk equivalent	2000	2005	2006	2007	2008	2009	2010
Production	12 658	13 714	13 287	12 262	11 761	11 610	11 249
Imports	50	112	150	199	234	455	273
Total supply	12 708	13 826	13 437	12 461	11 995	12 065	11 522
Processing	3 335	5 689	5 607	6 029	5 397	4 671	4 787
Other consumption (population)	6 060	4 963	5 547	4 347	4 415	5 339	4 629
Feed use	2 203	1 270	1 326	1 141	1 038	1 126	1 142
Losses	10	3	7	5	5	10	8
Exports	1 100	1 901	950	939	1 140	919	956
Total use	12 708	13 826	13 437	12 461	11 995	12 065	11 522

Source: Authors, based on the State Statistical Service of Ukraine.

Imports of dairy products have increased over recent years while exports have remained rather stable. Therefore, the trade balance of milk has also remained positive.

Conversely, milk processing volumes have decreased. This can be explained by both milk production decline (as Ukraine's milk processors frequently suggest) and extended use of vegetable fats for blending in the dairy industry, and increase of direct milk sales from farmers to retail customers. Certainly, the decrease in purchasing power of Ukrainian consumers has also negatively affected consumption of more expensive dairy products such as cheeses.

Cheese

High-fat, hard cheese is the most important product for the dairy industry of Ukraine. At least one third of all milk produced in Ukraine is utilized for the production of hard cheeses. However, this sector is heavily dependent on exports to only one country: the Russian Federation. Moreover, nearly 100 percent of all cheese is exported to the countries of the Customs Union of the Russian Federation, Kazakhstan and Belarus, which has unified import requirements. This points to a high dependency among Ukrainian cheese producers on a single export market (more detailed cheese foreign trade statistics are given in Table 58).

Table 2. Supply and demand balance of high-fat cheese in Ukraine, thousand tonnes

	2006	2007	2008	2009	2010
Production	217	248	245	228	220
Imports	8	12	13	9	10
Total cheese supply	225	260	258	237	230
Domestic consumption	175	197	179	159	150
Losses	1	1	1	1	1
Exports	49	62	77	77	79
Total cheese distribution	225	260	258	237	230
Consumption per person	3.73	4.22	3.87	3.46	3.26
Trade balance	40.79	50.22	64.30	67.57	69.32
Share of exports in production	23%	25%	32%	34%	36%

Source: State Statistical Service of Ukraine.