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DISCUSSION PAPER

Institute of Agricultural Development in Central and Eastern Europe

COST OF COMPLIANCE WITH THE *ACQUIS COMMUNAUTAIRE* IN THE HUNGARIAN DAIRY SECTOR

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ABSTRACT

The implementation and enforcement of the *acquis communautaire* is a precondition for joining the European Union (EU). However, there is only little information on the compliance costs in the acceding countries. In this paper, the investment needs and annual costs of compliance with the part of the *acquis communautaire* relevant for the dairy sector is assessed at different stages of the agri-food chain in Hungary. The assessment is mainly based on a classification of farms and processors according to their level of compliance with EU standards concerning milk hygiene in 2000/01 and calculations of necessary investments in buildings, milking and cooling facilities and delivery trucks.

The raw milk quality in Hungary has steadily improved since the early 1990's. In 1999, 78 % of the milk delivered to processors was in compliance with EU standards. Based on the farm structure in the reference period, the further necessary modernisation requires investments of 82 million euro causing annual compliance costs of 9 million euro or 0.1 up to 4.3 cent per litre milk. This is equivalent to 0.6 % up to 17.9 % of the average farm gate price for milk in 2000. For modernising the milk collection centres, 25 million euro are needed, and for the delivery trucks between 12 million euro and 17 million euro. Depending on the size of the milk processor and the current level of compliance, the annual compliance costs are estimated to be low, ranging from negligible 0.02 cent per litre up to 0.7 cent per litre.

Based on these findings there is only limited need for the government to support the further modernisation of milk processors. State support is more relevant at the farm level. Since 68 % of the total investment needs estimated at farm level are accounted for by farms with less than 5 cows, agricultural policy should support these farmers either to considerably increase their herd size or to cease production.

JEL: Q130, Q180
Keywords: Hungary, acquis communautaire, milk hygiene, dairy sector, modernisation

ZUSAMMENFASSUNG

Die Implementierung und Durchsetzung des *acquis communautaire* ist eine Voraussetzung für den Beitritt zur Europäischen Union (EU). Über die hiermit in den Beitrittsländern verbundenen Kosten liegen bisher kaum Informationen vor. In diesem Beitrag wird der Teil des *acquis communautaire* betrachtet, der für den Milchsektor in Ungarn von Bedeutung ist. Für verschiedene Stufen der Milcherzeugung und –verarbeitung wird untersucht, welcher Investitionsbedarf zur Einhaltung der relevanten Vorschriften besteht und wie hoch die hieraus resultierenden kalkulatorischen und pagatorischen jährlichen Kosten sind. Die Abschätzung basiert im Wesentlichen auf einer Einteilung der Milcherzeugungs- und –verarbeitungsunternehmen nach dem Stand der Einhaltung der EU-Milchhygienestandards im Jahr 2000/01 und Kalkulationen der notwendigen Investitionen in Gebäude, Melk- und Kühltechnik sowie in Milchtransportfahrzeuge.

Die Rohmilchqualität hat sich in Ungarn seit Anfang der 90er Jahre stetig verbessert. 1999 erfüllten bereits 78 % der an Molkereien gelieferten Milch die EU-Standards. Basierend auf der landwirtschaftlichen Betriebsstruktur in der Referenzperiode 2000/01 liegt der weitere Bedarf an Modernisierungsinvestitionen in einer Größenordnung von 82 Millionen Euro. Hieraus folgen jährliche Kosten in Höhe von 9 Millionen Euro oder 0,1 bis 4,3 Cent pro Liter Milch. Dies entspricht 0,6 % bis 17,9 % des 2000 durchschnittlich erzielten Erzeugerpreises für Milch. Zur Modernisierung der Milchsammelstellen werden etwa 25 Millionen Euro benötigt und für Milchtransportfahrzeuge zwischen 12 Millionen Euro und 17 Millionen Euro. In Abhängigkeit von der Größe der Molkereien und dem Grad der Einhaltung der

EU-Standards in der Ausgangssituation ergeben sich jährliche Modernisierungskosten in einer geringen Größenordnung: Sie reichen von vernachlässigbaren 0,02 Cent pro Liter bis zu 0,7 Cent pro Liter.

Die Ergebnisse zeigen, dass nur eine begrenzte Notwendigkeit für staatliche Hilfen zur Modernisierung des Milchverarbeitungssektors besteht. Auf der Erzeugerebene sind Fördermaßnahmen dagegen wichtiger. Weil 68 % des geschätzten gesamten Investitionsbedarfs auf Betriebe mit weniger als 5 Kühen entfällt, sollte die Agrarpolitik die Leiter dieser Betriebe dabei unterstützen, entweder ihre Produktion spürbar auszudehnen oder ganz einzustellen.

JEL: Q130, Q180
Schlüsselwörter: Ungarn, acquis communautaire, Milchhygiene, Milchsektor, Modernisierung

ÖSSZEFOGLALÓ

Az Európai Unióhoz történő csatlakozás egyik előfeltétele a közösségi joganyag, az *acquis communaitaire* átvételel és alkalmazása. Kevés információ áll azonban rendelkezésre arról, hogy a közösségi követelmények teljesítése mennyibe kerül. Ez a tanulmány az *acquis* átvételének magyarországi beruházási szükségletét és az éves költségeket méri fel a mezőgazdasági és élemiszeripari lánc különböző szintjein az tejszektorra vonatkozóan.

A tanulmány alapvetően az EU tejhigiéniai előírások alkalmazásának 2000-2001-es felkészülési szintjére épül, s a tejtermelők és feldolgozók csoportját vizsgálja. Felbecsüli az épületek, fejési és hűtőberendezések, valamint a szállítójárművek beruházási szükségleteit.

A nyerstej minősége az 1990-es évek eleje óta fokozatosan javul Magyarországon. 1999-ben a feldolgozásra beszállított tej 78 % megfelelt az EU előírásoknak. A referencia időszak üzemi szerkezetét alapul véve további 82 millió Euro beruházásra van szükség, ami éves szinten 9 millió Eurot vagy 0.1-4.3 centet jelent minden egyes liter tej esetén. Ez megefelel a 2000-ben elért átlagos tejtermelői ár 0.6-17.9 %-ának. A tejcsarnokok korszerűsítéséhez 25 millió Eurora, a szállítójárművek esetében 12-17 millió Eurora van szükség. A tejfeldolgozók méretétől és harmonizációs szintjétől függően az éves korszerűsítési költség becsült értéke alacsony, az elhanyagolható mértékű 0.02 centtől 0.7 centig terjed tej literenként.

Ezeket a megállapításokat figyelembe véve, a tejfeldolgozók fejlesztésére a kormányzatnak pusztán korlátozott mértékű támogatást kell szánnia. Fontosabb azonban az állami támogatás üzemi szinten. Mivel a termelői szintű beruházási igény 68 %-a 5 tehénnél kevesebbel rendelkező gazdáknál jelentkezik, a mezőgazdasági politikának esetükben vagy állományuk növelésében vagy a termeléssel való felhagyásban kellene támogatást nyújtania.

JEL: Q130, Q180
Kulcsszavak: Magyarország, acquis communautaire, tejhigiénia, tejszektor, korszerűsítés

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1 INTRODUCTION[1]

Joining the European Union requires "the ability to take on the obligations of membership including adherence to the aims of political, economic and monetary union", as the Copenhagen European Council indicated in 1993. The importance of this third Copenhagen criterion – to adopt, implement and enforce the *acquis communautaire* –[2], has been underlined by the European Council on a number of occasions.

According to the EU Commission's progress reports, "primary and secondary legislation alone represents a considerable volume of acts, roughly estimated at 60,000-70,000 pages of the Official Journal" (COMMISSION OF THE EUROPEAN COMMUNITIES 2001, p. 95).[3] In the German version of the 2000 progress report for Hungary, the volume is estimated at 80,000 to 90,000 pages (KOMMISSION DER EUROPÄISCHEN GEMEINSCHAFTEN 2000, p. 89). Agricultural legislation accounts for over half of all Community legislation (EUROPEAN COMMISSION, DIRECTORATE GENERAL FOR AGRICULTURE (2000, p. 1). Furthermore, one has to bear in mind that the size of the *acquis* has increased in the past, and this development is likely to continue in the future. The Commission estimates the annual increase to 4,000 to 5,000 pages. It is assumed that, at the time of the accession negotiations before the last Northern enlargement of the European Community[4], the *acquis* compromised only half of the number of pages of today (VOLNY 2001).

As the Commission points out, the agricultural committees involved in the decision-making at EU level "are now consulted on some 2000 texts relevant to agriculture each year" (EUROPEAN COMMISSION, DIRECTORATE GENERAL FOR AGRICULTURE 2000, p. 1). EU's Common Agricultural Policy (CAP), which forms an important part of the *acquis*, will be further developed in the next years and is thus often described as a moving target. Considering these developments and the will of the current EU member states to accept derogations for new member states only under specific circumstances and for limited periods, the preparation of the candidate countries to fulfil the third Copenhagen criterion is a huge task.

This paper aims at increasing the limited amount of information available so far on the investments necessary to comply with the *acquis* and the annual compliance costs.[5] However, only that small part of the entire *acquis* is taken into consideration which is relevant for the milk hygiene criteria in the dairy sector.[6] This sector was chosen because the dairy as well as

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[2] The first two criteria are the political ("stability of institutions guaranteeing democracy, the rule of law, human rights and respect for and protection of minorities") and the economic one ("the existence of a functioning market economy and the capacity to cope with the competitive pressures and market forces within the Union").

[3] According to the 2001 progress report, 51,500 of these pages were translated into Hungarian by the end of 2001.

[4] In 1995, Finland, Sweden and Austria joined the European Community.

[5] In order to comply with the environmental *acquis*, for example, the investments necessary in the ten Central and Eastern candidate countries are assessed to amount to around 1,000 euro per capita or nearly 100 billion euro in total (RABINOWICZ 2000, cf. DZIEGIELEWSKA 2000).

[6] For a comprehensive overview on the status of restructuring and future challenges of the dairy sector in the ten Central European Candidate countries see HARTMANN (2001) as well as EUROPEAN COMMISSION-DIRECTORATE GENERAL FOR AGRICULTURE, NETWORK OF INDEPENDENT AGRICULTURAL EXPERTS IN THE CEE CANDIDATE COUNTRIES (2003).

the meat sectors are much more important with regard to food hygiene and safety than other agri-food sectors. Furthermore, the Commission reports in its 2000 progress report on Hungary that "no progress was made as regards the modernisation of *meat and dairy products plants to meet EC hygiene and public health standards*" (emphasis in the original) (COMMISSION OF THE EUROPEAN COMMUNITIES 2000, p. 86). Food safety and quality in the dairy sector is influenced by many factors along the entire food chain (cf. PANAYOTOVA and ADLER 1999). Since food safety and consumer protection are policy fields with high and growing importance in the EU public, derogations with regard to the quality of dairy products are granted to the new member states only in a limited number of cases.[7] In addition, the single market without border controls aggravates exceptions from the EU quality standards for local markets in the candidate countries.

This paper, which mainly reflects the situation in Hungary as it was in the second half of 2001, is organised as follows: in the second section the EU legislation most relevant for the dairy sector is outlined and the level of harmonisation in Hungary analysed. The third section briefly describes the Hungarian dairy sector. In the fourth section the investment needs and annual compliance costs are assessed at the following four stages: farms, milk collection centres, delivery trucks and milk processors. The paper ends with some conclusions and policy recommendations.

2 HARMONISATION OF HUNGARIAN LEGISLATION RELEVANT FOR THE DAIRY SECTOR

2.1 Relevant EU legislation

In the EU, the directives 89/362/EEC and 92/46/EEC are the most important ones for the dairy sector with regard to milk hygiene (cf. PANAYOTOVA and ADLER 1999).[8] The former prescribes the general conditions of hygiene in milk production holdings, the latter lays down the health rules for the production and placing on the market of raw milk, heat-treated milk and milk-based products. Decision 95/165/EC regulates criteria for granting of derogations from some prescriptions of the latter directive to certain dairy plants processing less than 0.5 and 2 million litres milk per year.

According to Directive 92/46/EEC, raw milk must come from cows which do not show symptoms of tuberculosis or brucellosis or any other infectious diseases communicable to humans and which are in a good general state of health. Cows should not have any udder wound likely to effect the milk nor have been treated with dangerous or likely to be dangerous materials transmissible to milk. Among others, the plate count per millilitre milk is not allowed to exceed 100,000 and the somatic cell count 400,000. The milk production holding must be designed, constructed, maintained and managed in such a way as to ensure good conditions for housing of animals and satisfactory hygiene conditions for milking, handling, cooling as well as storing the milk. Rules are to be respected concerning walls, flooring, ventilation, lighting, water supply, drainage, waste disposal, cleaning and disinfection.

As Directive 89/362/EEC sets up, milking must been carried out in a hygienic way. Immediately after milking, milk must be held in a clean place designed to avoid adverse effects on the milk. If the milk is not collected or processed within 2 hours of milking, it must be cooled to a temperature of 8 °C or lower in the case of daily collection, or 6 °C and lower if the collection is not daily. During transport to the processing establishment, the milk temperature must not exceed +10 °C. Persons milking and/or handling raw milk must wear suitable clean clothes. Milkers must wash their hands immediately before milking and keep

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7 Hungary did not apply for derogations with regard to milk hygiene.

8 Further relevant legislation is listed in the annex.

them as clean as possible throughout the milking. For this purpose, suitable facilities must be available near the place of milking for hand and arm wash.

2.2 Hungarian legislation

The most important Hungarian acts and decrees related to milk hygiene are the following. The general animal health rules and the related proceedings are regulated by Ministerial decree (FM) No. 41/1997 (V.28.) on Veterinary regulation. General hygiene conditions of foodstuffs are regulated by Common ministerial decree (FVM–EÜM) No. 17/1999 (II. 10.) on food hygiene conditions of producing foodstuff and placing it on the market. It contains prescriptions related to e.g. establishments, environmental conditions, equipment of processing enterprises of milk and milk products, milk processing carried out by agricultural holdings, production of milk and milk products intended for marketing directly from dairy holdings, receiving and transport of milk, operating milk processing establishments. The objectives of the Act No. XC of 1995 on foodstuff and the common ministerial decree (FM-NM-IKM) No. 1/1996 (I. 9.) on implementation of the Act are to define conditions of production and commercialisation of foodstuffs intended for human consumption, taking into account the interest of consumers and consumer protection. The Act regulates the requirements of packaging and labelling, information of consumers, authority control and official measures related to food. Decree No. 4/1998 (XI. 11.) of the Minister of Health on the maximum levels of microbiological contamination in foodstuff regulates the cleanness of foodstuff in terms of food safety, of tools used in the production of food as well as of staff and its hygiene requirements. Ministerial decree (MÉM) No. 6/1980 (III. 6.) on hygiene certification of food industrial machines, which has been modified several times, regulates hygiene adequacy tests of food industrial machines and the necessary approval procedure.

The joint ministerial decree FVM-ESzCsM No. 1/2003 (I. 8.) on food hygiene rules for production and placing on the market of raw milk, heat-treated milk and milk based products came into force on 16.01.2003. The aim of this decree is to ensure a full compliance with 20 EC directives, regulations and decisions on health requirements.

Rules related to raw milk are regulated by Ministerial Decree No. 1/2003. Quality requirements for raw milk are detailed in Annex 3. This part of the decree will become obligatory only 1 year after the publication of this legislation. This measure allows a transitional period of one year in order to prepare the interested parties. For the transitional period, Hungarian Standard No. 3698 (MSZ 3698) is to be respected. This standard covers the following fields: quality requirements on raw milk (see Table 1); requirements on sampling and checks; basic requirements during cooling, storage and transport; date of receiving raw milk at processing establishments from producers; marketing period of raw milk intended to immediate human consumption.

Table 1: Quality requirements for raw milk with regard to plate count and somatic cell count in Hungary

	category "Extra"	category I	category II	category III
Plate count (per ml)	≤ 100,000	100,001-300,000	300,001-800,000	800,001-1,000,000
Somatic cell count (per ml)	≤ 400,000	400,001-500,000	500,001-700,000	700,001-1,000,000
Titre °SH	6.0-7.2			
Informative pH	6.6-6.75			
Physical cleanliness	Grade I			Grade II
Inhibiting material	Not traceable (the maximum limit is 0.0003 I.E. penicillin/cm^3)			

Source: *Hungarian Standard No. 3698 (MSZ 3698).*

The Milk Produce Council is responsible to register the milk producing establishments in Hungary. No delivery is allowed if the holding is not registered by the Council. Primary objective of this registration is to make the milk quota system operate, which has been in place since 1996.

The hygiene requirements of establishments and equipment of milk production farms are regulated by the Veterinary Decree. It is the responsibility of the farmer to build suitable establishments for animal keeping, to use appropriate technology in order to produce milk suitable for human consumption or food production.

The Hungarian Standard No. 3698 regulates the temperature requirement and duration of storage, collection and transport of milk. In farms having cooling machines, the raw milk has to be cooled within 4 hours – after the beginning of milking – at a temperature of 5 °C if the milk is collected after each milking. The cooling temperature must be 4 °C in case of milk collection every two days. In farms where no cooling equipment is available, the milk has to be transported to the collection centre equipped with suitable cooling machines within 2 hours. This kind of raw milk has to be cooled at least at a temperature 5 °C or lower. In this case, there is a daily transport of milk to the dairy establishment. Raw milk cooled to 5 °C has to be handed over within 8 hours, that kept at 4 °C, within 16 hours. While the milk is transported to the collection centre or dairy establishment, its temperature must not exceed 10 °C.

Already in 2001, the Hungarian prescriptions concerning milk hygiene were almost fully harmonised with the EU rules. However, there were two important exceptions. First, in Hungary, only the "Extra" raw milk quality category out of four meets the EU requirements.[9] Second, the raw milk produced on small farms often is only sampled at the milk collection centres, whereas Directive 92/46/EEC prescribes the obligatory control of raw milk at the level of each producer.

[9] As prescribed by Annex 3 of Joint Ministerial Decree No.1/2003, from 8th of January 2004 only the "Extra" category shall exist. In practice, it is already the case that milk processing establishments reluctantly accept milk from categories other than "extra".

2.3 Control authorities in Hungary

The National Veterinary Service is the responsible authority for the enforcement of standards related to milk hygiene. It is headed by the Animal Health and Food Control Department of the Ministry of Agriculture and Regional Development. The total staff of the Hungarian Veterinary Service was 2,707 in 1999. There are 20 regional Animal Health and Food Control Stations, headed by the Chief Veterinary Officer. The Animal Health and Food Control Department deals with administrative questions related to licences for veterinary drugs and biologicals, the import and transit of live animals, products of animal and plant origin which might be the carriers of disease-causing agents, and animal welfare during transportation and food hygiene and quality control. The National Food Investigating Institute (OÉVI) serves as the central laboratory supporting the food safety activities of the Ministry of Agriculture and Regional Development and its field stations. It is under the direct management of the Animal Health and Food Control Department of the ministry.

If a farmer intends to start milk production, he has to get the operation permit of the local notary. To obtain such document, the official statements of the Veterinary Service and the Environment Protection Authority are necessary. Dairy holdings and collection centres are supervised by the Veterinary Service. Official veterinarians carry out food hygiene controls at farms at least every quarter of a year, checking the following issues:

- compliance with animal health and hygiene rules,
- conditions of separation of sick animals,
- presence of udder inflammation,
- animal feeding which influences the quality of the milk,
- cleaning and disinfection,
- technological and hygienic conditions of milking, treating, collecting, storage, transport of milk,
- quality of the water used,
- sewage disposal.

Concerning the hygiene control of the milk collection centre, the procedure is similar to that with the farmers. The official veterinarians controlling the collection centres have a special hygiene qualification. The milk processing plants are also controlled by official veterinarians skilled as hygiene experts. An official veterinary permanence exists in the big milk processing establishments.

Raw milk sampling is carried out 3 times a month by official raw milk sampling persons. They are employed by milk processing establishments or they are independent. Their activities are supervised by the Animal Health and Food Control Station at Budapest. Official raw milk samplers have to participate in a vocational training and to pass a final exam to get the permit to carry out official raw milk sampling. Every 3 years they have to participate in an obligatory training. The Hungarian Milk Research Institute Ltd. employs 3 laboratories for raw milk analysis. It is supervised by the responsible County Animal Health and Food Control Station. This means that the results of the laboratory analysis carried out by the 3 laboratories have to be approved by the Veterinary Service.

Laboratories at the County Animal Health and Food Control Stations and the National Food Investigation Institute (OÉVI) are in charge of analyses of official samples of milk and milk products. OÉVI carries out the laboratory work of food inspection with national competence in its field. This institute operates as a reference laboratory. It checks the qualification of staff of food control laboratories and controls them by conducting a ring test.

Dairy farms are obliged to register in Hungary. The National Institute for Agricultural Quality Control (OMMI) has developed the Cattle Registration and Identification System (ENAR)

which has been operating since September 1999. When a farm is registered, the farmer receives a certificate providing details of the farm. This includes a 7-digit computer generated holding Identification Number, the name of the farmer, the name of the holding owner, the holding address, the type of animals kept, the veterinarian responsible for the holding etc.

The ENAR system is in conformity with the EU rules. Cattle are identified with an eartag in each ear within 15 days of birth. The eartags are yellow plastic tags and meet all the EU specifications regarding size, logos etc. Each eartag has a 10 digit number prefixed by "HU" for Hungary. Whenever an animal is transported within Hungary a movement health certificate must accompany it. The official veterinarians are authorised to issue eartags and write movement health certificates on behalf of the Veterinary Service.

A milk production, milk treating and/or processing establishment can only be approved after a preliminary official statement of the environment protection authority. The establishment has to fulfil the prescriptions related to the environment.

3 SITUATION IN THE HUNGARIAN DAIRY SECTOR

In the first years of transition, milk production in Hungary decreased from 2.9 million t in 1989 to 1.9 million t in 1994. Since then production has increased reaching 2.1 million t in 1999 (see Table 2), of which 1.7 million t were delivered to milk processors.

Table 2: Volume of produced and processed milk in Hungary (in 1000 t)

Year	Production	Delivery
1986	2755	2272
1987	2808	2302
1988	2865	2387
1989	2857	2402
1990	2840	2330
1991	2485	1967
1992	2297	1884
1993	2077	1656
1994	1931	1556
1995	1974	1603
1996	1972	1522
1997	1985	1549
1998	2102	1687
1999	2101	1678
2000	2081	1686

Source: CENTRAL STATISTICAL OFFICE (various issues).

Table 3 shows the dualistic structure of the dairy sector in Hungary. In 1999, around one third of the total 400,000 cows was kept by small holdings, enterprises and co-operatives respectively. Altogether, there are more than 700 enterprises or co-operatives keeping cows in Hungary, compared with more than 30.000 small holdings. The average number of cows differs considerably: whereas this figure amounts to only 4.5 for small holdings in 1999 (compared with 2.6 in 1995 however), it is 421 for enterprises and 299 for co-operatives.

Table 3: Structure of dairy farms differentiated by enterprises, co-operatives and small holdings

Year	Cattle in total				Cows			
	Enter-prises	Co-operatives	Small holdings	Total	Enter-prises	Co-operatives	Small holdings	Total
Herd size, thousand heads								
1995	265	406	257	928	118	178	125	421
1996	272	391	246	909	121	169	124	414
1997	242	349	280	871	109	155	139	403
1998	251	328	294	873	116	150	141	407
1999	288	268	302	857	132	122	145	399
2000	543		262	805	261		119	380
Number of holdings								
1995	323	658	62 000	62 981	287	629	49 000	49 916
1996	322	603	55 000	55 925	287	603	43 000	43 890
1997	274	561	48 000	48 835	256	542	39 000	39 798
1998	271	508	43 000	43 779	252	489	36 000	36 741
1999	317	439	40 000	40 756	299	421	32 000	32 720
Average number of animals/holding								
1995	820	617	4.1		411	283	2.6	
1996	845	648	4.4		422	280	2.9	
1997	883	622	5.8		426	286	3.6	
1998	926	646	6.8		458	289	3.9	
1999	908	610	7.6		441	290	4.5	

Source: CENTRAL STATISTICAL OFFICE (various issues).

26,594 of all milk producers were registered by the Milk Product Council in 2000. Only 1,540 of them delivered milk directly to dairy plants, whereas the remaining 25,054 dairy holdings transported it to milk collection centres (see Table 4). However, the latter contribute only to 11.5 % of the total milk delivered directly to milk processors or collection centres.

Table 4: Structure of dairy farms differentiated by the total milk delivery to processors and collection centres in 2000

	Number of units	Total milk volume (in 1,000 litres)	Average milk volume (in 1,000 litres)
Dairy farms directly delivering to processors			
Over 10 million	13	175,654	13,512
5-10 million	33	225,686	6,839
2-5 million	178	552,816	3,046
1-2 million	211	313,366	1,485
0.5-1 million	149	109,256	733
0.2-0.5 million	154	49,429	321
0.05-0.2 million	373	35,862	96
below 0.05 million	429	9,614	22
Dairy farms delivering to milk collection centres			
	25,054	192,081	8
All dairy farms			
	26,594	**1,663,764**	-

Source: BERKI (2001).

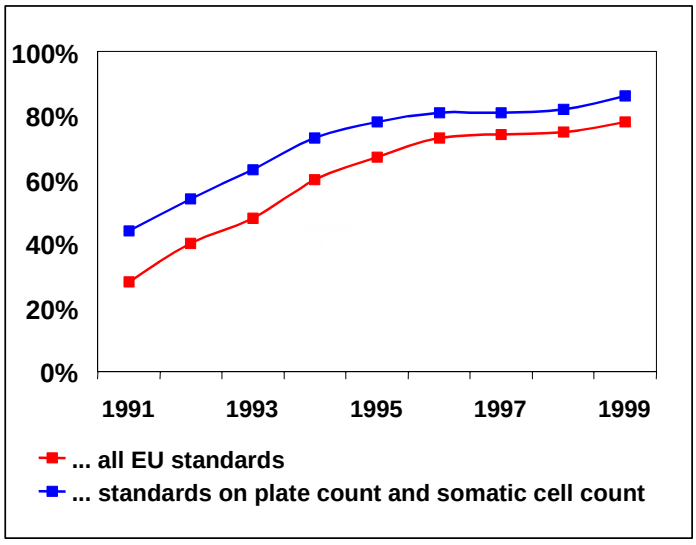
According to experts of the Milk Produce Council, in 2001, there were around 1,250 collection centres in Hungary. These centres collect raw milk from approximately 25,000 small producers keeping 1-5 cows each. The raw milk is filtered, cooled and stored in the

collection centres. Although the collection centres have equipment to filter and cool the milk, they are mostly outdated. Farmers supplying only a small quantity of milk often do not cool the milk at their farm, thus, the first place of cooling is the collection centre. There are 1 or 2 tanks in each centre containing the collected milk. Official samples are taken for qualification of raw milk every 10 days, but the samples are taken only from the milk of all farmers together, not on an individual basis.

The operation of the establishment is continuously supervised by the Veterinary Service. Official veterinarians carry out food hygiene controls at least every 3 months. Approximately 80% of the collection centres have to be reconstructed due to their outdated buildings and equipment (IDEI 2001). Therefore and due to the number of small dairy farms which is likely to decline the number of milk collection centres is expected to drastically decrease in the near future.

The raw milk quality in Hungary has steadily improved since the early 1990's. In 1999, 78 % of the milk delivered to processors was in compliance with all EU standards compared with 28 % in 1991 (see Figure 1).

Figure 1: Share of delivered raw milk in compliance with EU standards, 1991 to 1999

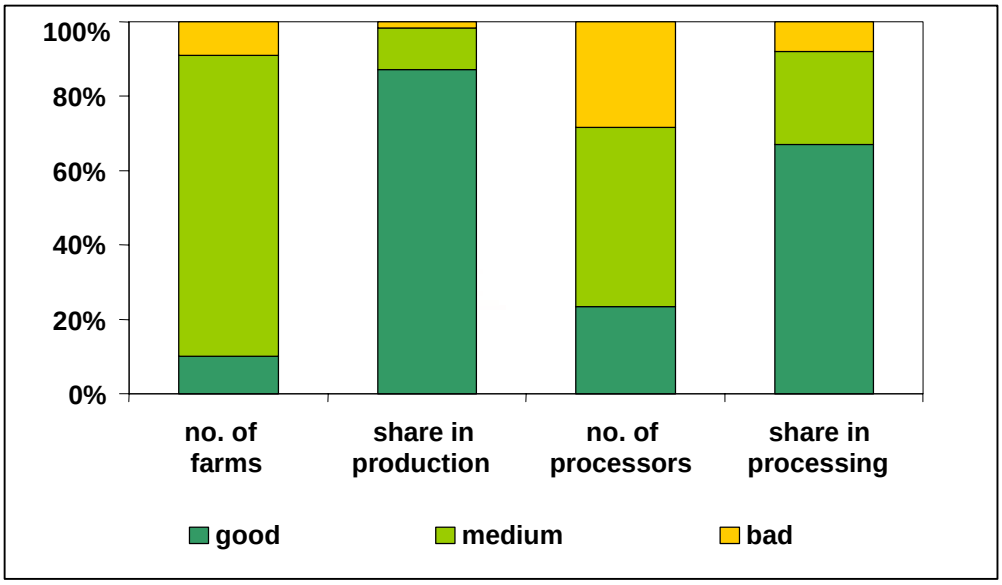


Source: UNGER (2001).

In 2001, the Milk Product Council assessed the level of compliance with EU hygiene standards as prescribed by Council Directive 92/46/EEC of dairy farms and milk processors by using three categories: good, medium and bad compliance. Although only 10 % of all registered dairy farms are classified as "good" they account for 87 % of the total milk produced (see Figure 2). Most of the small holdings do not only have to upgrade their milking and (if available at all) cooling facilities. Also the quality controlling system has to be improved, since Council Directive 92/46/EEC prescribes an individual raw milk qualification instead of qualification of mixed milk of the collection centres, which is the case at present. At the processing level[10], 19 out of 81 processors are assessed to be in "good compliance". However, their share in total milk processed is only 67 %. These 19 processors were approved by the EU for export to the EU.

[10] The leading milk processing company groups in Hungary are listed in annex 3.

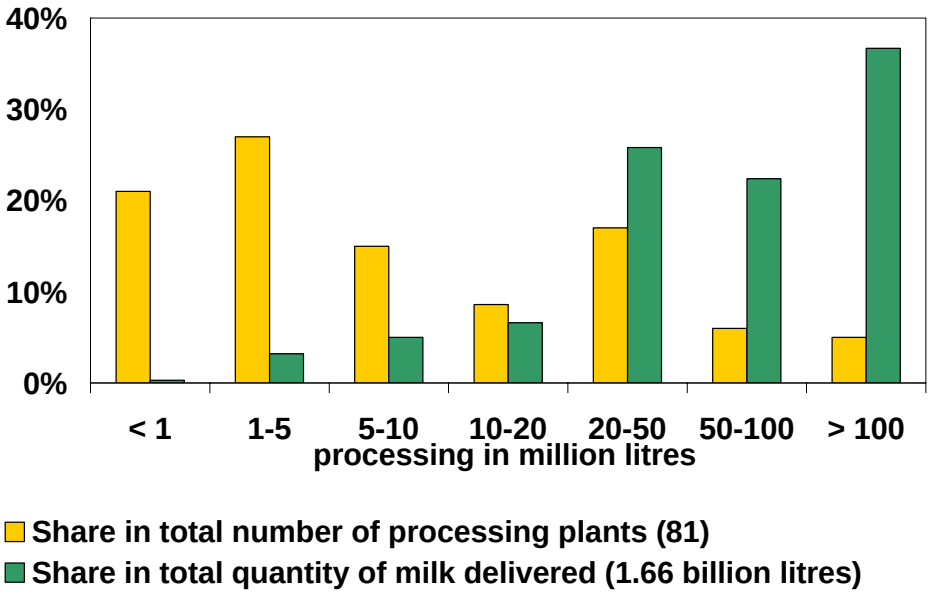
Figure 2: Level of compliance in 2000/01 with EU standards (Council Directive 92/46/EEC) of dairy farms and milk processors and their share in total production (2000)



Source: Based on BERKI (2001).

In 2000, 39 dairy plants processed less than 5 million litres each, which accounts for 3.5 % of the total milk delivered (see Figure 3). In the size of over 100 million litres per year, there are 4 dairy plants contributing 37 % of the total milk delivered. According to HARTMANN (2001) the 3 (10) biggest dairy enterprises account for 51 % (84 %) of the total sales of all dairy enterprises in 1999.

Figure 3: Share of milk processors of different sizes in the total number of processors and their share in total delivered milk in 2000

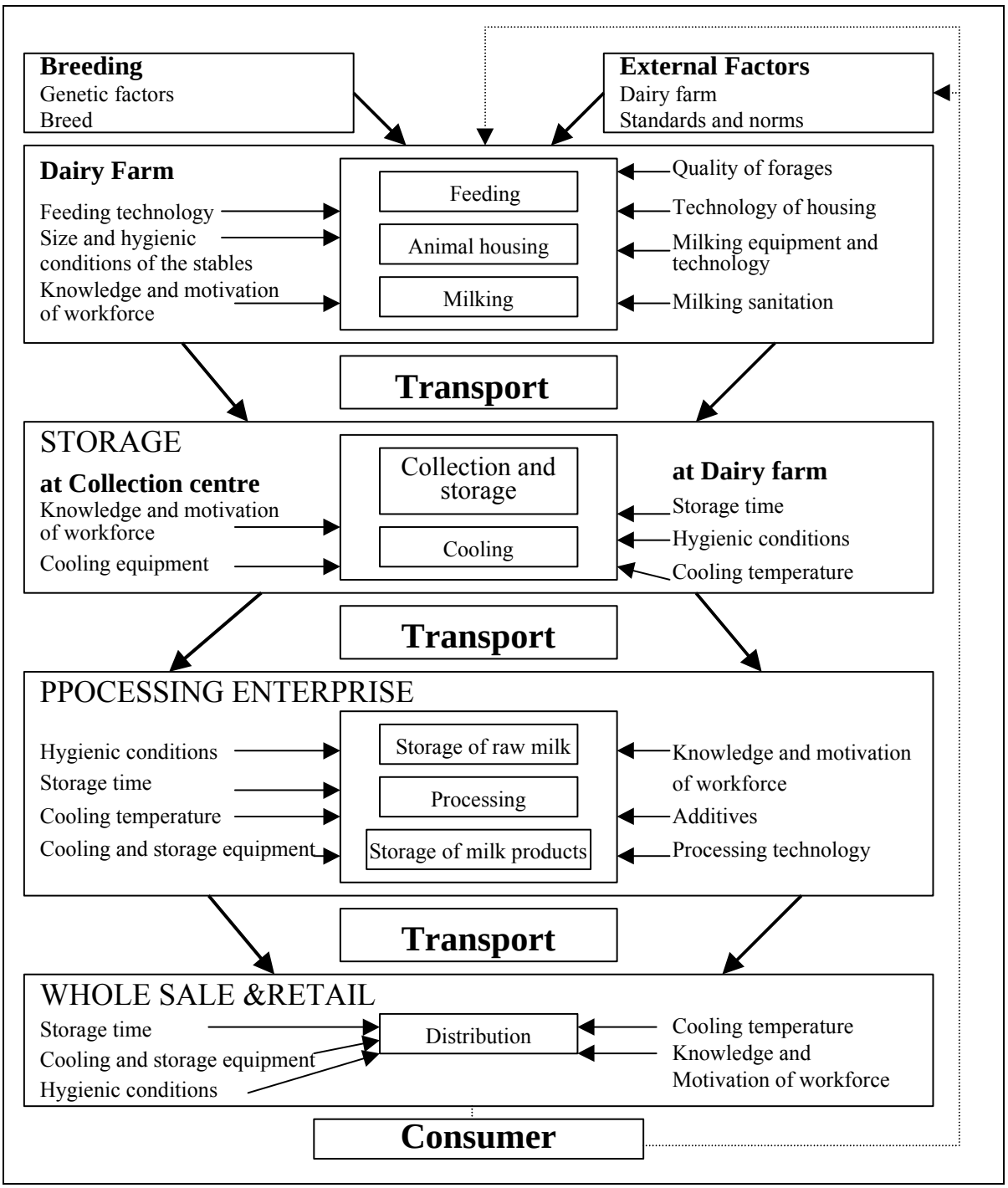


Source: Based on BERKI (2001).

4 INVESTMENT NEEDS AND ANNUAL COMPLIANCE COSTS IN THE DAIRY SECTOR

The most important stages in the chain of dairy products are the dairy farms, the milk collection centres, the milk processors and the wholesaler and retailers (see Figure 4). In this section, investment needs and annual compliance costs are assessed at all these levels including the transport of raw milk. Not included are investments necessary at the level of wholesalers and retailers as well as costs caused by necessary improvements in the field of the control authorities. At any stage shown in Figure 4, the quality of raw milk or dairy products is influenced by many factors. Since there seems to be no need for considerable changes in the field of breeding and feeding technology, these factors are not explicitly included in our cost assessment.

Figure 4: Main stages in the chain of dairy products



Source: PANAYOTOVA and ADLER (1999, p. 22), modified.

4.1 Investment needs and annual compliance costs at the farm level

Based on the classification of farms according to their compliance level and farm size, specific assumptions on the capital necessary to construct new buildings, milking facilities and cooling facilities (see Table 5), the investment needs are calculated.

Table 5: Farm size specific investments necessary to establish new dairy farms (in euro)

Number of cows	Buildings	Milking equipment	Cooling equipment etc.	Total
<5	2,308	1,231	769	**4,308**
5	3,077	1,231	1,169	**5,477**
10	4,615	1,723	2,462	**8,800**
30	9,231	6,154	3,692	**19,077**
60	15,385	8,000	6,154	**29,539**
300	92,308	55,385	43,846	**191,539**
800	215,385	123,077	184,615	**523,077**

Remark: Assumed exchange rate forint/euro: 260.
Source: Authors's calculations based on data provided by Agromilk Ltd.

We assume that those farms which are in good compliance with EU standards need on average 12.5 % of the capital reported in Table 5 for further modernisation investments in order to fully comply with all EU standards. For the "medium compliance" category, the corresponding figure is 50.0 % and for the "bad compliance" category it is 87.5 %. In order to calculate the annual compliance costs we assumed 25 years use of buildings, 10 years for milking and cooling facilities, 2 % maintenance for buildings and 6 % interest rate. Based on these assumptions the "good compliance" farms have to invest 25 million euro resulting in annual costs of 2.8 million euro (see Table 6). Farms categorised as "medium compliance" face total investments of 48 million euro (5.2 million euro annual costs). Those farms in "bad compliance" need investments of 9 million euro leading to annual costs of 1.0 million euro. In the last column of Table 6, the annual costs are expressed per litre milk.[11] For the "good compliance" farms, these costs range from 0.1 to 0.6 cent per litre. The compliance costs per litre are considerable higher for "medium compliance" farms, reaching 1.4 to 2.5 cent. Small holdings which are currently in "bad compliance" face compliance costs of 3.2 to 4.3 cent per litre.

[11] Depending on the farms size the following annual yields per cow are assumed: <5 cows: 3800 l, 5 cows: 3200 l, 10 cows:3500 l, 30 cows: 4200 l, 60 cows: 5100 l, 300 cows: 5400 l, 800 cows: 4800 l.

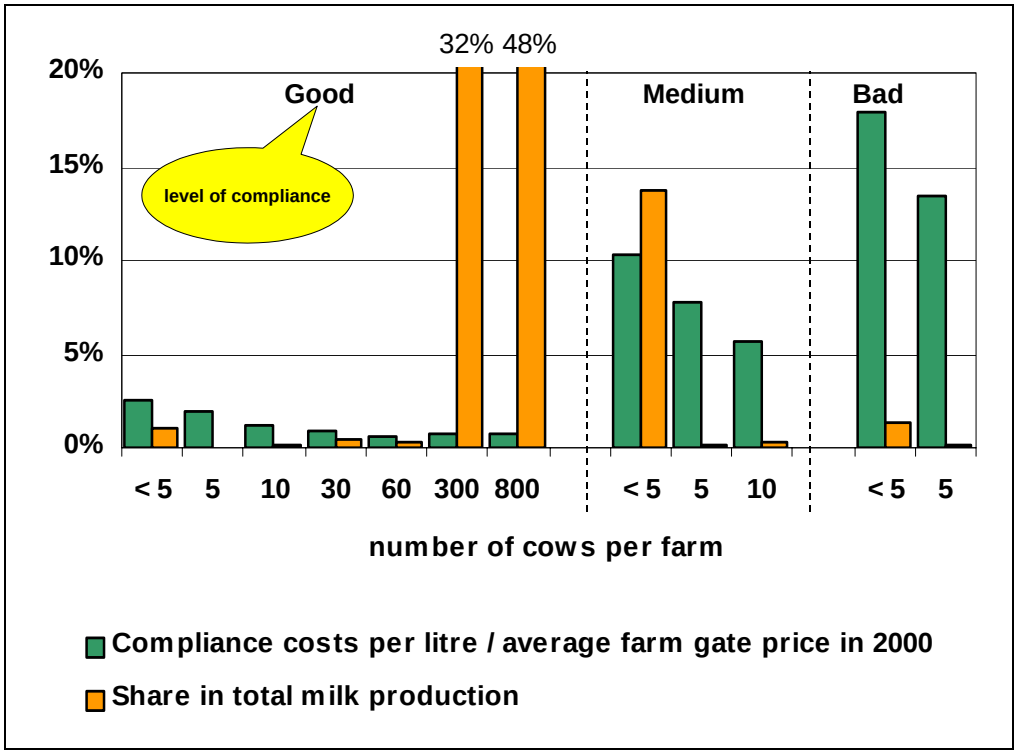
Table 6: Investment needs and annual costs at farm level to comply with EU standards

Com-pliance	Number of cows/farm	Number of farms	Total investment per farm	Total investment per category	Annual cost per category	Annual costs per litre
			euro	1,000 euro	1,000 euro	cent
Good	<5	1660	538	894	97	0.61
	5	82	685	56	6	0.46
	10	55	1,100	61	7	0.29
	30	65	2,385	155	17	0.21
	60	154	3,692	569	62	0.13
	300	360	23,942	8,619	954	0.16
	800	224	65,385	14,646	1,663	0.19
	Total	**2,600**		**24,999**	**2,806**	
Medium	<5	21,630	2,154	46,588	5,058	2.46
	5	240	2,769	665	72	1.87
	10	130	4,400	572	62	1.37
	Total	**22,000**		**47,824**	**5,192**	
Bad	<5	2,211	3,769	8,334	905	4.31
	5	189	4,792	906	97	3.22
	Total	**2,400**		**9,240**	**1,002**	
	All farms	**27,000**		**82,063**	**9,000**	

Source: Authors' calculations.

Figure 5 compares these annual compliance costs per litre and the average farm gate price for milk in 2000 (24 cent/litre). For the two biggest farm size groups, which together represent 80 % of the total milk delivery, the annual costs reach less than 0.8 % of the 2000 average milk price. The modernisation costs are much more important for small holders. For example, for those holdings with less than 5 or 5 cows which are currently only in "bad compliance", these costs amount to 18 % of the milk price and 13 % respectively. Fortunately, these groups only account for 0.2 % of total milk production and 1.4 % respectively.

Figure 5: Annual compliance costs (differentiated by herd size and current level of compliance)



Source: Authors' calculations.

4.2 Investment needs and annual compliance costs at the level of milk collection centres and milk delivery trucks

In order to assess the investment needs and the resulting annual compliance costs, we assumed that the number of milk collection centres will decrease to 350. Necessary investments are considered with regard to the reconstruction of buildings and the modernisation of cooling facilities as well as of laboratory equipment. According to our assessment, investments of 24.8 million euro are necessary for the assumed 350 milk collection centres in order to comply with EU standards (see Table 7). This leads to annual compliance costs of 2.2 million euro.

Table 7: Investment needs and annual costs at the level of the collection centres to comply with EU standards (in 1,000 euro)

	Investment needs per collection centre	Total Investment needs for assumed 350 collection centres	Total annual costs for assumed 350 collection centres
Reconstruction of buildings	9	3,231	291
Modernisation of cooling facilities and laboratory equipment	62	21,538	1,938
Total	**71**	**24,769**	**2,229**

Source: Authors' calculations.

Investments are also necessary to improve the milk delivery trucks which transport the raw milk from the collection centres and the big dairy farms to the milk processors. Depending on the assumed technology of the trucks, the investment needs range from 12.0 million euro (i.e. 1.6 million euro annual costs) to 17.4 million euro (i.e. 2.3 million euro annual costs). The

former refer to trucks without automatic sampling facilities and self-cleaning systems, whereas the higher figures refer to modern trucks which have these technologies.[12]

4.3 Investment needs at the milk processing level

In order to comply with EU standards, a number of milk processors not only have to modernise their equipment e.g. for pasteurising the milk and to improve their cleaning systems, but also to invest in buildings and in sewage-water cleaning systems. The estimated investment needs are shown in Table 8 differentiated by the level of compliance with EU standards and the size of the milk processors. Unfortunately, there are no data available concerning how many milk processors fit the different categories. Therefore, it is not possible to calculate the total investment needs for all milk processors.

Table 8: Investment needs at the milk processing level differentiated by the size of the milk processor (in 1,000 euro)

Harmonisation level	Size of processor (million l/year)	Number of milk processors	Investment purpose			
			Reconstruction of buildings	Modernisation of pasteurising equipment, establishing controllable cleaning systems	Sewage water cleaning system	Total investment needs per processor
			1,000 Euro	1,000 Euro	1,000 Euro	**1,000 Euro**
good	<1	no data available	2	5	1	**8**
	1-5		4	9	2	**15**
	5-10		6	13	4	**23**
	10-20		16	29	11	**56**
	20-50		35	35	23	**92**
	50-100		53	42	32	**127**
	>100		58	51	35	**144**
medium	<1	no data available	9	18	6	**33**
	1-5		15	35	10	**60**
	5-10		24	52	17	**93**
	10-20		65	115	44	**225**
	20-50		138	138	92	**369**
	50-100		212	169	127	**508**
	>100		234	203	138	**575**
bad	<1	no data available	15	32	10	**57**
	1-5		27	61	17	**104**
	5-10		42	92	30	**163**
	10-20		114	202	77	**394**
	20-50		242	242	162	**646**
	50-100		370	296	222	**888**
	>100		409	355	242	**1.007**

Source: Authors' calculation based on price lists from BORÓDI and KIS.

Table 9 indicates that the annual compliance costs at the milk processing level are low, ranging from negligible 0.02 cent per litre for large processors which already show a good level of compliance up to 0.7 cent per litre for the smallest processors with the worst status quo in terms of the relevant EU standards.

[12] The calculated investments per truck are based on price lists from AGROMILK LTD. and DELAVAL LTD. We assumed that a modern truck with a capacity of 10,000 l costs 87,000 euro. The same truck without automatic sampling and self cleaning necessitates 63,000 euro.

Table 9: Annual costs at the milk processing level to comply with EU standards (in cent per litre milk processed)

Volume of processed milk (million l)	Level of compliance		
	Good	**Medium**	**Bad**
<1	0.10	0.39	0.68
1-5	0.07	0.29	0.50
5-10	0.04	0.15	0.26
10-20	0.04	0.18	0.31
20-50	0.03	0.12	0.21
50-100	0.02	0.08	0.13
over 100	0.02	0.06	0.11

Source: Authors' calculations.

5 CONCLUSIONS

The raw milk quality in Hungary has steadily improved since the early 1990's. In 1999, 78 % of the milk delivered to processors was in compliance with EU standards. However, further improvements are necessary to fully comply with all EU standards at the time of joining the EU. We roughly estimated the investment needs and the resulting annual compliance costs for the Hungarian dairy sector at different levels.

Based on the current farm structure, the further necessary modernisation requires investments of 82 million euro causing annual compliance costs of 9 million euro or 0.1 up to 4.3 cent per litre milk. This is equivalent to 0.6 % up to 17.9 % of the average farm gate price for milk in 2000. For modernising the milk collection centres 25 million euro are needed and for the delivery trucks between 12 million euro and 17 million euro. Depending on the size of the milk processor and the current level of compliance, the annual compliance costs are estimated to be low, ranging from negligible 0.02 cent per litre up to 0.7 cent per litre. Since the early 1990's, Hungary has been successful in attracting foreign direct investments in its agri-food sector. In 2000, foreign companies owned about 70 % of the equity of the milk processing sector (HARTMANN 2001).

Based on these findings, there is only limited need for the government to support the further modernisation of milk processors. State support is more relevant at the farm level. Since 68 % of the total investment needs estimated at farm level are accounted for by farms with less than 5 cows, agricultural policy should support these farmers either to considerably increase their herd size or to cease production.

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ANNEX

Annex 1: Basic EC and Hungarian legislation concerning milk hygiene

Basic EC legislation as last amended

- Council Directive 64/432/EEC of 26 June 1964 on animal health problems affecting intra-Community trade in bovine animals and swine (Annex A, paragraph 1) (Official Journal 121, 29/07/1964 pp. 1977-2012).
- Council Directive 80/778/EEC of 15 July 1980 relating to the quality of water intended for human consumption (OJ L 229 30/07/80 pp. 11-29).
- Commission Directive 89/362/EEC of 26 May 1989 on general conditions of hygiene in milk production holdings (OJ L 156, 08/06/1989 pp. 30-32).
- Council Directive 89/384/EEC of 20 June 1989 establishing the detailed procedures for carrying out checks to ensure that the freezing point of untreated milk laid down in Annex A of Directive 85/397/EEC is complied with (OJ L 181, 28/06/1989 p. 50).
- Council Regulation 2377/90 of 26 June 1990 laying down a Community procedure for the establishment of maximum residue limits of veterinary medicinal products in foodstuffs of animal origin (OJ L 224, 18/08/1990 pp. 1-8).
- Council Directive 91/68/EEC of 28 January 1991 on animal health conditions governing intra-Community trade in ovine and caprine animals (Article 2 (4) and (5)) (OJ L 046 , 19/02/1991 pp. 19-36).
- Commission Decision 91/180/EEC of 14 February 1991 laying down certain methods of analysis and testing of raw milk and heat-treated milk (OJ L 093, 13/04/1991 pp. 1-48).
- Council Directive 92/46/EEC of 16 June 1992 laying down the health rules for the production and placing on the market of raw milk, heat-treated milk and milk-based products (OJ L 268, 14/09/1992 pp. 1-31).
- Council Directive 93/99/EEC of 29 October 1993 on the subject of additional measures concerning the official control of foodstuffs (OJ NO. L 290, 24/11/1993 pp. 14-17).
- Council Directive 94/35/EC of 30 June 1994 on sweeteners for use in foodstuffs (OJ L 237, 10/09/1994 pp. 3-12).
- Council Directive 94/36/EC of 30 June 1994 on colours for use in foodstuffs Service (OJ L 237 , 10/09/1994 pp. 13-29).
- Commission Decision 95/165/EC of 4 May 1995 establishing uniform criteria for the grant of derogations to certain establishments manufacturing milk-based products (OJ L 108, 13/05/1995 pp. 84-86).
- Council Directive 95/2/EC of 20 February 1995 on food additives other than colours and sweeteners (OJ L 061, 18/03/1995 pp. 1-40).
- Commission Decision 95/342/EC of 27 July 1995 on treatment of milk and milk-based products for human consumption from third countries or parts of third countries where there is a risk of foot-and-mouth disease (OJ L 200, 24/08/1995 pp. 50-51).

— Council Directive 96/23/EC of 29 April 1996 on measures to monitor certain substances and residues thereof in live animals and animal products and repealing Directives 85/358/EEC and 86/469/EEC and Decisions 89/187/EEC and 91/664/EEC (OJ L 125, 23/05/1996 pp. 10-32).

— Commission Decision 97/747/EC of 27 October 1997 fixing the levels and frequencies of sampling provided for by Council Directive 96/23/EC for the monitoring of certain substances and residues thereof in certain animal products (OJ L 303, 06/11/1997 pp. 12-15).

— Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption (OJ L 330, 05/12/1998 pp. 32-54).

— Directive 2000/13/EC of the European Parliament and of the Council of 20 March 2000 on the approximation of the laws of the Member States relating to the labelling, presentation and advertising of foodstuffs (OJ L 109, 06/05/2000 p. 29).

Basic Hungarian legislation in force

— Act No. XC of 1995 on Foodstuffs.

— Joint ministerial decree (FM-NM-IKM) No. 1/1996 (I. 9.) on implementation of Act No. XC of 1995.

— Ministerial decree (FM) No. 41/1997 (V. 28.) on Veterinary regulation.

— Common ministerial decree (FVM–EüM) No. 17/1999 (II. 10.) on food hygiene conditions of production and placing on the market of foodstuffs.

— Ministerial decree (MÉM) No. 6/1980 (III. 6.) on hygiene certification of food industrial machines.

— Ministerial Decree (EüM) No. 4/1998 (XI. 11.) on the maximum levels of microbiological contamination in foodstuffs.

— Joint decree (FVM-EüM) No. 2/1999 (II. 10.) on the public health conditions for production and marketing of foodstuffs.

Annex 2: The most important EC laws related to food hygiene and related sub-chapters of the National Program for the Adoption of the *Acquis communautaire*

Sub-chapters of the agricultural National Program for the Adoption of the *Acquis communautaire*	**Main EC rules (as last amended) referred to in the White Paper on Enlargement (where available)**
I Veterinary issues (control of animal diseases, veterinary control system of third-country-consignments, food hygiene, animal welfare, animal protection, animal feedingstuffs, veterinary medicinal products, Maximum Residue Limit (MRL), control of animal products)	Trade of live animals, semen, eggs and embryos (Directive 64/432/EEC, Directive 91/68/EEC, Directive 90/426/EEC, Directive 90/539/EEC, Directive 91/67/EEC, Directive 89/556/EEC, Directive 88/407/EEC, Directive 90/429/EEC, Directive 92/65/EEC) Trade of animal products (Directive 72/461/EEC, Directive 91/494/EEC, Directive 91/495/EEC, Directive 92/457EEC, Directive 80/215/EEC, Directive 92/46/EEC, Directive 92/118/EEC) Control measures (Directive 85/511/EEC, Directive 90/423/EEC, Directive 80/217/EEC, Directive 92/35/EEC, Directive 92/40/EEC, Directive 92/66/EEC, Directive 93/53/EEC, Directive 92/119/EEC, 82/894/EEC) Marketing of animal products (Directive 64/433/EEC, Directive 91/498/EEC, Directive 71/118/EEC, Directive 77/99/EEC, Directive 92/120/EEC, Directive 88/657/EEC, Directive 94/65/EEC, Directive 89/437/EEC, Directive 91/493/EEC, Directive 92/48/EEC, Directive 91/492/EEC, Directive 92/46/EEC, 91/495/EEC, Directive 92/45/EEC, Directive 92/118/EEC Arrangements covering more than one sector (Directive 81/602/EEC, Directive 88/146/EEC, Decision 92/218/EEC, Directive 86/469/EEC, 92/117/EGK, Directive 90/167/EEC, Directive 90/667/EEC) Import of live animals and animal products originating in third countries (Directive 72/462/EEC, Directive 90/426/EEC, Directive 90/539/EEC, Directive 92/65/EEC, Directive 89/556/EEC, Directive 88/407/EEC, Directive 90/429/EEC, Directive 71/118/EEC, Directive 91/493/EEC, Directive 92/46/EEC, Directive 91/492/EEC, Directive 92/118/EEC, Directive 77/96/EEC) Control and protection system (Directive 92/102/EEC, Directive 90/425/EEC, Directive 89/662/EEC, 89/608/EEC, 91/496/EEC, Directive 90/675/EEC, Decision 92/438/EEC, Directive 85/73/EEC) Breeding animals and pedigree animals (Directive 77/504/EEC, Directive 89/661/EEC, Directive 89/361/EEEC, Directive 90/427/EEC, Directive 90/428/EEC, Directive 91/174/EEC, Directive 94/28/EEC) Protection of animals (Directive 91/628/EEC, Decision 88/306/EEC, Decision 78/923/EEC, Directive 88/166/EEC, Directive 91/629/EEC, Directive 91/630/EEC,

II Phytosanitary issues (control of harmful organisms, pesticides, seeds and seedlings)	1. Seeds and seedlings (Directive 66/400/EEC, Directive 66/401/EEC Directive 66/402/EEC, Directive 66/403/EEC, Directive 69/208/EEC, Directive 70/457/EEC, Directive 70/458/EEC, Directive 68/193/EEC, Directive 91/682/EEC, Directive 92/33/EEC, Directive 92/34/EEC, Directive 75/502/EEC, Decision 80/755/EEC, Decision 81/675/EEC, Directive 86/109/EEC, Directive 91/376/EEC, Decision 87/309/EEC, Directive 89/14/EEC, Decision 89/374/EEC, Decision 89/540/EEC, Decision 90/639/EEC, Directive 93/17/EEEC, Decision 92/231/EEC, Decision 93/213/EEC, Decision 94/650/EEC, Directive 93/48/EEC, Directive 93/49/EEC, Directive 93/61/EEC, Directive 93/62/EEC, Directive 93/63/EEC, Directive 93/64/EEC, Directive 93/78/EEC, Directive 93/79/EEC) 2. Plants and plant products (Directive 77/93/EEC*, Directive 93/85/EEC, Directive 69/464/EEC, Directive 69/465/EEC, Directive 92/70/EEC, Directive 92/76/EEC, Directive 92/90/EEC, Directive 92/105/EEC, Directive 93/50/EEC, 93/51/EEC, Directive 93/106/EEC, Directive 94/3/EEC) Plant protection products (Directive 91/414/EEC, Directive 79/117/EEC) Pesticide residues (Directive 76/895/EEC, 86/362/EEC, 86/363/EEC, 90/642/EEC) Plant variety rights (Regulation 2100/94/EC
III Quality assurance of the agricultural and food products - concentrating on food safety	Foodstuffs (Directive 93/43/EEC)
IX Food industry	Foodstuffs (Foodstuffs (Directive 79/112/EEC, Directive 89/396/EEC, Directive 90/496/EEC, Directive 89/107/EEC, Directive 94/35/EEC, Directive 94/36/EEC, Directive 95/2/EEC, Directive 88/388/EEC, Directive 89/109/EEC, Directive 90/128/EEC, Directive 84/500/EEC, Directive 89/397/EEC, Regulation 315/93, Regulation 3954/87, Directive 88/344/EEC, Directive 83/463/EEC, Directive 87/250/EEC, Directive 81/712/EEC, Directive 65/66/EEC, Directive 78/664/EEC, Directive 78/663/EEC, Directive 80/590/EEC, Directive 78/142/EEC, Directive 80/776/EEC, Directive 81/432/EEC, Directive 82/771/EEC, Directive 85/572/EEC, Directive 93/10/EEC, Directive 93/11/EEC, Directive 85/591/EEC, Directive 89/108/EEC, Directive 76/621/EEC, Directive 80/891/EEC, Directive 73/241/EEC, Directive 73/437/EEC, Directive 79/796/EEC, Directive 74/409/EEC, Directive 93/77/EEC, Directive 93/45/EEC, Directive 79/693/EEC, Directive 76/118/EEC, Directive 79/1067/EEC, Directive 87/524/EEC, Directive 83/417/EEC, Directive 85/503/EEC, Directive 86/424/EEC, Directive 80/777/EEC, Directive 80/778/EEC, Directive 77/436/EEC, Directive 79/1066/EEC)

XVII	Beef, sheep and goat meat - concentrating on registration of bovine animals and beef labelling	Beef, veal, sheepmeat and goatmeat (Regulation 1208/81/EEC, Regulation 1186/90/EEEC, Regulation 338/91/EEC, Regulation 3013/89/EEC, Regulation 1186/90/EEC)
XVIII	Milk and dairy products - concentrating on milk hygiene standards	Directive 92/46/EEC

Remark: **replaced by Directive 2000/29/EEC.
Source: National Program for Adoption of the acquis (NPAA).

Annex 3: Leading milk processing company groups in Hungary

Company/group	**Ownership capital (million HUF/ million EURO)**	**Majority owner (%)**	**Main products produced**
Nutricia-Group	2500/9.61	Numico N.V. (Nutricia) The Netherlands 97	Full scale of dairy products. Strategic dairy products are fresh milk, UHT milk, butter, Túró Rudi (a fresh cheese dessert), condensed milk and milk powder (market leader from both), Hajdú hard cheese (for export to the Middle East), protein concentrate (for export to Japan). Also important: flavoured milk drinks, fermented products, sour cream, curd.
Gala Hungaria Group	2300/8.846	Gala Itali SpA Italy over 75	Almost full range of dairy products. Strategic products are fresh milk, UHT milk, kefir, sour cream, double cream cheese – for export to the Middle East, Trappista: a semi hard cheese.
MiZo-Baranyatej Rt.	2800/10.77	Banks etc.; in liquidation	Full range of dairy products. Strategic products are Trappista: a semi-hard cheese, processed cheese, protein concentrate (for export).
Danone kft.	2700/10.38	Compagnie Gervais-Danone France 100	A relatively narrow product scale, including almost exclusively high value added products: fruit yoghurts, kefir, sour cream, desserts – Túró Rudi, Petit Danone, puddings.
Parmalat-Group	1700/6.54	Parmalat SpA Italy 99	Broad product scale but without cheeses; also fruit juices with milk; and ice tea. Strategic products are: fresh milk, UHT-milk (market leader), butter spread/butter crème, curd desserts.
Bongrain-Group	4200/16.15	Bongrain S.A. France Over 75 in Veszprémtej 100 in Pannontej	Broad product range, dominated by cheeses : Emmenthaler-type hard cheese, Camembert and Brie type mould cheeses. Strategic products: semi-hard Trappist cheese, hard cheese, Camembert and Brie cheeses, processed cheese.

Source: INSTITUTE FOR AGRICULTURAL ECONOMICS (AKII).

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