



Project no.
513705

Project Acronym
CEEK AGRI POLICY

Project title
**Agro economic policy analysis of the new member states,
the candidate states and the countries of the western Balkans**

Instrument Specific Support Action

Thematic Priority Scientific Support to Policies

D12-3 Third 6-monthly report
STRUCTURE AND COMPETITIVENESS OF THE MILK AND DAIRY
SUPPLY CHAIN IN BOSNIA AND HERZEGOVINA

Due date of deliverable: 30.11.2006

Actual submission date: 30.11.2006

Start date of project: 01.05.2005

Duration: 24 Months

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission	
RE	Restricted to a group specified by the consortium (including the Commission	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Acknowledgement

This report forms part of the deliverables from a project called "CEEC AGRI POLICY" which has been awarded financial support by the European Commission under the 6th Framework Programme.

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.

DOCUMENT HISTORY

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Date	Author	Description
08.09.2006.	Dragana Ognjenovic	Introduction to the dairy sector, Expert views on the challenges at the level of the milk production, Expert views on the challenges at the stage of milk collection from farms
08.09.2006.	Aleksandra Nikolic	A dual sector, Prospects for dairy product consumption, Expert views on the challenges at the milk processing stage
11.09.2006.	Dragana Ognjenovic Aleksandra Nikolic	Conclusions
14.09.2006.	Partner for revision (Cyprus)	Revision
21.09.2006.	Dragana Ognjenovic Aleksandra Nikolic	Corrections after partner' revision
20 October	John Malcolm	Editing
28/10/06	Dragana Ognjenovic Aleksandra Nikolic	Corrections after John Malcolm editing
6 November 2006	John Malcolm	Final version

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1 Introduction to the dairy sector

The development of agricultural production is among the economic priorities for Bosnia and Herzegovina. The dairy sector, both primary products from livestock and subsequent processing, is a core sector in the strategy for the development of agricultural production. The importance of the sector lies in several facts: more than 80% of the country has favourable conditions for livestock production; there is an abundance of insufficiently used natural grassland; there is a tradition of livestock farming; and livestock production is the most common form of agricultural activity and employs the majority of the rural population. In addition, there are lots of processing plants operating at very low capacity utilisation, which guarantees a safe distribution outlet for milk production. Domestic production of milk and dairy products does not meet the needs of the population, so Bosnia and Herzegovina is a net importer of dairy products.

It is impossible to give an overview of the dairy sector in Bosnia and Herzegovina without mentioning the war damage that almost destroyed the sector completely. Before the war, in 1991, the estimated total number of cows in Bosnia and Herzegovina was 623,000, and total milk production was 875,000 litres. The average annual milk yield was 1410 litres per cow. During the war from 1992 until 1995, the number of cows fell by 60%, and total milk production by even more as the average milk yield also fell. Furthermore, as many farmers became refugees or displaced, the number of farmers decreased. An estimated 80% of farm infrastructure suffered war damage and access to agricultural land suitable for livestock production was restricted due to the numerous minefields. Channels for milk distribution were disrupted and the majority of institutions specialized for supporting the dairy sector ceased activities.

After the war, several big projects were implemented in Bosnia and Herzegovina¹ in order to rebuild the cattle stock and farm facilities. However, the dairy sector in Bosnia and Herzegovina has not yet recovered, although significant efforts were made and improvements have been recorded, particularly in the years immediately after the war when the recovery was very strong. From the end of the 1990s to 2004, total milk production remained fairly stable at around 530 million litres per year. According to FAO statistics, the significant increase to 629 million litres in 2005 was due to both increases in cow numbers (298,000 head of cattle) and the average yield of 2110 litres per cow. Eleven years after the war, Bosnia and Herzegovina has still only reached 47% of its pre-war cow numbers and 72% of its pre-war milk production.

A very low proportion of total milk production is collected and processed by dairies. Processing and manufacturing in the dairy sector is characterised by very low capacity utilisation (estimated at around 40%) and a high share (around 60%²) of low margin, high volume, short shelf-life products. Only one dairy in Bosnia and Herzegovina has not been privatised yet. Several of them have been bought by foreign companies, particularly those with large capacities such as the dairies in Tuzla, Bihac, Banja Luka.

The level of regulation in the dairy sector in Bosnia and Herzegovina is far behind the EU member states but is still the most regulated agricultural sector in the country. In 2005, the Republika Srpska (RS) allocated 26% (€4.4 million) and Federation of Bosnia and Herzegovina (FB&H) allocated 43% (€3.5 million) of their budgets for agricultural subsidies for the dairy sector. The measures used to support the dairy sector are import tariffs and subsidies. The minimum purchase price is €0.25 per litre of milk, while the premium for collected milk is €0.05 per litre in RS and €0.07 in FB&H.

¹ World Bank Project: Urgent reconstruction of the farms; several cycles of IFAD Projects et c.

² USAID Project "Linking Agricultural Producers to Market"

Milk quotas for Bosnia and Herzegovina have not been determined yet. Hopefully, negotiations with EU will start by the end of this year.

2 A dual sector

One of the major obstacles to faster agricultural development and improvement in Bosnia and Herzegovina is the highly unfavourable farm size structure. According to the most recent official data (1981)³ only 16% of farms were bigger than 5 ha (see Chart 2.2.1.). Bearing in mind recent history and the law on land heritage that allows the dissolution of farm land, it is not likely that this farm size structure will change significantly. Consequently, most dairy farms are semi-subsistence farms which mean that commercial farms (with 25 to 30 milking cows) are the exception⁴. Even those farms that are big in the context of B&H are small in comparison with the EU average.

The milk processing industry is very fragmented. After the war, the five state dairies faced a lot of problems: ranging from war damage and a shortage of working capital, know-how and raw materials, to clear and committed management and privatisation. At the same time a lot of international donor agencies encouraged and supported the establishment of new, but very small, milk processing facilities so that today two thirds of milk processing plants have capacities between 2000 and 10000 litres/day, and only six dairies (9% of the total) have capacities of 100,000 litres/day or more (the maximum is 150,000 litres/day) which is still small for gaining the full benefits from economies of scale.

This unfavourable structure of production capacity has a significant negative impact on the prospects, competitiveness and business success of both dairy farms and milk processing operations. Small farms are unable to invest in modern technology and obtain quality inputs resulting in low productivity, high unit production costs and low profitability, as well as low growth capability. The high farm gate price of milk coupled with high transport and handling costs are the main factors encouraging dairies to search for other sources of raw materials, including imports, while putting a large number of dairy farms out of business. The biggest risk and problem for small farms is and will be the requirement of B&H food safety law to apply standards of good agricultural practice and produce milk in line with EU hygiene requirements (e.g. the number of bacteria and somatic cells).

The small size of dairies and very similar product ranges (based on low-margin, fast-moving non-durable goods – see Chart 2.2.2.) leaves room for foreign companies to take a large part of the market for value-added dairy products (see Chart 2.2.3.). Small, non-specialised dairies are not in a position to follow market trends and innovate, and dominate the domestic market. Also, the lack of working capital and a strong focus on cost-cutting business strategies make it difficult for small dairies to provide the resources necessary for implementing the obligatory food safety standards implementation as defined by B&H food safety law⁵. Therefore in the near future those dairies will face the need to either specialise to find a market niche, join together in some sort of

³ The war stopped last agricultural census organized in 1991. After the war the agricultural census was not organized and therefore it is impossible to get any reliable data about farm size structure, or herd size structure within the sector.

⁴ The government of Federation of Bosnia and Herzegovina (FBiH) planned that only 500 farms could be in position to get subventions for improving herd quality and quantity by rising up number of cows to 30. This fact is pointing out statement that real commercial dairy farms are exceptions in B&H.

⁵ HACCP and different hygienic requests

business association (cluster or holding company etc), become part of bigger milk companies, or to shut down their operations.

At the end of this year the EU negotiation process is expected to start. This process will make the B&H market more competitive - different tariff and non tariff barriers are expected to be abolished - which will speed up the process of sector transition towards either expanding processing capacity or focusing on a narrow spectrum of specific products to gain a competitive advantage in both domestic and international markets. This process will put a lot of pressure on dairy farms to cut costs and improve productivity. It is therefore expected to see fast growth among farms that have the capacity to grow. In a few years the sector will have split in two: a smaller part consisting of commercial and competitive dairy farms with an average of 20 milking cows; and a larger part consisting of semi-commercial dairy farms working with small dairies oriented toward specific niche markets, or with cooperatives able to develop strong local brands and direct marketing channels, such as organic dairies, or products with geographical indication.

More substantial state support is necessary to enable sector improvement and growth. Today state support is very modest and focused on product support, not encouraging producers and processors to improve productivity and quality. This must be changed soon.

The process of EU integration will allow the country to use pre-Accession funds to support sector transition and development. Administrative and institutional capacities are currently very limited and could be the main constraining factor in the take-up of pre-Accession funds. This could have a very negative impact on the future development of the dairy sector.

3 Prospects for dairy product consumption

The average annual milk and dairy consumption per capita is approximately 135 litres (milk and milk-equivalent for 2004)⁶. This is very low compared to the EU average milk and dairy consumption of 355 litres/capita annually and lower than neighbours Croatia (162 litres/capita annually) and Serbia and Montenegro (179 litres/capita annually). The main reason for this low average consumption of dairy products is the lower incomes of B&H citizens.

In the post-war period the average consumption of all milk and dairy products has exhibited low but steady growth in line with B&H development and economic growth. On average the following amounts of dairy products are consumed annually: 120 litres/capita of liquid milk (pasteurized and sterilised), 0.54 kg/capita of butter, 6.3 kg/capita as yoghurt and similar drinks, 3.6 kg/capita of sour cream and 3.0 kg/capita of cheese.

In the post-war period consumers' preferences have been changing fast. Before the war the consumption of fruit yogurts, flavoured milk and probiotic milk drinks was very low. The B&H dairy sector produces very small quantities of such products as only a few dairies produce them. Today, due to the slow recovery of the dairy sector and its inability to follow market needs and invest, the domestic demand is almost totally met by imported products.

Since the war the demand for fresh pasteurised milk has been decreasing while UHT milk consumption has been growing. Compared to the pre-war situation this is a significant change. Pasteurised milk was previously 60% of the total liquid milk consumed; now it accounts for only 5%. The B&H dairy industry has been able to accommodate the increased demand for UHT milk.

⁶ Milk producers and processors association, Foreign trade Chamber of B&H approximation.

Most firms invested heavily in the necessary packaging equipment which prevented them from investing in the development of value added products.

The consumption of cheese remains very low as shown in chart 2.3.1. This is expected given the low disposable income of B&H citizens. An increase in cheese consumption will follow the economic recovery of the country, but the small increase in hard cheese consumption is and will be shaped by traditional tastes as the population prefers white and cottage cheese types that are produced by farms and sold at green markets.

The patterns of milk and dairy consumption are shaped above all by the economic position of consumers and the ability of the retail sector to offer and promote appropriate products. In supermarkets 34% of shelf space is dedicated to milk and dairy products, but only 25% is dedicated to foodstuffs made in B&H: consumers are in touch with global market products which may cause them to change preferences and adopt consumption patterns similar to EU countries.

Generally speaking B&H consumers prefer local domestic brands. Trust in the company is the most important reason for purchasing a particular milk product⁷. If all consumers in B&H traditionally see milk as something that protects and maintains good health, consumed by the young, old and ill, then trust is the key criterion for purchasing decisions. It follows that B&H consumers' preference for local milk, perceived as being healthier, will remain in the future.

B&H consumers take care over food quality. In the future the focus will be on quality products, especially on products with designated origin or geographical indication, organic products etc. This trend will be fuelled by tourism and the development of the hospitality industry.

4 Expert views on the challenges at the level of the milk production

The dairy sector has been prioritised by the government of Bosnia and Herzegovina for improving conditions in agriculture. A large part of the agricultural land in B&H is suitable for milk production. The labour-intensive nature of the dairy sector, together with high unemployment and little opportunity for employment outside agriculture, has contributed significantly to the growth of the sector during the last post-war decade.

Since there is no farm register in Bosnia and Herzegovina and other statistical data are either insufficient or unreliable, information on the number of farms and their structure and average size are not available. According to some estimates (Selak, 2006), 80% of dairy farms in Bosnia and Herzegovina have three cows or fewer. A very small average farm size is typical in the dairy sector in Bosnia and Herzegovina.

During the last decade, Bosnia and Herzegovina has managed to go some way towards rescuing its dairy sector that was almost completely devastated during the war. The recovery is far from satisfactory at the moment as Bosnia and Herzegovina is still forced to import significant quantities of milk and almost all dairy products.

Compared to EU-25, the productivity in milk production in Bosnia and Herzegovina is very low. There also seems to be a significant difference between two entities. According to USAID LAMP data for 2005, the average yield in RS was 2,900 litres per year and in FB&H 1,948, an increase on previous years, but still very low. The difference between the yields is probably a

⁷ USAID LAMP: UHT Milk study, 2005.

consequence of different methods of animal feeding. Low productivity, due largely to the lack of knowledge of farmers and poor farm equipment, is one of the most important problems and obstacles for sector development.

Within the EU, milk for human consumption must not have a total bacteria content of more than 100000 per millilitre. In Bosnia and Herzegovina, this limit is 1 million. Even with such a poor standard, B&H dairies are sometimes forced to refuse milk due to irregular microbiological status. The improvement of milk quality depends largely on motivation and education. However, education will do little good until farmers are motivated to produce a high quality product for the processors. Such motivation may come in the form of payment premiums. Some dairies, such as Zenica, are slowly introducing such a practice of rewarding higher quality milk.

In addition to low productivity and poor milk quality, B&H dairy farmers are faced with the further problems of a poor communication infrastructure, the lack of refrigeration facilities, insufficient coverage within the collection network, and a lack of tailor-made loans suitable for agricultural producers for purchasing capital assets and meeting working capital requirements.

However, premiums for collected milk are not paid on a regular basis and are very often several months late putting farmers, particularly small ones, in difficult financial positions.

5 Expert views on the challenges at the stage of milk collection from farms

The level of milk collection in Bosnia and Herzegovina is extremely low. Compared with more than 90% of milk collected in EU countries, Bosnia and Herzegovina succeeded in collecting only around 20% of its total milk production in 2005. However, even such a low share is a success, given that only a few years previously the share of collected milk amounted to around 10% of the total. A large proportion of the milk is consumed within the farm household or fed to calves and any surpluses are typically sold locally by the farmer.

The low percentage of milk collected is largely due to the very small average farm size, coupled with wide dispersion and poor road infrastructure which make collection too costly for the dairy processors and forces a large quantity of milk outside the legal distribution channels. Farmers either sell the milk to a dairy or process it themselves and then consume or sell it. Such a practice is very widespread, particularly in remote regions.

Dairies do not have sufficient refrigeration facilities to collect all milk produced nor to collect it quickly enough. This has a very direct negative effect on milk quality and hygiene as the majority of bacteria develop during the first few hours after milking. Such a situation has a negative impact on both dairies and farmers. 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. Premiums are only paid for collected milk which means that these farmers lose support and find themselves in unfavourable position. In order to increase both farm size and milk collection, the government set a minimum requirement for milk sold to the dairy sector of 1200 litres per quarter to qualify for the premium. This way, farmers are motivated to raise more milking cows and to produce more milk, which then makes it more viable for a dairy to collect it.

During the last few years, milk producers have started to organise themselves into associations, taking the place of farmers' cooperatives. Their main activity is to collect milk and take it to the dairy or to collect it in a few locations so the dairy can collect it more quickly and easily. Together with the relatively new practice of entrepreneurs establishing private collection stations for milk that operate on contractual basis with dairies, these associations are likely to increase the share total milk production that is collected in the future.

In the medium-term strategy for the development of agricultural production until 2010, an increase in the average yield to 2,400 litres per cow is planned for the total cow population, while in commercial farm production the yield should increase to 4,000 – 5,000 litres per cow. This would facilitate increased milk collection from farms, but such an achievement is not possible without giving up traditional methods of production, applying knowledge more widely, raising the technical level of on-farm activities, and consistent and firm agricultural policy.

6 Expert views on the challenges at the milk processing stage

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. The quantity of domestic milk that is bought and processed is increasing each year. The quantity exported is low but is showing an upward trend each year; this is a very good sign, especially given that due to institutional weaknesses in B&H, the national system of food safety assurance is not functioning, and the EU market is effectively closed. Meanwhile free trade agreements with neighbouring countries have led to small but significant increases in imports of dairy products (chart 2.6.1.).

Today most dairies are trying to develop internal quality and safety assurance systems in order to meet the requirements of domestic and EU regulations. Most of the dairies are small with insufficient financial and human capacity to introduce and maintain such sophisticated systems, and there is no organized support to help dairies in this respect. Only a few internationally financed programmes are in place to provide training or other types of technical support, and the quality certification services are offered only by international companies. Therefore the costs of development and certification of such systems are very high given conditions in B&H.

The institutional weakness at state level is a very important factor limiting the sector's future prospects. Many dairy products receiving export subsidies (e.g. cheese, butter and powdered milk) are legally being sold at very low prices in domestic markets. Also, due to the inefficiency and lack of institutions that make up the B&H quality assurance sector a lot of products are not labelled as required by B&H law. Therefore product information is often misleading or missing. The law requires that liquid milk produced from raw milk must be labelled differently to liquid milk *not* produced from raw milk. In many cases this is not done yet no action is taken. This is only one small example of how the state is unable to guarantee fair play in the dairy market.

A serious weakness of the B&H sector is its inability to follow market trends, innovate and develop new value-added products. This is the result of many factors such as a lack of management and marketing skills, undue focus on cost-cutting strategies, a shortage of working capital, high unit production costs due to low capacity utilisation (around 40% on average), a lack of suitable low interest credit facilities, barriers to entry, and the low average educational level of employees. Also, there are very few institutions able to offer know-how and support new product development.

Generally speaking dairies are unaware of their negative impact on the environment - odours, noise, waste water, gas emissions and poor energy efficiency – and are likely to face serious problems when B&H environmental legislation incorporates EU directives and standards.

The state is making progress in developing a proper institutional framework for quality assurance across the whole sector. This process is very slow but is expected to speed up when the EU negotiation starts.

7 Conclusion

The unfavourable farm and herd size structure among dairy farms is the main factor limiting faster development. It is the main reason behind the poor economic performance of dairy farms in terms of low productivity, high unit costs, and an inability to fulfil the requirements of good agricultural practice and to produce high quality milk. A second major weakness is the poor human resource capacity for improving productivity, quality and safety. The present extension service is not efficient in supporting farmers to overcome this problem. Dairies are currently taking steps to support farmers in order to get quality raw materials and so gain a competitive advantage in the market. The poor availability of favourable credit facilities is another obstacle to the sector's development. It is expected that a small group of farmers (no more than 2%) will grow faster than others and create the models for bigger milk processing units. The remaining farms will still be able to operate but their profitability will be at risk. 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. This trend will be supported by the development of the hospitality industry.

The milk processing industry is very fragmented and the majority of dairies are very small, even for B&H. Only a few dairies reach 100,000 litres/day processing capacity which is still relatively low compared to the EU average. Also, all dairies tend to produce the same products: high-volume, low-margin items such as liquid milk and fermented products.

The average per capita consumption of milk and dairy products remains relatively low. The demand for UHT milk is unusually strong compared to neighbouring countries and the average EU consumption pattern. The growth in consumption of dairy products is low but steady. Generally speaking B&H consumers care about quality and prefer local products because they perceive domestic milk as being less risky and healthier. This opens up doors for small B&H dairies to survive if they succeed in focusing on the production of high quality dairy products, products with designated origin, traditional products or organic dairy products. However, the dairies in B&H are focused on cost-cutting strategies, having no resources for following market trends in order to innovate and offer high quality products.

It is hoped that small and medium size dairies will narrow their product ranges or join the bigger milk producers. The bigger dairies will be forced to diversify into higher value-added products. The process of EU integration will speed up this process.

The major challenge for the sector is to develop internal quality and safety assurance systems in order to meet the requirements of B&H and EU legislation. Most farms and dairies lack the human and financial resources necessary to ensure the required levels of food hygiene and quality to remain attractive to consumers.

Up to now the state has failed to provide the right environment to ensure fair play in the market. However, it is making progress in developing a proper institutional framework for quality assurance across the whole sector. This process is very slow but is expected to speed up when the process of EU negotiation starts.

Annex I

Chart 2.2.1.

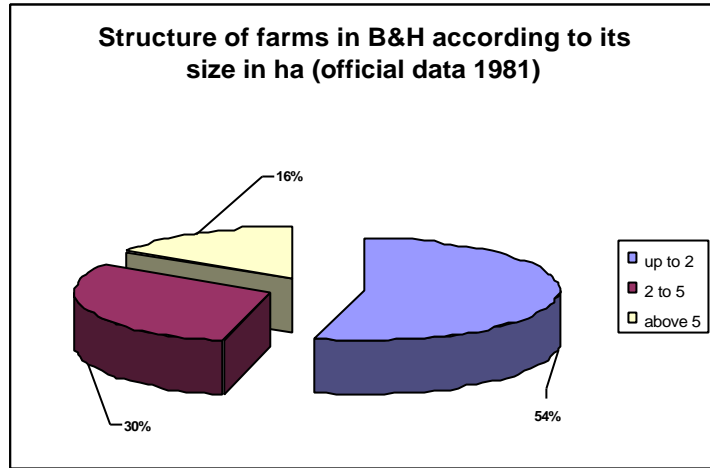


Chart 2.2.2

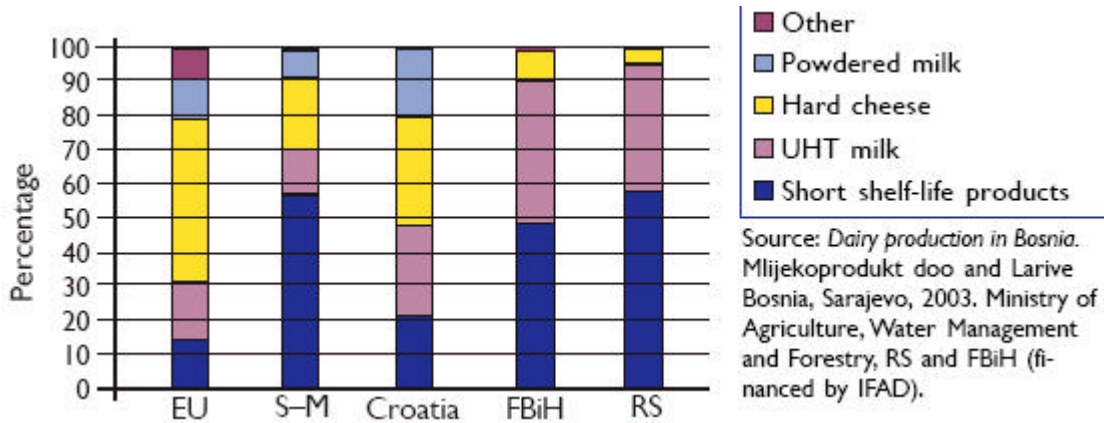


Chart 2.2.3.

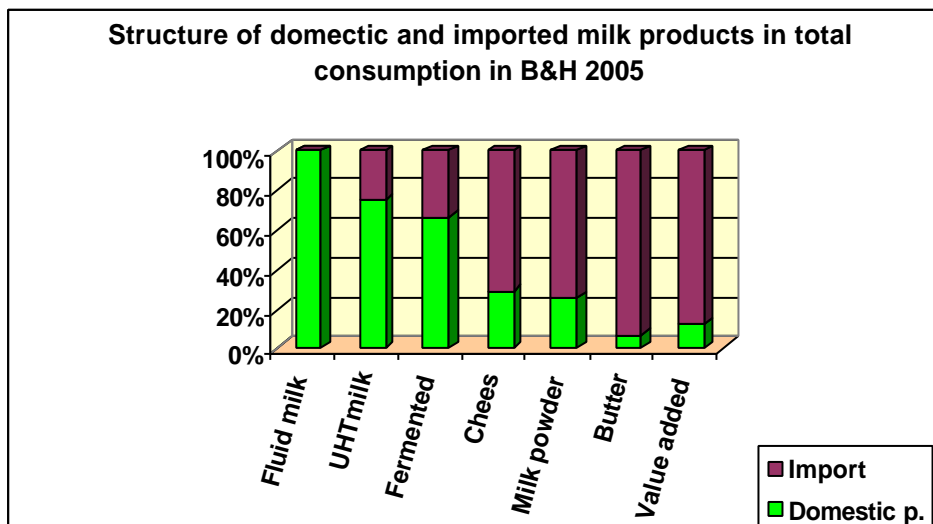


Chart 2.3.1.

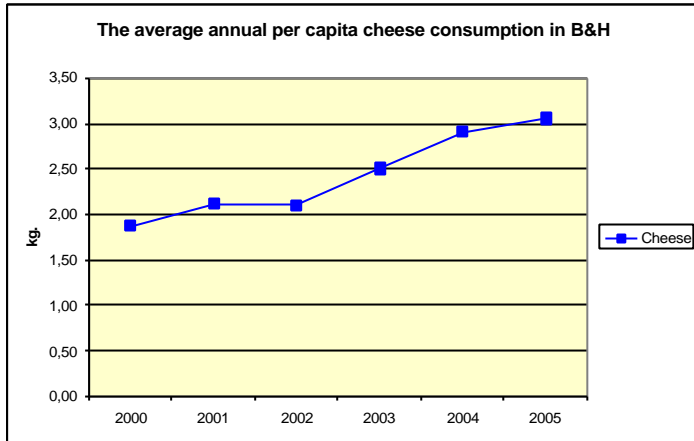


Chart 2.3.2.

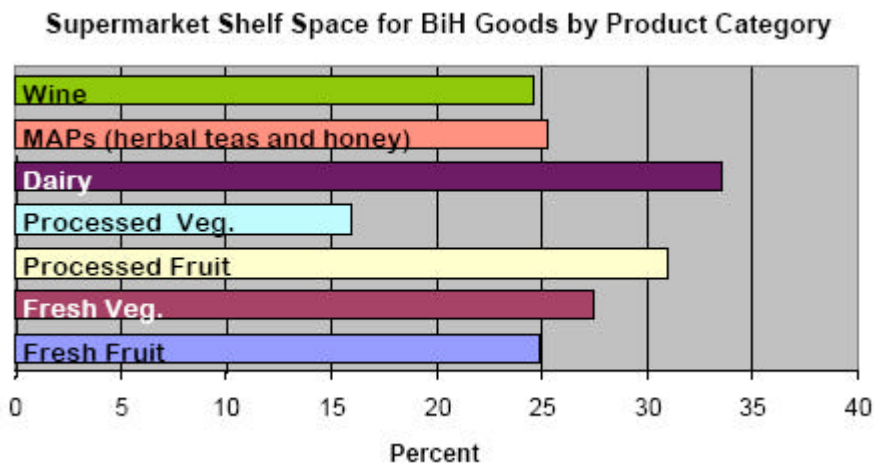
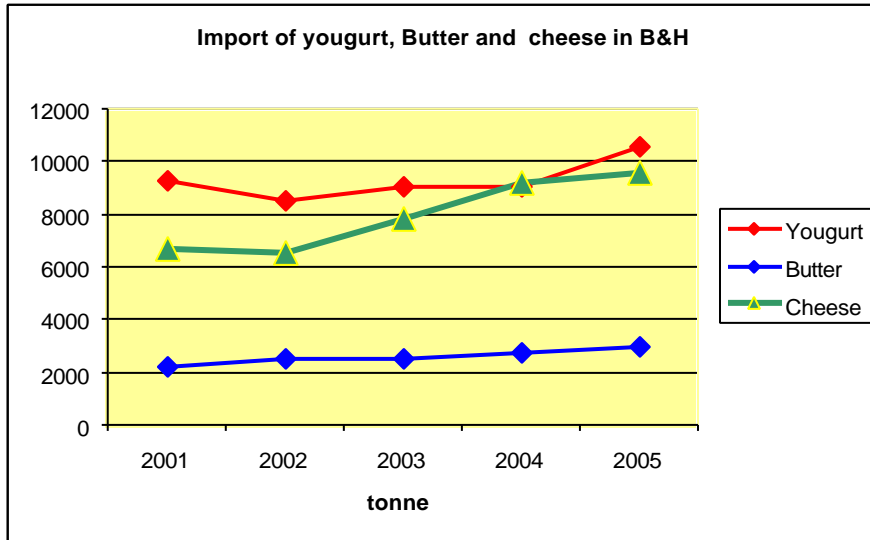


Chart 2.6.1.



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