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AGRICULTURE AND RURAL DEVELOPMENT**

**Study on mandatory origin labelling for milk,
milk used as an ingredient in dairy products,
and unprocessed meat other than beef, pig,
poultry, and sheep and goat meat**

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Study Report

Part A – Milk and milk used as an ingredient in dairy products

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ABBREVIATIONS

CA	Competent authorities
(M)COOL	(Mandatory) Country of Origin Labelling
CRPA	Centro Ricerche Produzioni Animali
DG	Directorate General
DG AGRI	Directorate General for Agriculture and Rural Development
DG SANCO	Directorate General for Health and Consumers
DLO	Stichting Dienst Landbouwkundig Onderzoek (DLO foundation)
EC	European Commission
EU	European Union
FIC	Food Information to Consumers
GI	Geographical indication
IDELE	Institut de l' Elevage
IERIGZ	Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej
ITAVI	Institut Technique de l'Aviculture
LEI	Stichting Dienst Landbouwkundig Onderzoek (DLO foundation), Research Institute LEI (Agricultural Economics Research Institute)
MCM	Multi-Criteria Mapping
MS	Member State
PDO	Protected Designation of Origin
PGI	Protected Geographical Indication
RFID	Radio frequency identification
SME	Small or medium-sized enterprise
SMP	Skimmed Milk Powder
TC-ASCR	Technology Center Academy of Sciences of Czech Republic
TSG	Traditional Speciality Guaranteed
WP	Work Package
WTP	Willingness to pay
WUR	Wageningen University and Research Centre

DEFINITIONS

Composite products: The term 'milk' and the designations used for milk products may also be used in association with a word or words to designate composite products of which no part takes or is intended to take the place of any milk constituent and of which milk or a milk product is an essential part either in terms of quantity or for characterisation of the product. See Regulation (EU) No 1308/2013, Annex VII, Part III, 3.

Country of origin is defined under Regulation (EU) No 1169/2011, which makes reference to Council Regulation (EEC) No 2913/1992 establishing the Community Customs Code. Goods originating in a country shall be those wholly obtained or produced in that country. However, goods whose production involved more than one country shall be deemed to originate in the country where they underwent their last, substantial, economically justified processing or working in an undertaking equipped for that purpose and resulting in the manufacture of a new product or representing an important stage of manufacture.

Dairy products is a term used in Regulation (EU) No 1308/2013, Annex VII, Part III, 6 to include milk, milk products and composite products by specifying that no other products may be marketed as dairy products.

Milk means exclusively the normal mammary secretion obtained from one or more milkings without either addition thereto or extraction therefrom and coincides with what is normally called "raw milk". See for full details Regulation (EU) No 1308/2013, Annex VII, Part III, 1.

Milk products means products derived exclusively from milk, on the understanding that substances necessary for their manufacture may be added provided that those substances are not used for the purpose of replacing, in whole or in part, any milk constituent. It includes milk products such as whey, cream, butter, buttermilk, butter oil, caseins, anhydrous milk fat (AMF), cheese, yogurt, kephir, and others. See for full details Regulation (EU) No 1308/2013, Annex VII, Part III, 2.

Place of provenance is defined in Regulation (EU) No 1169/2011 on the provision of food information to consumers as any place where a food is indicated to come from, and that is not the 'country of origin'.

Pre-packed food is defined in Regulation (EU) No 1169/2011 as any single item of presentation as such to the final consumer and to mass caterers, consisting of a food and the packaging into which it was put before being offered for sale, whether such packaging encloses the food completely or partially, but in any event in such a way that the contents cannot be altered without opening or changing the packaging. It does not cover foods packed on the sales premises at the consumer's request or pre-packed for direct sale.

Traceability is defined in Regulation (EC) No 178/2002 as the ability to trace and follow a food, feed, food-producing animal or substance intended to be, or expected to be incorporated into a food or feed, through all stages of production, processing and distribution. Food or feed which is placed on the market or is likely to be placed on the market in the Community shall be adequately labelled or identified to facilitate its traceability, through relevant documentation or information in accordance with the relevant requirements of more specific provisions.

EU quality schemes for agricultural products and foodstuffs

The EU quality schemes, Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Speciality Guaranteed (TSG) identify products and foodstuffs farmed and produced to exacting quality standards.

PDO and PGI schemes are linked to specific geographical areas. They are quality indicators.

Regulation (EU) No 1151/2012 describes a scheme for protected designations of origin and protected geographical indications of products linked to a geographical area by particular quality or other value-adding characteristics or attributes. The schemes help consumers by providing information concerning the specific character of the products.

The TSG scheme is based on the specific and traditional character of a product and does not certify that the protected food product has a link to a specific geographical area.

Regulation (EU) No 1169/2011, Article 26 on country of origin or place of provenance applies without prejudice to labelling requirements for PDO, PGI and TSG schemes.

1 INTRODUCTION TO THE STUDY

1.1 Background

The preamble to Regulation (EU) No 1169/2011 on the provision of food information to consumers (the FIC Regulation) explains that mandatory origin provisions have been developed for some foods including honey, fruit and vegetables, fish, beef and beef products, and olive oil. More recently pig, poultry, sheep and goat meat have been added.

The FIC Regulation identifies the need to explore the possibility to extend mandatory origin labelling for selected foodstuff categories. Article 26 paragraph 5 of the Regulation requires the European Commission to submit reports by 13 December 2014 to the European Parliament and Council regarding the mandatory indication of country of origin or place of provenance for:

- types of meat other than beef, poultry, pig, and sheep and goat meat;
- milk;
- milk used as an ingredient in dairy products;
- unprocessed foods;
- single ingredient products;
- ingredients that represent more than 50% of a food.

Article 26 paragraph 7 of the Regulation requires that the Commission reports referred to in paragraph 5 shall take into account:

- the need for the consumer to be informed;
- the feasibility of providing the mandatory indication of the country of origin or place of provenance, and;
- an analysis of the costs and benefits of the introduction of such measures, including the legal impact on the internal market and the impact on international trade.

The Commission may accompany these reports with proposals to modify the relevant Union provisions.

This study concerns the first three categories of food listed above: milk¹, milk used as an ingredient in dairy products² and meat other than beef, poultry, pig and sheep and goat meat ('minor meats'). It was commissioned to inform the Commission regarding the mandatory indication of the country of origin or place of provenance for those products.

The aim was to provide information on two elements:

1. An assessment of the need to inform the consumer regarding the origin of food;
2. An examination of the feasibility of providing mandatory indication of country of origin or place of provenance for each of the above categories with an analysis of the costs and benefits of introducing such measures including the impact on the internal market and on international trade. With respect to feasibility the link to existing traceability systems was taken into account.

¹ Milk as defined in Regulation (EU) No 1308/2013, Annex VII, Part III, 1

² See sub-section 2.2.3 for an explanation of the term dairy products

The impact of possible origin labelling was assessed for each category in terms of: consumer behaviour; the economic effects on the food supply chain; the competitiveness of enterprises; the effects on internal trade and trade with third countries, and; the administrative burden on economic operators and national authorities.

The results of the study are presented in two parts:

Part A – Milk and milk used as an ingredient in dairy products

Part B – Minor meats

Part A is presented in this report.

1.2 Dairy products within the scope of the study - Regulation (EU) No 1308/2013

All dairy products are considered within the scope of the study, including those listed in the EU product quality schemes PDO (Protected Designation of Origin) and PGI (Protected Geographical Indication).

However, there is not a specific definition of dairy products in EU legislation: it is a collective term used in Regulation (EU) No 1308/2013, Annex VII, Part III, 6 to describe milk, milk products and composite products.

Regulation (EC) No 853/2004 laying down specific hygiene rules for food of animal origin defines dairy products as 'processed products resulting from the processing of raw milk or from the further processing of such processed products'.

The definitions of milk, milk products and composite products and the meaning of dairy products in Regulation (EU) No 1308/2013, Annex VII, Part III are summarised in the Table 1 and explained below:

Table 1. Definition of dairy products based on Regulation (EU) No 1308/2013, Annex VII, Part III

Regulation (EU) 1308/2013	Definition	Dairy product (Annex VII, III, 6)
Annex VII, III 1	Milk	Yes
Annex VII, III 2	Milk products	Yes
Annex VII, III 3	Composite products	Yes

Annex VII, III 1 defines milk:

The term 'milk' means exclusively the normal mammary secretion obtained from one or more milkings without either addition thereto or extraction therefrom.

However, the term 'milk' may be used:

(a) for milk treated without altering its composition or for milk, the fat content of which is standardised under Part IV;

(b) in association with a word or words to designate the type, grade, origin and/or intended use of such milk or to describe the physical treatment or the modification in composition to which it has been subjected, provided that the modification is restricted to an addition and/or withdrawal of natural milk constituents.

Annex VII, III 2 defines milk products:

For the purposes of this Part, 'milk products' means products derived exclusively from milk, on the understanding that substances necessary for their manufacture may be added provided that those substances are not used for the purpose of replacing, in whole or in part, any milk constituent.

The following shall be reserved exclusively for milk products.

(a) the following names used at all stages of marketing:

- (i) whey,*
- (ii) cream,*
- (iii) butter,*
- (iv) buttermilk,*
- (v) butteroil,*
- (vi) caseins,*
- (vii) anhydrous milk fat (AMF),*
- (viii) cheese,*
- (ix) yogurt,*
- (x) kephir,*
- (xi) koumiss,*
- (xii) viili/fil,*
- (xiii) smetana,*
- (xiv) fil;*
- (xv) rjaženka,*
- (xvi) rūgušpiens;*

(b) names within the meaning of Article 5 of Directive 2000/13/EC or Article 17 of Regulation (EU) No 1169/2011 actually used for milk products.

Annex VII, III 3 defines composite products:

The term 'milk' and the designations used for milk products may also be used in association with a word or words to designate composite products of which no part takes or is intended to take the place of any milk constituent and of which milk or a milk product is an essential part either in terms of quantity or for characterisation of the product.

Annex VII, III 6 explains that products other than those defined in Annex VII Part III (milk, milk products and composite products) may not be marketed as dairy products:

In respect of a product other than those described in points 1, 2 and 3 of this Part, no label, commercial document, publicity material or any form of advertising as defined in Article 2 of Council Directive 2006/114/EC (1) or any form of presentation may be used which claims, implies or suggests that the product is a dairy product.

However, in respect of a product which contains milk or milk products, the designation 'milk' or the designations referred to in the second subparagraph of points 2 of this Part may be used only to describe the basic raw materials and to list the ingredients in accordance with Directive 2000/13/EC or Regulation (EU) No 1169/2011.

2 OVERVIEW OF DAIRY SUPPLY CHAIN

2.1 Background

The study involves a detailed investigation of dairy supply chains in nine Member States:

1. Czech Republic (CZ)
2. France (FR)
3. Germany (DE)
4. Italy (IT)
5. Netherlands (NL)
6. Poland (PL)
7. Romania (RO)
8. Spain (ES)
9. United Kingdom (UK)

2.2 EU milk production

The EU has a dairy cow population of around 23 million animals. Milk collection from dairy cow farms in 2012 and 2013 was approximately 140.1 and 141.3 million tonnes respectively. Milk collection from other animals is about 3 million tonnes; representing about 2% of total milk collection.

Taking into account on-farm utilisation, milk production and deliveries is summarised in the table below:

Table 2. EU milk supply and utilisation, 2012 – 2013

EU milk supply and utilisation, 2012 - 2013		
	2012	2013e
Dairy cows (million)	23.1	23.3
Milk yield (kg/dairy cow/year)	6 451	6 438
Milk production (million tonnes)	152.2	153.2
On farm use and direct sales (million tonnes)	6.6	6.4
Delivered to dairies (million tonnes)	140.1	141.3
Delivery ratio (%)	92.0	92.2

e = estimated

Source: Short Term Outlook for arable crops, meats and dairy - Summer 2014, DG AGRI

Milk collection by Member State for cows' milk is shown in Table 3, followed by milk collection for other species in Table 4:

Table 3. EU cows' milk collection by Member State, 2011 – 2013

EU cows' milk collection by Member State, 2011-2013			
Eurostat code MC001	2011	2012	2013
1 000 tonnes			
EU-28	139 634	140 050	-
AT	2 896	2 964	2 933
BE	3 101	3 072	3 474
BG	549	514	511
CY	153	154	157
CZ	2 366	2 429	2 358
DE	29 764	29 703	30 301
DK	4 800	4 927	5 026
EE	642	665	706
EL	639	637	-
ES	5 838	6 089	5 939
FI	2 255	2 254	2 287
FR	24 698	24 246	23 937
HR	626	602	504
HU	1 308	1 398	1 364
IE	5 536	5 379	5 581
IT	10 480	10 500	10 397
LT	1 317	1 360	1 339
LU	281	278	287
LV	662	718	736
MT	40 e	40 e	41 e
NL	11 642	11 675	-
PL	9 309	9 858	9 922
PT	1 842	1 861	1 777
RO	897	888	882
SE	2 850	2 861	2 870
SI	526	535	517
SK	812	851	827
UK	13 805	13 591	13 687

- : not available

Source: DG AGRI European Milk Market Observatory

based on Eurostat NewCronos (apro_mk_pobta and apro_mk_farm)

The nine case study countries (highlighted in the above table) account for 78% of dairy cow milk collection. Germany, France and UK alone account for almost half (48% - 49%) of total dairy cow milk collection.

Almost 97% of milk produced on EU farms is from cows. However milk from other species (sheep, goats and buffaloes) is important for some Member States particularly Bulgaria, Cyprus, Greece, Spain, France and Italy.

Table 4. Milk collection from sheep, goats and buffaloes, 2011 - 2013

	Milk collection from other species, 2011-2013 (1 000 tonnes)								
	Ewes MC002			Goats MC003			Buffaloes MC004		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
EU-28	1 669	1 633	1 112	1 278	1 257	887	196	196	199
AT	4	5	5	12	13	12			
BE				9	10	9			
BG	23	25	25	5	7	7	2	2	3
CY	19	18	16	21	20	18			
CZ									
DE					13	13			
DK									
EE									
EL	519	496		133	115				
ES	369	364	368	316	302	295	0		
FI									
FR	272	270	263	547	514	479			
HR	3	3	3	4	4	4			
HU	1	1		0					
IE									
IT	419	406	384	24	28	27	193	192	195
LT									
LU									
LV									
MT									
NL				190	213				
PL				1	1	2			
PT	22	24	25	13	13	13			
RO	14	16	18	3	5	7	1	1	1
SE									
SI									
SK	5	5	6						
UK									

Source: DG AGRI European Milk Market Observatory based on Eurostat NewCronos (apro_mk_pobta and apro_mk_farm)

Utilisation of whole milk at EU level is shown in Table 5 below. Note that the milk used to produce butter also produced associated skimmed milk and buttermilk:

Table 5. EU percentage utilisation of whole milk, 2012

Utilisation of milk collected in the EU-28, 2012	
	Utilisation of whole milk %
Drinking milk	12.6%
Cheese	36.2%
Butter	27.6%
Cream for direct consumption	11.9%
Milk powder	3.1%
Other fresh products	5.9%
Other manufactured products	2.7%
Total	100%

Source: Eurostat Pocketbooks, Agriculture, forestry and fishery statistics, 2013
(Eurostat online data code: apro_mk_pobta)

2.3 Dairy farms

The following table shows dairy cow farm statistics for EU Member States with the nine case study countries highlighted:

Table 6. Structure of dairy farming in EU Member States

	Number of dairy cows (1) (1000)		Milk production per cow (2) (kg/year)	MS milk production (3) (1 000 tonnes)	MS milk deliveries (4) (1 000 tonnes)	On-farm utilisation/ direct sales (1 000 tonnes) %	
	2 012	2013e	2 012	2 012	2 012	2 012	2 012
EU-28	23 065	23 263	6 451	148 801	140 050	8 751	5.9%
AT	523	530	6 462	3 382	2 964	418	12.4%
BE	504	516	6 188	3 116	3 072	44	1.4%
BG	294	313	3 712	1 093	514	579	53.0%
CY	24	25	6 353	154	154	0	0.2%
CZ	367	375	6 617	2 429	2 429	0	0.0%
DE	4 190	4 268	7 319	30 672	29 703	969	3.2%
DK	579	567	8 647	5 006	4 927	80	1.6%
EE	97	98	7 445	721	665	56	7.7%
EL	132	137	5 799	766	637	128	16.7%
ES	851 e	851 e	7 638	6 502	6 089	413	6.4%
FI	280	282	8 206	2 297	2 254	43	1.9%
FR	3 644	3 697	6 779	24 703	24 246	456	1.8%
HR	181	168 e	3 641	659	602	57	8.6%
HU	255	244	7 109	1 813	1 398	415	22.9%
IE	1 060	1 082	5 092	5 399	5 379	20	0.4%
IT	1 857 e	1 862 e	6 193	11 500	10 500	1 000	8.7%
LT	331	316	5 361	1 775	1 360	415	23.4%
LU	45	48	6 431	289	278	12	4.1%
LV	165	165	5 290	871	718	152	17.5%
MT	6	6	6 315	40 e	40 e	0	0.0%
NL	1 541	1 597	7 710	11 881	11 675	206	1.7%
PL	2 346	2 299	4 208	9 872	9 858	14	0.1%
PT	237	231	7 374	1 744	1 861	-117	-6.7%
RO	1 163	1 169	3 338	3 881	888	2 993	77.1%
SE	346	346	8 281	2 861	2 861	0	0.0%
SI	111	110	5 351	594	535	59	9.9%
SK	150	145	6 227	933	851	81	8.7%
UK	1 786	1 817	7 754	13 849	13 591	258	1.9%

e = estimate

(1) Source: DG AGRI based on Eurostat December livestock survey, ISTAT and SITRAN [apro_mt_lscatl]

(2) Source: DG AGRI

(3) Source: DG AGRI based on Eurostat annual milk collection (all milks) and dairy products obtained statistics [apro_mk_farm]

(4) Source: DG AGRI based on Eurostat annual milk production statistics [apro_mk_pobta]

Of the case study countries, Poland and Romania are characterised by a large number of small farms, which are also associated with low productivity per cow.

Romania has a large number of subsistence or semi-subsistence farms and only 23% of total milk production is delivered to dairy factories whilst 77% is used on farm or sold directly from the farm.

Milk production in Romania is affected by small herd size (59% of herds have 1-2 cows) and the lowest milk yields per cow in the European Union (see Table 6 above). The milk sector is characterised by a low level of integration and excessive fragmentation of supply. Farmers suffer from lack of market information and low bargaining power, and have a low incentive to deliver their milk to processors.³

Germany has the most dairy cows and produces the most milk, followed by France.

³ Grodea, M., 2013, Productivity gaps along the milk chain in Romania – comparisons with the EU-27 Member States. MPRA Munich Personal RePEc Archive. <http://mpra.ub.uni-muenchen.de/53458/>

2.4 Dairy processors by size

Dairy enterprises have been categorised by size, as shown in the following table:

Table 7. Processing enterprises in case study Member States

Processing Enterprises				
2012	% of total raw milk	Number of enterprises	Number of factories/plants	Average volume/factory (x 1000 Tonnes)
Large enterprises > 100 000 tonnes				
Czech Republic	71%	7	14	103
France	74%	49		377
Germany	91%	84		322
Italy (> 50 000)	28%	20		151
Netherlands	99%	11	39	282
Poland	56%	21	126	253
Romania				
Spain	66%	19		254
United Kingdom	94%	6		905
Medium enterprises, 5 000 - 100 000 tonnes				
Czech Republic	37%	21	21	28
France	23%	188		25
Germany	9%	62		43
Italy (5 000 - 50 000)	55%	309		19
Netherlands	1%	10	12	5
Poland	39%	118	118	31
Romania				
Spain	28%	87		24
United Kingdom	5%	7		46
Small enterprises < 5 000 tonnes				
Czech Republic	1.0%	n.a.		0.7
France	3.0%	246		2.0
Germany	0.2%	26		2.3
Italy	17%	1 011		1.8
Netherlands	0.2%	18	18	1.2
Poland	5.0%	66	66	3.3
Romania				
Spain	6%	582		0.7
United Kingdom	0.3%	8		2.4

Source: Study data collected from individual country reports

As explained above, it is estimated that less than a quarter of total milk production in Romania is sold to milk factories and statistics are not available on the structure of the enterprises.

2.5 Structure of ownership of dairies

Table 8. Structure of the dairy industry in case study Member States

Member State	Structure of the industry
Czech Republic	<p>The five largest companies accounted for 50% of the sector revenue in 2010. These five largest companies include two domestically owned and three foreign companies. There were seven companies having at least 5% share on the sector revenue – they all have a processing capacity over 100 000 t of raw milk and represented 63% of the dairy product sales in 2010.</p> <p>These figures indicate a fairly high concentration of dairy production in the Czech Republic. However, comparing to the other EU countries the Czech dairy processors are rather small; e.g. Dutch and German companies are on average 3 and 4 times bigger, respectively (Boskova, Ratinger, 2013)⁴.</p> <p>Concerning farmers' milk marketing cooperatives (MMC), they are organised in a two-level structure in the Czech Republic. At the bottom level, there are organisations unifying the primary agricultural producers. At the top level, there is a cooperative, associating several primary level cooperatives. The MMCs vary in size, their functions are however similar – strengthening bargaining power of dairy farmers. Currently, no MMC engages in processing. The top 5 MMCs account for almost 60% of the total MMCs' milk supply. The MMCs supply about 29% of the raw milk processed in the top five Czech dairies; Some of them sell raw milk to German dairies in addition (Ratinger, Boskova, 2013).</p>
France	<p>About ten dairy corporate groups, private companies and cooperatives collect and process almost three quarters of the French milk output:</p> <ul style="list-style-type: none"> - Private corporate groups are very internationalised (Lactalis, Danone, Bel, Bongrain and Senoble), dynamic and aggressive in their fields of activity. They create added value thanks mainly to a wide portfolio of brands. These groups focus on consumer products (such as fresh dairy products, cheese) rather than on dairy powders or the ingredients market. - Larger cooperatives resulting from mergers of smaller ones, which operate on a regional or national scale (Sodiaal, Laïta, Agrial, Eurial, Terra Lacta, Ermitage). They have to balance economic rigour with the obligation to collect all the milk from their members. The share of dairy ingredients and powders in their production is more important than for private companies. <p>In addition, there are numerous small and medium enterprises, collecting less than 100 000 tonnes of milk each year. These companies are more specialised and they process differentiated products sold on regional or niche markets. Their dairy supply is often local and they have a stronger relationship with their milk producers.</p> <p>In France, milk collection is divided almost equally between private firms and cooperatives: 54% of milk deliveries are collected by 260 cooperatives. Their share of national production is 66% for consumption milk, 53% for milk powder, 51% for butter and 44% for cheese.</p>

⁴ Boskova, I., Ratinger, T, (2013) Structure, Innovations and Performance of the Czech Dairy Value Chain. A paper to be presented at 140th EAAE Seminar Theories and Empirical Applications on Policy and Governance of Agri-food Value Chains, Perugia, Italy, 12 – 13 December 2013

<p>Germany</p>	<p>In Germany, the dairy industry is dominated by cooperatives. According to a study of the Bundeskartellamt (2009)⁵ more than two third of German milk production is delivered and processed by cooperative dairies. In terms of turnover by far the largest dairy cooperative in Germany is the Deutsches Milchkontor (DMK) followed by the private company Theo Müller. With respect to numbers, cooperatives and private industries are equally distributed among the top ten dairies: in 2013, there were five cooperatives and five private firms in the top ten. In terms of processed milk quantities, the three German largest dairies are DMK (6.9 billion kg), Arla Foods (2.5 billion kg) and Hochwald Foods (2.0 billion kg).</p> <p>The cooperatives are owned by farmers, so, in principle, their added value generated will be transferred to owners. However, like other firms, cooperatives have to accumulate reserve funds as well as provisions and contingencies. Cooperatives issue contracts for delivery of the milk, they pay a fixed milk price in advance. Afterwards the dairy farmers get an additional payment if cooperatives had made a profit.</p>
<p>Italy</p>	<p>The Italian dairy industry is a mix of private companies and cooperatives, some of them are multinational, some are national and the majority are local.</p> <p>The largest milk processor is the French company Lactalis with a share of 6.2% of the national milk production. The second national player is the cooperative Granlatte representing 3.8% of the milk collection.</p> <p>The top four milk buyers collect 13.4% of the national milk production and the top eight buyers collect 20.3%.</p>
<p>Netherlands</p>	<p>The Dutch dairy industry is dominated by cooperatives. There are five cooperatives: FrieslandCampina, CONO, DOC Cheese, Rouveen and Delta Milk. These cooperatives have a market share of about 86% of the total milk collected, private companies have the other 14%.</p> <p>FrieslandCampina has the biggest market share of about 75% (8.8 billion kg of milk). FrieslandCampina is a cooperative with 14 132 members of which 13 062 in the Netherlands, 1 040 in Germany and 30 in Belgium in 2012 (FC, 2013)⁶.</p> <p>The Dutch cooperatives are based on the principal that farmers are members of the cooperative and have to deliver their milk to the cooperative. In return the cooperative is obliged to collect the milk of the members. The members receive a milk price and in addition, in most cases, a performance payment based on the performance of the cooperative. In return the members (partly) finance the cooperative.</p> <p>The price of milk has increased 11% in 2013 compared to 2010. The milk price at farm gate increased almost 22% in the same period. The industry and retail did not fully pass on the price increase to the consumers. This may be the result of contracts between the industry and retail, but also the international character of the Dutch dairy industry.</p> <p>The dairy industry is active in growing economies such as China, and can add more value in those countries than in the economically struggling Europe. Also the demand for milk on the world market is increasing due to increased prosperity in rising economies. As a result, also because of the cooperative structure of the Dutch dairy</p>

⁵ Bundeskartellamt (2009). Sektoruntersuchung Milch – Zwischenbericht Dezember 2009. B2-19/08. Bonn. http://www.bundeskartellamt.de/wDeutsch/download/pdf/Stellungnahmen/1001_Sektoruntersuchung_Milch_Zwischenbericht_2009.pdf

⁶ FC (2013), Annual report 2012, Amersfoort: FrieslandCampina.

	<p>industry, the industry can pay a higher milk price to the farmers.</p>
<p>Poland</p>	<p>The Polish dairy industry is dominated by dairy cooperatives, with their share in the collected milk accounting for 66% of the total in 2012 (compared with almost 80% in 2000). Two of those (Mlekpól, Mlekovita) are among seven largest Polish enterprises according to both sales value and collected milk volume. They represent 23% of the Polish milk collection (Mlekpól and Mlekovita with the collection of ca. 1 400 thousand tons and 800 thousand tons of raw milk, respectively) and account for ca. 20% of sales value of the sector (over EUR 1.5 billion). Those two cooperatives have a total of 25 thousand suppliers, who are cooperative members, which constitutes ca. 16% of all milk suppliers in the Polish dairy industry.</p> <p>The remaining 19 out of the largest enterprises (collecting over 100 thousand tons of milk per year) collected 3 158 thousand tons of raw milk in 2012, i.e. 166 thousand tons/enterprise. They account for 34% of milk collection, including a 12% share of dairy companies. Three of those enterprises (Danone, Polmlek and Lacpól) are among the seven largest dairy enterprises, with sales value exceeding EUR 300 million per year and milk processing volume of 200–700 thousand tons per enterprise.</p> <p>None of the Polish cooperatives has its branches or members abroad, and they do not collect milk abroad. However, some Polish milk processing plants buy milk from dairy producers in neighbouring Lithuania. Raw milk from Poland is also sold to German milk processing plants situated near the border, mainly by producer groups which collect milk from their members and sell it at much higher prices than if they sold it to local dairy plants.</p>
<p>Romania</p>	<p>The main characteristic of the milk market in Romania is that only 22% of the total milk production is sold to the dairy factories, while 29% is delivered directly on the market. Of the remaining milk production, 39% is represented by on-farm human consumption, and 10% is estimated as milk consumption by calves.</p> <p>In 2012, there were 116 milk processing units approved for intra-community trade that process compliant milk to quality parameters established by the EU hygiene legislation. There were 65 milk processing units that process milk that do not have the quality parameters established by the EU legislation.</p> <p>Non-compliant milk was accepted into milk processing units in Romania by the European Commission as a transitional measure until 31st December 2013, following the negotiations between the National Sanitary-Veterinary and Food Safety Authority (ANSVSA) and the European Commission in 2011.</p> <p>According to Infoaliment, at present the cheese market, estimated at €300 million (cheese and kashkaval) is dominated by multinationals, with Hochland, Bongrain (owner of Delaco) and FrieslandCampina being the greatest players. These add to Covalact, Albalact and Lactalis, as well as the private brands of the large retailer chain stores.</p> <p>In 2012 the top 45 dairy companies had sales accounting for 78% of the dairy market, the value of which is estimated by industry experts at €1 billion. The dairy products market appears to be experiencing dynamic growth. In 2012, the top 45 companies recorded an increase in total sales value by approximately € 31.9 million compared to 2011, with decreasing sales for drinking milk and increasing sales for yogurts.</p> <p>Out of the total value of the dairy market, yogurts continue to be the most dynamic sector. This category has a diversified supply with fierce competition and aggressive sales campaigns. According to monitoring data by Nielsen, the main players on the yogurt market were Danone, Friesland Holding Company, Albalact, Molkerei Alois</p>

	<p>Muller as well as the private mark owners (retailers).</p> <p>The hypermarkets, supermarkets and discount stores account for 77% (in value terms) and 78% (in volume terms) of total sales.</p>
Spain	<p>The Spanish dairy industry is dominated by private companies. The cooperatives have a low market share of about 21% of the total milk processed. Another 40% of the market share is under foreign owned companies, of which the main are Lactalis, Danone, Lactogal, Senoble, Nestle and Mondelez (formerly Kraft Foods).</p> <p>There is a spot market for raw milk, which comprises about 10% of production, of a floating nature and without a stable relationship with the processing industry, that resells the milk in refrigerated tanks according to demand. This situation is caused by the small size of most dairies and by the existence of only a few drying facilities of milk and whey.</p>
UK	<p>The UK dairy industry is dominated by five major enterprises:</p> <ul style="list-style-type: none"> ▪ Arla Foods, a European farmer owned co-operative (www.arlafoods.co.uk) ▪ Dairy Crest, a public UK-based PLC (www.dairycrest.co.uk) ▪ First Milk, a UK-based dairy farming co-operative (www.firstmilk.co.uk) ▪ Müller Wiseman Dairies, a German-based privately owned dairy company (www.muller-wiseman.co.uk) ▪ United Dairy Farmers, a UK-based dairy co-operative (www.utdni.co.uk) <p>These enterprises hold purchase contracts with farmers. However the purchasers do not necessarily process all the milk purchased in their own processing facilities and may sell some of the milk to other organisations for processing.</p> <p>There has been a trend towards large highly efficient processing facilities, particularly in the liquid milk sector. In England and Wales over 90% of liquid milk is processed by six dairy companies,</p> <p>Many UK milk processors are part of internationally-based companies. Compared to continental Europe, the UK has a relatively low level of industry concentration and further mergers and concentration are possible in future.</p> <p>Farm ownership of milk processing capacity is growing. In 2013 over 30% of milk processing was carried out by co-operatives.</p> <p>Several retailers have developed integrated supply arrangements where they obtain their supply of liquid milk exclusively from a specific group of farmers. Farmers generally receive a higher price under these arrangements and are partly protected from fluctuations in commodity prices. As part of the integrated supply arrangements farmers may have to comply with specific requirements, for example on animal welfare or environmental standards, and they may be required to share performance data with the retailer.</p>

Source: Study research

2.6 Labelling schemes in place

A wide range of voluntary labelling schemes are used across the Member States. These include the use of geographical indications, assurance schemes, and private label and brand initiatives.

Table 9. Summary of voluntary labelling in case study Member States

Voluntary labelling schemes in place for origin labelling of dairy products	
Czech Republic	<p>A Czech Product mark can be awarded by the food processors' chamber. Ministry of Agriculture mark for specific regional products. Various regional logos. Some indications refer to the location of the dairy plant but do not always guarantee the origin of the raw materials.</p>
France	<p>Considering the large quantity of consumer-oriented products sold directly in France, most companies have developed a wide range of labels and brands. National brands, generally owned by big groups, are weighing for 50% of the sales in value, retailer's brands for 40% and other brands for the remainder. Approximately 13% of total milk deliveries are processed into high-end products, including 10% sold under Geographical Indications (GIs), 2% under organic standards and 1% under the "Mountain" (in French "Montagne") appellation. Other private labelling initiatives, at the national to regional level, have recently appeared in France. These initiatives communicate on the "locally-produced" characteristics of the milk and on the resulting social and economic benefits.</p>
Germany	<p>Brands with geographical indication, private label initiatives (Regionalfenster), PDO/PGI.</p>
Italy	<p>Main emphasis on EU geographical indications, particularly PDO, which focus on characteristics of a product linked to a particular area.</p>
Netherlands	<p>Milk with the 'weidemelk' logo is guaranteed as coming from Dutch farms that have their cows outside in the meadow. Dairy products from small processors often emphasise the regional character of a product.</p>
Poland	<p>Voluntary origin labelling for niche dairy products, particularly regional and traditional products with a special character. 71 regional dairy products have been registered including 66 types of cheese (of which 20 are types of goat cheese) and two types of milk with specific regional characteristics.</p>
Romania	<p>Romania, Cyprus and Malta were found to have a very limited number of food labelling schemes⁷.</p>
Spain	<p>Programme for Sustainable Dairy Products to promote high nutritional value and quality using milk from Spanish farmers.</p>
United Kingdom	<p>Voluntary code of practice⁸ for dairy products including country of origin labelling for liquid milk and country of origin or place of manufacture labelling for cheese. Where the milk is sourced from multiple countries this is made clear either by naming the countries (e.g. produced in the UK with milk from Belgium and France), stating "product of multiple countries", defining a geographical area (e.g. product of the EU) or by stating that the origin of the primary ingredients is different from the origin of the product e.g. "Produced in the UK from imported milk." There is additional advice on information that is not considered to be an origin indication. Evaporated and condensed milk as well as processed cheese and cheese used as an ingredient are not included in the voluntary code.</p>

⁷ Consumer market Study on the functioning of voluntary food labelling schemes for consumers in the European Union, Final report by the Ipsos and London Economics Consortium, December 2013

⁸ http://www.brc.org.uk/brc_news_detail.asp?id=1842

	<p>At least seven major retailers have agreed to adopt the voluntary code on their products. A greater proportion of own label products follow the voluntary code than branded products.</p> <p>A survey in 2011⁹ found 67% of dairy products (milk, cream, butter, cheese) followed the voluntary code. Recommendations have been made on improving the clarity of statements for liquid milk.</p>
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2.7 Main dairy products

Dairy products obtained from milk in the EU in 2012 and 2013 are shown in the following table:

⁹ 2011 Comparative Study to the National Country of Origin Labelling Evaluation 2011, Camden Technology Limited.

Table 10. EU dairy production by product, 2012 - 2013

EU dairy production by product, 2012 - 2013 (1 000 tonnes)												
	Drinking milk		Cream for direct consumption		Butter (1)(2)		Milk powder		Cheese (3)		Whey (1)	
Code (4)	MC110		MC130		MC230		MC220		MC240		MC270 (5)	
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
EU- 28	31 728	:	2 506	:	2 134	:	2 013	:	9 253	:	43 227	:
AT	770	788	63	70	34	:	5	5	160	158	1 150	1 187
BE	706	747	176	198	74	:	162	165	78	79	997	903
BG	72	71	2	2	1	:	:	:	69	68	383	354
CY	71	71	4	4	0	:	:	:	19	20	33	42
CZ	609	620	47	47	27	29	30	31	112	118	921	1 131
DE	5 251	5 132	542	550	490	:	503	530	2 161	2 182	12 289	12 955
DK	493	492	65	56	128	:	145	138	300	325	2 031	2 203
EE	86	88	27	32	4	:	5	2	43	44	65	99
EL	488	:	14	:	1	:	:	:	195	:	:	:
ES	3 485	3 590	153	125	37	:	21	24	316	:	1 473	1 499
FI	736	735	64	65	52	:	27	:	102	102	861	839
FR	3 606	3 620	412	415	417	:	403	367	1 929	1 931	635	630
HR	311	294	27	27	5	:	:	:	32	33	36	48
HU	394	399	5	5	9	:	:	:	73	68	338	309
IE (6)	502	494	21	23	145	:	78	98	185	183	172	:
IT	2 620	2 563	118	118	101	:	:	:	1 204	1 158	4 000	4 026
LT	92	96	3	8	12	:	21	23	112	113	1 008	962
LU	:	:	:	:	:	:	:	:	:	:	:	:
LV	66	61	36	36	6	:	:	:	31	33	185	142
MT	:	:	:	:	:	:	:	:	:	:	:	:
NL	524	:	9	:	195	:	287	:	764	:	7 021	:
PL	1 511	1 616	244	245	165	:	140	137	721	732	4 785	6 857
PT	859	834	18	19	28	:	17	15	72	70	96	112
RO	208	219	48	54	9	:	2	2	67	70	22	25
SE	867	864	113	104	37	:	68	80	101	89	1 008	926
SI	152	153	13	13	3	:	:	:	18	16	77	57
SK	317	320	32	32	9	9	4	5	32	33	242	229
UK	6 932	6 981	250	304	145	:	95	116	357	349	3 399	3 235

Table Codes
(1) EU-28: sum of available data for EU Member States
(2) Includes other yellow fat dairy products
(3) All species. Excluding processed cheese (code 250)
(4) Eurostat product code
(5) Liquid whey
(6) Ireland whey figure from Eurostat codes MC271 + MC273; and cheese figure from MC241
<i>Source: DG AGRI European Milk Market Observatory from Eurostat NewCronos (apro_mk_pobta and apro_mk_farm)</i>

The main dairy products produced in the EU-28 in 2011¹⁰ were cheese, liquid milk, milk powder and butter:

- 67.2 million tonnes of milk were used to produce 9.1 million tonnes of cheese with the balance being whey;
- 31.5 million tonnes of raw milk was utilised as liquid (drinking) milk;
- 19.3 million tonnes of raw milk were converted into 2.1 million tonnes of milk powder;
- 34.8 million tonnes of raw milk was used to produce an estimated 2.1 million tonnes of butter plus associated buttermilk and skimmed milk.

A balance of remaining raw milk together with the various by-products was used to produce the other dairy products (cream, yogurt, concentrated milk, buttermilk, etc.).

The following table shows the breakdown of cheese production by species. The table also shows the amount of total cheese that is made into processed cheese, which is a composite product:

¹⁰ Eurostat Pocketbooks, Agriculture, Forestry and Fishery Statistics, 2013 edition.

Table 11. EU cheese production by species, and processed cheese production, 2012

EU cheese products obtained from milk, 2012						
Unit: 1 000 tonnes of products obtained						
	All species (1)	Cows	Sheep	Goats	Buffalos + mixed cheese	Processed cheese
Code (2)	MC240	MC241	MC242	MC243	MC249	MC250
EU- 28	9 253	6 385	171	151	402	563
AT	160	158	1	1	0	35
BE	78	75		3		
BG	69	59	6	1	3	1
CY	19	1	1	0	17	
CZ	112	112				15
DE	2 161					165
DK	300	300				
EE	43	43				
EL	195	24			171	0
ES	316	112	65	21	117	24
FI	102	102		0		18
FR	1 929	1 767	25	98	38	133
HR	32	31			0	2
HU	73	72	0	0		12
IE	185	185				
IT	1 204	1 091	68	4	41	42
LT	112	112				3
LU	:					
LV	31	31				
MT	:					
NL	764	764		20		
PL	721	721		0		49
PT	72	60	5	2	5	
RO	67	60			5	9
SE	101	101				6
SI	18	18				0
SK	32	28	1		4	12
UK	357	357				35

(1) Amounts for each species do not necessarily add up to the figure for all species

(2) Eurostat product code

Source: DG AGRI European Milk Market Observatory

from Eurostat NewCronos (apro_mk_pobta and apro_mk_farm)

Note that processed cheese is not a primary cheese product as it is made by blending other cheeses together. Processed cheese may contain non-milk ingredients such as vegetable oil or starch, in which case it is a composite product.

The main dairy products for the nine case study countries in 2012 (2013 data is incomplete) are shown in the following table:

Table 12. Dairy production by product in case study Member States, 2012

Dairy products, 2012							
1 000 tonnes of product obtained		Drinking milk	Cream for direct consumption	Butter	Milk powder	Cheese	Whey
Eurostat product code		MC110	MC130	MC203	MC220	MC240	MC270
EU-28		31 728	2 506	2 134	2 013	9 253	43 227
CZ	Czech Republic	609	47	27	30	112	921
	<i>% of total</i>	<i>1.9%</i>	<i>1.9%</i>	<i>1.3%</i>	<i>1.5%</i>	<i>1.2%</i>	<i>2.1%</i>
DE	Germany	5 251	542	490	503	2 161	12 289
	<i>% of total</i>	<i>16.6%</i>	<i>21.6%</i>	<i>23.0%</i>	<i>25.0%</i>	<i>23.4%</i>	<i>28.4%</i>
ES	Spain	3 485	153	37	21	316	1 473
	<i>% of total</i>	<i>11.0%</i>	<i>6.1%</i>	<i>1.7%</i>	<i>1.0%</i>	<i>3.4%</i>	<i>3.4%</i>
FR	France	3 606	412	417	403	1 929	635
	<i>% of total</i>	<i>11.4%</i>	<i>16.4%</i>	<i>19.5%</i>	<i>20.0%</i>	<i>20.8%</i>	<i>1.5%</i>
IT	Italy	2 620	118	101	-	1 204	4 000
	<i>% of total</i>	<i>8.3%</i>	<i>4.7%</i>	<i>4.7%</i>	<i>-</i>	<i>13.0%</i>	<i>9.3%</i>
NL	Netherlands	524	9	195	287	764	7 021
	<i>% of total</i>	<i>1.7%</i>	<i>0.4%</i>	<i>9.1%</i>	<i>14.3%</i>	<i>8.3%</i>	<i>16.2%</i>
PL	Poland	1 511	244	165	140	721	4 785
	<i>% of total</i>	<i>4.8%</i>	<i>9.7%</i>	<i>7.7%</i>	<i>7.0%</i>	<i>7.8%</i>	<i>11.1%</i>
RO	Romania	208	48	9	2	67	22
	<i>% of total</i>	<i>0.7%</i>	<i>1.9%</i>	<i>0.4%</i>	<i>0.1%</i>	<i>0.7%</i>	<i>0.1%</i>
UK	United Kingdom	6 932	250	145	95	357	3 399
	<i>% of total</i>	<i>21.8%</i>	<i>10.0%</i>	<i>6.8%</i>	<i>4.7%</i>	<i>3.9%</i>	<i>7.9%</i>

Source: DG AGRI European Milk Market Observatory

from Eurostat NewCronos (*apro_mk_pobta* and *apro_mk_farm*)

There is some variation in the product range from the different countries. UK, for example produces over 20 % of the EU's drinking milk despite having only 10% of the milk utilisation. Germany and France, on the other hand, produce relatively less drinking milk and more milk products relative to their proportions of the total milk utilisation. France, Germany and Italy account for over 57% of EU cheese production.

2.8 Intra-EU trade

2.8.1 Milk and cream

Intra-EU trade in milk and cream is shown in the following table:

Table 13. Intra-EU trade in milk and cream, 2011-2013

Intra-EU trade in milk and cream, 2001 - 2013 (tonnes)											
2011				2012				2013			
EU-28	Export	Import	Net trade	EU-28	Export	Import	Net trade	EU-28	Export	Import	Net trade
FR	1 256 584	573 702	682 882	AT	832 060	103 223	728 837	AT	811 556	75 047	736 510
AT	753 588	89 194	664 394	CZ	716 497	83 823	632 674	CZ	698 765	72 593	626 173
DE	2 540 161	1 954 782	585 379	FR	1 103 385	569 009	534 376	FR	1 016 355	531 173	485 183
CZ	638 889	73 674	565 216	UK	615 273	194 043	421 230	DE	2 191 937	1 781 655	410 281
UK	646 871	214 725	432 146	DE	2 294 879	1 895 082	399 798	UK	572 601	244 684	327 917
HU	374 639	173 989	200 650	HU	386 226	119 675	266 551	HU	388 740	96 916	291 824
LV	215 421	30 649	184 772	LV	274 182	66 752	207 430	LV	280 331	75 247	205 084
PL	255 653	80 065	175 588	DK	225 963	59 539	166 424	EE	204 963	15 962	189 000
SI	231 528	81 790	149 738	SI	249 298	84 972	164 326	DK	238 282	61 769	176 513
DK	256 034	116 745	139 289	PL	294 639	132 675	161 964	SI	246 658	75 179	171 480
LU	152 815	35 095	117 720	EE	165 179	8 594	156 586	LU	162 386	29 779	132 607
SK	204 947	107 325	97 621	SK	210 766	86 281	124 485	SK	252 786	123 359	129 428
EE	104 570	23 314	81 257	LU	150 909	36 050	114 858	PL	276 860	165 989	110 871
BE	933 096	860 482	72 614	BE	982 780	950 263	32 517	BE	1 008 338	969 271	39 066
SE	98 728	78 776	19 951	SE	73 918	45 603	28 316	PT	196 686	163 169	33 517
PT	237 458	218 689	18 769	PT	237 694	218 001	19 693	SE	72 953	43 912	29 041
CY	807	3 255	-2 448	CY	799	4 557	-3 758	CY	730	6 275	-5 545
MT	0	5 535	-5 535	MT	0	5 345	-5 345	MT	0	5 683	-5 683
BG	6 066	30 997	-24 931	BG	7 040	22 056	-15 016	BG	6 755	23 823	-17 068
HR	2 577	39 297	-36 720	HR	2 210	51 685	-49 476	FI	10 618	57 776	-47 159
FI	8 236	57 571	-49 335	FI	9 360	59 869	-50 508	IE	226 139	329 639	-103 499
NL	690 468	787 408	-96 940	RO	8 349	122 858	-114 509	RO	23 426	139 370	-115 944
IE	187 095	307 998	-120 903	GR	1 159	127 973	-126 814	HR	2 460	128 738	-126 278
RO	6 094	127 416	-121 322	IE	170 753	303 465	-132 712	GR	1 925	158 269	-156 344
LT	135 208	301 808	-166 600	LT	141 357	392 486	-251 129	NL	494 794	684 779	-189 985
GR	826	193 698	-192 872	NL	499 783	788 710	-288 927	ES	172 638	439 205	-266 566
ES	173 730	535 968	-362 238	ES	223 539	558 367	-334 828	LT	156 604	424 136	-267 531
IT	13 867	2 652 343	-2 638 476	IT	17 703	2 428 571	-2 410 868	IT	27 047	2 268 393	-2 241 345

Source: Eurostat EU trade since 1995 by HS6 [DS-016893]

For milk and cream (see table 13) the most important countries with a net export are France, Austria and Czech Republic. Italy and Spain have high net imports in the period 2011-2013. Countries like Belgium, Sweden and Portugal have relative high volumes traded but the net trade equals almost zero.

2.8.2 Dairy products

The following tables have been compiled using data from the DG AGRI European Milk Market Observatory site¹¹

Many Member States have significant inward and outward trade in the same products indicating the dynamic and competitive nature of intra-EU trade in dairy products.

The following tables show the ranking of Member States for different dairy products according to the net balance of their intra-EU trade. Case study Member States are shaded green:

¹¹ http://ec.europa.eu/agriculture/milk-market-observatory/index_en.htm

Table 14. Intra-EU trade of butter, 2011 - 2013

Intra EU trade of butter 2011 - 2013												
Tonnes of product, 2011				Tonnes of product, 2012				Tonnes of product, 2013				
	Exports	Imports	Net Trade		Exports	Imports	Net Trade		Exports	Imports	Net Trade	
EU-28	546 018	546 015		EU-28	598 907	598 883		EU-28	535 039	473 414		
IE	117 433	3 427	114 006	IE	116 315	6 012	110 303	IE	127 064	6 132	120 932	
NL	109 000	57 930	51 070	NL	141 107	70 243	70 864	NL	75 636	379	75 257	
DK	42 552	8 323	34 229	PL	27 163	6 745	20 418	BE	67 241	46 320	20 921	
PL	29 132	7 635	21 497	DK	32 211	13 350	18 861	DE	113 158	94 158	19 000	
PT	12 331	4 652	7 679	PT	16 811	5 295	11 516	ES	18 322	1 030	17 292	
FI	8 894	2 451	6 443	BE	72 708	64 649	8 059	UK	16 306	8 941	7 365	
EE	4 015	599	3 416	LT	4 858	1 359	3 499	DK	22 811	17 864	4 947	
LT	2 787	834	1 953	FI	3 319	1 581	1 738	FI	5 254	472	4 782	
LV	2 514	1 671	843	EE	1 329	1 206	123	PT	12 459	8 779	3 680	
MT		369	-369	LV	1 508	1 812	-304	LT	3 541	1 481	2 060	
SI	492	990	-498	MT		409	-409	EE	2 488	1 456	1 032	
LU	2 942	3 644	-702	SI	230	898	-668	MT				
CY		1 044	-1 044	LU	2 691	3 534	-843	LU	2 216	2 984	-768	
HR	0	1 083	-1 083	CY		1 428	-1 428	CY		928	-928	
ES	14 351	15 692	-1 341	HR		1 507	-1 507	LV	2 322	3 943	-1 621	
BG	657	2 901	-2 244	BG	540	3 860	-3 320	HR		1 738	-1 738	
RO	296	3 746	-3 450	RO	384	3 982	-3 598	SK	1 045	3 885	-2 840	
HU	672	5 539	-4 867	HU	314	4 777	-4 463	BG	413	3 685	-3 272	
EL	22	5 914	-5 892	EL	37	5 142	-5 105	HU	140	4 562	-4 422	
BE	64 497	70 416	-5 919	SK	1 154	8 221	-7 067	RO	165	4 781	-4 616	
SK	991	8 079	-7 088	AT	1 709	9 804	-8 095	EL	74	5 270	-5 196	
AT	1 008	9 483	-8 475	DE	90 406	103 151	-12 745	SI	26	8 100	-8 074	
SE	1 187	12 332	-11 145	SE	1 335	14 777	-13 442	AT	1 446	9 768	-8 322	
CZ	2 489	15 106	-12 617	CZ	1 721	16 957	-15 236	SE	2 880	13 846	-10 966	
IT	4 151	23 048	-18 897	ES	13 809	32 592	-18 783	CZ	1 391	15 973	-14 582	
DE	78 526	101 970	-23 444	IT	5 608	24 796	-19 188	IT	4 963	21 869	-16 906	
UK	13 965	64 560	-50 595	UK	12 268	68 130	-55 862	PL	25 881	69 474	-43 593	
FR	31 114	112 577	-81 463	FR	49 372	122 666	-73 294	FR	27 797	115 596	-87 799	

Source: DG AGRI Milk Market Observatory

Table 15. Intra-EU trade of cheese, 2011 – 2013

Intra EU trade of cheese 2011 - 2013												
Tonnes of product, 2011				Tonnes of product, 2012				Tonnes of product, 2013				
	Exports	Imports	Net Trade		Exports	Imports	Net Trade		Exports	Imports	Net Trade	
EU-28	3 447 156	3 435 088		EU-28	3 564 940	3 558 748		EU-28	3 471 685	3 454 905		
NL	585 189	229 610	355 579	NL	584 221	263 022	321 199	DE	1 050 496	589 946	460 550	
FR	572 942	280 638	292 304	DE	984 826	681 909	302 917	FR	587 534	263 069	324 465	
DE	934 363	677 307	257 056	FR	575 654	288 198	287 456	NL	432 897	268 959	163 938	
DK	230 490	76 821	153 669	DK	224 091	82 091	142 000	DK	218 307	84 838	133 469	
IE	149 717	50 290	99 427	IE	158 659	57 138	101 521	IE	169 638	60 171	109 467	
PL	116 540	46 652	69 888	PL	124 255	45 614	78 641	PL	128 832	52 083	76 749	
LT	28 949	13 278	15 671	LT	37 663	11 028	26 635	LT	29 315	10 443	18 872	
BG	16 268	10 912	5 356	LV	10 386	2 974	7 412	EE	12 682	6 422	6 260	
EE	11 240	6 288	4 952	BG	15 267	12 766	2 501	BG	14 688	14 967	-279	
CY	7 008	5 082	1 926	CY	7 604	7 941	-337	CY	8 387	10 389	-2 002	
MT				EE	12 448	13 732	-1 284	LV	10 058	14 993	-4 935	
AT	91 542	93 855	-2 313	AT	93 989	96 615	-2 626	MT		6 187	-6 187	
LV	8 058	10 563	-2 505	MT		5 302	-5 302	LU	44 470	54 405	-9 935	
LU	40 947	47 601	-6 654	LU	46 589	54 512	-7 923	HR	348	12 380	-12 032	
HR	302	7 077	-6 775	HR	312	13 466	-13 154	AT	83 604	99 408	-15 804	
SK	20 141	31 829	-11 688	SK	22 568	36 167	-13 599	SI	1251	17 262	-16 011	
SI	1273	14 756	-13 483	SI	910	15 074	-14 164	SK	19 789	40 000	-20 211	
RO	2 795	35 453	-32 658	RO	8 076	36 401	-28 325	RO	8 531	38 545	-30 014	
PT	5 832	41 726	-35 894	PT	5 764	38 191	-32 427	PT	4 276	36 100	-31 824	
HU	6 354	45 747	-39 393	HU	8 908	41 499	-32 591	HU	9 205	44 154	-34 949	
FI	10 447	54 433	-43 986	CZ	34 258	84 442	-50 184	CZ	40 205	79 222	-39 017	
CZ	27 845	78 091	-50 246	FI	7 398	62 318	-54 920	EL	42 979	98 688	-55 709	
EL	43 795	105 804	-62 009	EL	43 984	107 063	-63 079	FI	5 362	68 527	-63 165	
BE	162 065	239 706	-77 641	BE	165 376	242 453	-77 077	BE	152 000	221 408	-69 408	
SE	13 483	95 396	-81 913	SE	16 788	103 612	-86 824	SE	17 107	110 630	-93 523	
ES	41 310	255 004	-213 694	ES	45 887	252 031	-206 144	ES	51 931	227 435	-175 504	
IT	207 637	458 916	-251 279	IT	217 849	473 822	-255 973	IT	218 084	478 729	-260 645	
UK	110 624	422 253	-311 629	UK	111 210	429 367	-318 157	UK	109 709	445 545	-335 836	

Source: DG AGRI Milk Market Observatory

Table 16. Intra-EU trade of skimmed milk powder, 2011 – 2013

Intra EU trade of skimmed milk powder 2011 - 2013												
Tonnes of product, 2011				Tonnes of product, 2012				Tonnes of product, 2013				
	Exports	Imports	Net Trade		Exports	Imports	Net Trade		Exports	Imports	Net Trade	
EU-28	559 827	559 243		EU-28	544 457	543 603		EU-28	564 624	564 572		
DE	194 391	39 656	154 735	DE	175 745	40 060	135 685	DE	195 356	42 030	153 326	
FR	109 420	35 390	74 030	FR	113 033	38 986	74 047	FR	83 004	36 964	46 040	
IE	32 129	12 083	20 046	PL	38 234	21 099	17 135	PL	38 402	21 069	17 333	
PL	40 625	23 943	16 682	IE	27 825	16 420	11 405	BE	60 387	46 867	13 520	
SE	14 001	3 224	10 777	SE	14 635	3 296	11 339	SE	14 547	3 899	10 648	
LT	9 330	1 879	7 451	LT	10 785	2 166	8 619	LT	12 499	2 112	10 387	
DK	14 322	7 469	6 853	DK	14 673	8 086	6 587	UK	45 466	39 568	5 898	
CZ	7 502	3 073	4 429	FI	4 691	415	4 276	FI	6 108	329	5 779	
FI	3 789	435	3 354	BE	58 188	54 754	3 434	LV	5 883	639	5 244	
EE	4 193	1 016	3 177	CZ	7 067	4 753	2 314	CZ	5 691	3 751	1 940	
LV	1 813	1 208	605	LV	2 860	1 022	1 838	MT		612	-612	
MT		530	-530	CY		301	-301	SI	2	657	-655	
SI	121	761	-640	SI	277	596	-319	CY		675	-675	
CY		756	-756	MT		869	-869	EE	824	2 234	-1 410	
PT	3 348	4 811	-1 463	PT	4 101	4 979	-878	LU	139	1 568	-1 429	
HR	13	2 561	-2 548	EE	941	2 386	-1 445	RO	1 877	3 716	-1 839	
RO	1 756	5 068	-3 312	RO	2 376	3 983	-1 607	SK	2 353	4 339	-1 986	
SK	2 185	5 531	-3 346	SK	2 699	4 345	-1 646	HR		2 277	-2 277	
LU	19	4 966	-4 947	HR		3 103	-3 103	DK	11 821	15 523	-3 702	
HU	262	6 089	-5 827	HU	159	4 405	-4 246	HU	20	4 552	-4 532	
EL	635	6 782	-6 147	LU	19	4 307	-4 288	PT	3 301	9 424	-6 123	
AT	2 225	9 704	-7 479	EL	137	7 623	-7 486	AT	1 870	11 403	-9 533	
UK	14 424	30 295	-15 871	AT	2 124	9 867	-7 743	EL	295	10 859	-10 564	
BG	318	16 564	-16 246	BG	3 016	18 221	-15 205	BG	4 339	18 569	-14 230	
BE	43 473	68 578	-25 105	UK	16 831	37 300	-20 469	IE	22 112	40 946	-18 834	
ES	12 876	44 837	-31 961	ES	7 225	43 832	-36 607	ES	7 638	42 432	-34 794	
IT	2 397	67 602	-65 205	IT	4 331	67 578	-63 247	IT	3 717	56 431	-52 714	
NL	44 260	154 432	-110 172	NL	32 485	138 851	-106 366	NL	36 973	141 127	-104 154	

Source: DG AGRI Milk Market Observatory

Table 17. Intra-EU trade of whole milk powder, 2011 – 2013

Intra EU trade of whole milk powder 2011 - 2013											
Tonnes of product, 2011				Tonnes of product, 2012				Tonnes of product, 2013			
	Exports	Imports	Net Trade		Exports	Imports	Net Trade		Exports	Imports	Net Trade
EU-28	296 346	296 075		EU-28	249 335	249 175		EU-28	251 006	250 814	
IE	43 115	17 322	25 793	BE	40 499	26 000	14 499	BE	42 631	24 822	17 809
DE	53 921	40 323	13 598	DK	10 904	2 331	8 573	DE	46 942	32 947	13 995
BE	43 625	31 594	12 031	DE	45 455	37 257	8 198	PL	13 402	5 579	7 823
DK	11 589	1 890	9 699	PL	12 498	4 927	7 571	SE	7 698	1 993	5 705
CZ	7 573	556	7 017	IE	19 586	13 366	6 220	FR	49 492	44 308	5 184
PT	7 876	1 258	6 618	CZ	6 243	852	5 391	CZ	6 648	1502	5 146
PL	11 054	4 569	6 485	SE	6 345	1 994	4 351	PT	5 338	1 169	4 169
SE	7 541	2 252	5 289	PT	5 205	1 049	4 156	DK	5 555	3 082	2 473
LV	3 447	217	3 230	LV	3 781	504	3 277	LV	1 962	805	1 157
AT	5 284	4 783	501	FR	44 366	43 409	957	FI	277	86	191
EE	759	600	159	AT	4 887	4 275	612	EE	560	568	-8
FI	60	84	-24	SK	1 395	995	400	MT		26	-26
MT		42	-42	EE	514	401	113	CY		158	-158
CY		154	-154	MT		36	-36	SK	1 650	2 120	-470
SK	407	964	-557	FI	82	213	-131	AT	2 944	3 565	-621
HU	55	744	-689	CY		193	-193	LU	68	750	-682
SI	5	1 049	-1 044	LT	647	1 324	-677	HU	75	1 034	-959
LT	317	1 837	-1 520	HU	222	1 018	-796	HR		1 040	-1 040
BG	855	2 643	-1 788	LU	92	1 150	-1 058	LT	245	1 366	-1 121
RO	159	1 956	-1 797	SI	1	1 076	-1 075	SI	18	1 291	-1 273
HR	0	1 805	-1 805	HR		1 626	-1 626	RO	145	1 797	-1 652
LU	41	2 573	-2 532	ES	7 645	10 000	-2 355	IE	13 891	15 985	-2 094
EL	130	4 230	-4 100	RO	225	2 763	-2 538	EL	249	3 235	-2 986
UK	29 124	34 193	-5 069	BG	114	2 731	-2 617	BG	235	4 000	-3 765
ES	7 498	14 001	-6 503	EL	159	3 234	-3 075	UK	22 450	27 065	-4 615
FR	42 548	50 602	-8 054	UK	17 687	24 923	-7 236	ES	4 541	12 769	-8 228
IT	581	25 772	-25 191	NL	20 179	38 802	-18 623	IT	561	17 427	-16 866
NL	18 782	48 062	-29 280	IT	604	22 726	-22 122	NL	23 429	40 325	-16 896

Source: DG AGRI Milk Market Observatory

Table 18. Intra-EU trade of whey powder, 2011 – 2013

Intra EU trade of whey powder 2011 - 2013												
Tonnes of product, 2011				Tonnes of product, 2012				Tonnes of product, 2013				
	Exports	Imports	Net Trade		Exports	Imports	Net Trade		Exports	Imports	Net Trade	
EU-28	974 564	960 960		EU-28	933 319	920 330		EU-28	885 759	869 466		
DE	301 647	117 639	184 008	DE	297 143	121 242	175 901	DE	271 177	105 877	165 300	
FR	211 778	94 273	117 505	FR	162 711	75 957	86 754	FR	157 266	73 805	83 461	
PL	76 324	23 250	53 074	PL	90 157	24 510	65 647	PL	87 390	26 990	60 400	
UK	45 658	22 970	22 688	UK	43 631	24 468	19 163	UK	40 694	25 236	15 458	
IE	33 382	14 348	19 034	AT	23 391	9 632	13 759	IT	63 128	48 313	14 815	
LT	15 302	3 022	12 280	LT	16 050	2 403	13 647	AT	22 469	10 434	12 035	
AT	23 082	10 839	12 243	IE	32 509	20 946	11 563	LT	15 886	5 229	10 657	
PT	15 062	4 240	10 822	ES	33 882	27 333	6 549	DK	22 247	11 804	10 443	
ES	37 824	32 768	5 056	IT	54 123	48 008	6 115	ES	35 440	28 834	6 606	
FI	5 328	516	4 812	PT	10 525	4 499	6 026	IE	26 376	19 801	6 575	
SK	5 148	2 874	2 274	CZ	8 976	4 395	4 581	PT	9 615	4 213	5 402	
LV	2 685	853	1 832	FI	4 921	759	4 162	FI	3 314	774	2 540	
CZ	8 900	7 250	1 650	DK	17 668	16 001	1 667	EE	2 870	1 903	967	
DK	16 593	15 339	1 254	LV	1 979	540	1 439	SK	3 865	3 074	791	
HU	3 256	2 922	334	EE	3 663	2 416	1 247	CZ	7 055	6 597	458	
CY		86	-86	SK	3 684	2 685	999	MT		56	-56	
MT		100	-100	MT		31	-31	CY		100	-100	
SI		197	-197	CY		80	-80	SI	2	211	-209	
EE	2 999	3 409	-410	SI		293	-293	LV	633	943	-310	
LU	1	1 193	-1 192	HR	0	1 573	-1 573	HR	265	1 243	-978	
EL	3 732	4 941	-1 209	EL	2 786	4 613	-1 827	HU	2 493	4 394	-1 901	
HR	57	1 278	-1 221	HU	3 455	5 565	-2 110	EL	2 544	4 906	-2 362	
SE	3 189	4 927	-1 738	LU	34	2 147	-2 113	LU	57	2 633	-2 576	
RO	36	4 008	-3 972	SE	3 744	6 299	-2 555	SE	1 647	4 234	-2 587	
BG	249	7 369	-7 120	RO	1 220	3 889	-2 669	RO	75	3 082	-3 007	
IT	37 035	57 913	-20 878	BG	105	9 055	-8 950	BG	193	8 949	-8 756	
BE	35 795	66 100	-30 305	BE	20 183	64 131	-43 948	BE	27 296	55 500	-28 204	
NL	89 502	456 336	-366 834	NL	96 779	436 860	-340 081	NL	81 762	410 331	-328 569	

Source: DG AGRI Milk Market Observatory

The above tables show a dynamic intra-EU trade in dairy products over the period 2011 – 2013.

The volume of butter traded within the EU in 2012 represented 28% of EU production. For cheese the figure was 39% and for combined whole and skimmed milk powders it was 40%. In contrast the volume of milk and cream traded within the EU in 2012 represented just 2.4% of production.

For butter (see table 14) the countries with a high net export within the EU are Ireland and the Netherlands. France is a country with the highest net import in all these years. For the UK (high net imports in 2011 and 2012 but net export in 2013) and Poland (high net exports in 2011 and 2012 but net import in 2013) the situations differs a lot per year.

For cheese (see table 15) the situation is more stable. The Netherlands, France and Germany are by far the biggest net exporters (more than 70% of total net export each year) in the period 2011-2013 while Spain, Italy and the UK (more than 60% of total net import each year) are by far the biggest net importers of cheese.

Skimmed Milk powder (table 16) is mainly exported by Germany and France (about 75% in each year) and net imported by Italy and the Netherlands (together more than 50% in each year) in the period 2011-2013.

For whole milk powder (see table 17) the important net exporting countries within the EU are Belgium, Germany Poland and Denmark. In 2011 Ireland was the biggest exporter but in 2013 Ireland was a net importer of whole milk powder. The biggest net importers of whole milk powder are the Netherlands and Italy.

For whey powder (see table 18) the important net exporting countries within the EU are Germany, France and Poland (more than 80% of all net import). The biggest net importers of whey powder is the Netherlands (more than 80% of all net import).

2.9 International trade balance

The EU is self-sufficient in the production of milk and dairy products and is a significant exporter, particularly of milk powders. Milk production is controlled by the quota system, which is due to expire in 2015 raising the possibility of increased overall milk production in the EU.

The following tables show the EU market balance for fresh dairy products, butter, cheese, whole milk powder and skimmed milk powder for the years 2011 – 2013.

Table 19. EU fresh dairy products market balance, 2011 – 2013

EU fresh dairy products market balance, 2011 - 2013			
(1 000 tonnes)	2011	2012	2013e
Production	46 800	46 713	46 495
<i>of which:</i>			
Drinking milk	31 723	31 670	31 584
Cream	2 419	2 509	2 521
Acidified milk	8 201	8 130	8 005
Other fresh products (1)	4 456	4 405	4 384
Extra EU imports	44	42	28
Extra EU exports	399	532	578
Domestic use (2)	46 445	46 222	45 945
Self-sufficiency (%)	100.8%	101.1%	101.2%
<i>e = estimated</i>			
<i>(1) Includes buttermilk, drinks with milk base and other fresh commodities</i>			
<i>(2) Includes stock changes</i>			
<i>Source: Short Term Outlook for arable crops, meats and dairy - Summer 2014, DG AGRI</i>			

Table 20. EU butter market balance, 2011 – 2013

EU butter market balance 2011 - 2013			
(1 000 tonnes)	2011	2012	2013e
Production	2 133	2 196	2 182
Extra EU imports	34	29	23
Extra EU exports	124	124	116
Domestic use (1)	2 015	2 081	2 088
Self-sufficiency (%)	105.9%	105.6%	104.5%
<i>e = estimated</i>			
<i>(1) Includes stock changes</i>			
<i>Source: Short Term Outlook for arable crops, meats and dairy - Summer 2014, DG AGRI</i>			

Table 21. EU cheese market balance, 2011 – 2013

EU cheese market balance, 2011 - 2013			
(1 000 tonnes)	2011	2012	2013e
Production	9 065	9 287	9 368
<i>of which:</i>			
cows' milk	8 381	8 548	8 625
other milk (1)	684	738	743
Processed cheese impact (2)	330	325	334
Total production	9 395	9 612	9 702
Extra EU imports (3)	75	78	75
Extra EU exports	673	768	787
Domestic use (4)	8 797	8 923	8 990
<i>of which:</i>			
processing	296	287	287
consumption	8 501	8 636	8 703
Self-sufficiency (%)	106.8%	107.7%	107.9%
<i>e = estimated</i>			
<i>(1) Includes sheep, goat and buffalo milk</i>			
<i>(2) Includes production and net exports of processed cheese</i>			
<i>(3) Imports and exports include processed cheese</i>			
<i>(4) Includes stock changes</i>			
<i>Source: Short Term Outlook for arable crops, meats and dairy - Summer 2014, DG AGRI</i>			

Table 22. EU whole milk powder market balance, 2011 – 2013

EU whole milk powder market balance, 2011 - 2013			
(1 000 tonnes)	2011	2012	2013e
Production	692	662	698
Extra EU imports	2	3	3
Extra EU exports	388	386	374
Domestic use (1)	305	278	327
Self-sufficiency (%)	226.6%	237.7%	213.5%
<i>e = estimated</i>			
<i>(1) Includes stock changes</i>			
<i>Source: Short Term Outlook for arable crops, meats and dairy - Summer 2014, DG AGRI</i>			

Table 23. EU skimmed milk powder market balance, 2011 – 2013

EU skimmed milk powder market balance, 2011 - 2013			
(1 000 tonnes)	2011	2012	2013e
Production	1 096	1 109	1 092
Extra EU imports	-	2	5
Extra EU exports	516	520	407
Domestic use (1)	689	685	690
Self-sufficiency (%)	159.1%	161.8%	158.2%
<i>e = estimated</i>			
<i>(1) Includes stock changes</i>			
<i>Source: Short Term Outlook for arable crops, meats and dairy - Summer 2014, DG AGRI</i>			

The self-sufficiency ratios for butter and cheese fluctuate around 105% - 108%, indicating a net exportable surplus of 5-8% of domestic consumption needs.

The self-sufficiency ratio of milk powders and in particular of whole milk powder is higher. The self-sufficiency ratios for butter, skimmed milk powder and whole milk powder tend to fluctuate more than those for cheese. This reflects the fact that processors switch their product mix between butter and skimmed milk powder, or whole milk powder in response to market conditions (including stock positions).

The global economic crisis and volatile world market prices in the second half of the decade disrupted the smoother patterns observed in earlier years. It should be noted that dairy product markets are interrelated because they essentially share the same basic components (fat, non-fat solid), be it in different combinations. As such it is not warranted to draw strong conclusions from the minor movements for individual products.

The increasing demand for dairy products from Asia, especially the boost in demand for powders by China, presents a challenge for the industry, to which it must adapt.

3 ANALYSIS OF LABELLING OPTIONS

3.1 Labelling options for milk and milk used as an ingredient

Six possible labelling options are being investigated in nine case studies for origin labelling of milk and milk used as an ingredient in key dairy products. The seventh option – no mandatory labelling – represents the current baseline situation.

Three geographical levels of origin are considered:

- 'EU origin': the label would state the origin as EU or non-EU;
- 'Group origin': the label would state a group of Member States of *possible* origin on the label (e.g. Origin DE or IT or FR or PL);
- 'Multi-country origin': the label would state one or more Member States of *definite* origin on the label (e.g. Origin DE and IT and FR and PL).

Two stages of the supply chain are considered:

- origin of the first place of processing of the raw milk;
- origin of the place of milking.

The three geographical levels and two supply chain stages give a matrix of six possible origin scenarios as shown in Table 24.

Table 24. Options for origin labelling of milk and milk used as an ingredient in dairy products

Levels of geographical origin	Stage of the supply chain	
	First place of processing of the raw milk	Place of milking
EU origin EU / non-EU	Scenario 1.	Scenario 4.
Group of Member States origin Member States of <i>possible</i> origin e.g. [DE] <u>or</u> [BE] <u>or</u> [NL] <u>or</u> [FR]	Scenario 2.	Scenario 5.
Multi-country origin Member States of <i>definite</i> origin e.g. [DE] <u>and</u> [BE] <u>and</u> [NL]	Scenario 3.	Scenario 6.

Regarding the multi-country option it would be necessary to consider a threshold level for the amount of milk to be included from each country. This point is considered during the case study interviews.

Interviewees were asked to consider the likely costs and possible benefits attached to each scenario. They were also asked to consider whether the factory is representative of the total production of the particular product in the Member State.

The following points were also explained at the interviews:

- the purpose of the study is to identify the impact of origin labelling only if it becomes mandatory;

- origin labelling will only apply to milk and milk as an ingredient and not to other ingredients in dairy products. In addition in the case studies of yogurt, the interviewees were also asked to consider the labelling of the origin of the fruits;
- origin labelling will only apply to business-to-consumer (B2C) products, not to business-to-business (B2B) products;

3.2 Scope of impacts of labelling options for milk and dairy products

The results of the case studies provided insight into the possible impacts of the different labelling options for different dairy products. The findings from the case study interviews are summarised in the following tables. Table 25 presents the main points of concern that have been mentioned in the interviews.

3.2.1 Cost increases

Many of the small scale factories will probably not face high cost increases because all milk is exclusively sourced within the home country. Large dairies and multinationals that source internationally or buy milk on the spot market will have to deal with substantial cost increases. These extra costs might become very high for certain products and the most stringent labelling options.

Note that companies buying additional milk from other sources (in their own country) will need a certificate of origin in order to ensure the origin of the milk ingredient used for the making of products going to the consumer. As such introducing mandatory origin labelling for business-to-consumer (B2C) products, is likely to also spill over to business-to-business (B2B) exchanges (e.g. spot market transactions) , which is not considered in the modelling (only B2C).

The range of possible cost increases as a result of mandatory origin labelling includes:

- adding new processing lines;
- cleaning between batches;
- purchase of new machinery for labelling, preparing and printing a new design of labels;
- cost of materials (labels, packing materials);
- the limitations to using the cheapest sourcing options.

Cost increases also depend on the extent to which the process in a factory is automated. Large plants might benefit from economies of scale. On the other hand, mainly large, multinational companies seem to have problems with origin labelling, because they source raw milk from several EU countries, they frequently exchange ingredients between firms and between factories, and they seasonally purchase raw materials on the spot market. For such dairies origin labelling is very unpractical and can be relatively expensive.

Introducing mandatory labelling of origin may also generate costs for consumers and society in a broader sense:

- consumers not interested in origin and not prepared to pay for origin labelling will be “enforced” to buy origin labelled products, at a price which is higher than they faced before;
- there might be initially unexpected impacts on the distribution of income and costs along the supply chain (e.g. due to an increased competition and lack of willingness to pay from the consumers side, dairy processors may see no other way out than to lower the farm gate price paid for raw milk).

- to the extent the labelling of origin leads to more logistic actions and cleaning activities, this may possibly generate an extra negative impact on the environment and lower the resource use efficiency (e.g. energy, waste water);

Addressing environmental impact is beyond the scope of this study, although several interviews have pointed to these type of effects.

3.2.2 Points of concern

In some interviews it was mentioned that the benefits of origin labelling will be that the consumer would be able to choose products depending also on the origin, an issue that currently is not clear on the label unless a voluntary origin labelling scheme is in place. A small number of interviewees indicated possible increases in sales margin resulting from origin labelling.

Most interviewees state that there are no benefits of origin labelling and dairies will lower the prices when buying milk from the farmers to compensate for the extra costs. Several interviewees state that there is no clear benefit in terms of food safety (despite the fact that food safety is not addressed by origin labelling legislation).

Introducing mandatory origin labelling might also create a loss of benefits to stakeholders. Firms that at this moment differentiate their product in the market by voluntarily labelling its origin might see the marketing value of this voluntary label decline and their business case being eroded.

Voluntary labelling is practised because it creates a premium paid by interested consumers (i.e. consumers are willing to pay) and/or it provides a competitive edge of a business compared to other business and in this case the cost is captured by economies of scale (in reality it will be a mixture of both)

Mandatory labelling (when every product is labeled) is an obligation (like tracing and other mandatory information) so there will be no willingness to pay for this general information: the cost will be covered by the whole chain (consumers, processors and primary producers). However, a consumer might be interested in a specific origin and therefore have a willingness to pay (but does not need to pay) so the preferred origin and this consumer will have an advantage compared to competitors or uninterested consumers.

Table 25. Main points of concern raised during the case study interviews

Product category	Points of concern
Drinking milk	<ul style="list-style-type: none"> - In many factories all milk is sourced from the home country, so mandatory origin labelling will not lead to any significant change in the production process, regardless of the labelling options and levels of origin on the label. - Large dairies in particular that source internationally or buy milk on the spot market will face substantial cost increases (mostly < 10%), depending on the scenario. Extra value for current brands, with a label based on the place of <i>processing</i>, could disappear if labelling of the place of <i>milking</i> would become mandatory. - Some retailers may require that raw milk is sourced only from the own country.
Cheese (regular)	<ul style="list-style-type: none"> - findings for cheese might be quite similar to those for drinking milk. However, in some cases, the imports may be higher than for drinking

	<p>milk and thus lead to slightly higher extra costs.</p> <ul style="list-style-type: none"> - Milk ingredients are bought from other businesses, which do not fulfil labelling requirements.
Cheese (PDO/PGI)	<ul style="list-style-type: none"> - In principle no high impacts on costs are envisaged because the milk is already sourced within the home country (in most cases). - Mandatory origin labelling might be damaging for current products that gain a market advantage from voluntary origin labelling.
Yogurt	<ul style="list-style-type: none"> - Probably, higher additional costs, compared to drinking milk or cheese if the countries of origin of the whey powders and skimmed milk powders should also be mentioned on the label.
Yogurt + fruit	<ul style="list-style-type: none"> - Difficulties might raise to identify the origin when there is presence of non-EU fruits in the products, which in many cases will be.
Processed cheese	<ul style="list-style-type: none"> - Processed cheese is a special case, because it is made by blending mixtures of cheeses, vegetable ingredients and powders from all over the world. - As it contains non-milk ingredients processed cheese is a composite dairy product (see section 1.2) - Identifying the countries of origin on the label would require major changes to the business model. - Similarities with a product like honey.
Dairy ice cream	<ul style="list-style-type: none"> - The impact of origin labelling might be limited if (minor) ingredients like skimmed milk powder would be excluded from the legislation.

3.3 Classification/typology of the supply chain and labelling options

The case studies and other study investigations have led to the identification of a number of indicators, which may be used to develop a classification/typology of the dairy supply chain that will enable the impact of various options for mandatory origin labelling to be assessed at EU level.

Estimates at Member State level are generated from the case studies, where the information obtained from specific cases (firms) is “weighted” in order to arrive at country level estimates. Two sources of information used are:

- degree to which a specific firm (type) is affected (based on case study information, impact on costs can be zero (0%), low (1%), medium (3%) or high (>10%))
- estimated market share of the different firm types (based on supply chain descriptions, case study information and market data)

In order to assess the cost impacts and market shares the following supply chain aspects and trade indicators were taken into account:

Supply chain indicators:

1. Chain length / number of different treatments in processing of different dairy products (number of movements between stages and between businesses);
2. Scale and character of businesses (small, medium, large; cooperative versus purely commercial);
3. Traceability systems in place;

4. Separation of supply chains for different origins;
5. Amount of raw milk sold and consumed through unofficial channels;
6. Market differentiation (high value products versus commodity);
7. Degree to which voluntary labelling is already in place;
8. Share of products produced for consumer usage and for business to business usage;
9. Role of PDO and PGI in the dairy product mix;
10. Inspection costs.

Trade indicators:

11. Self-sufficiency in raw milk and dairy products;
12. Import/export of raw milk and products using milk as an ingredient.

Using these criteria a typology has been developed in which the supply of a product is classified according to the expected cost increase it will face in case of mandatory origin labelling. The ‘cost increase’-classes distinguished have been selected based on the range of cost estimates found in the cases studies. The indicators mentioned above have been used to generalize the expected cost increases observed for specific types of firms (by linking the cost estimates to firm and firm-contextual characteristics such as market environment).

The following categories are distinguished:

- i. Percentage of supply facing a 0% cost increase (being not affected)
- ii. Percentage of supply facing a 0% - <1% cost increase (being somewhat affected)
- iii. Percentage of supply facing a 1 - <5% cost increase (being affected)
- iv. Percentage of supply facing a >5% cost increase (being strongly affected)

For the four categories distinguished we used a mean cost increase of 0%, 1%, 3% and 10% for respectively category i to iv. In table 28 the estimated cost increase for fresh milk and cheese per case study country are given. This estimated cost increase is expressed as percentage of the cost of production at the processor level (the wholesale price). This information is subsequently used to obtain expected estimated cost increases at Member State level.

The supply chain and trade indicators mentioned above were also used to link the EU Member States that were not included in the case study set to the case study countries. Based on comparability of characteristics a matching has been made (see Table 26). It should be noted that this matching has been a process using expert information since different characteristics might sometimes point in different directions (see as an example the matching of Malta with the UK, where the similarity in terms of having an ‘island-property’ has been decisive in this case).

Table 26. Matching of EU-28 Member States to the case study countries

Case study country	NL	DE	PL	UK	FR	ES	IT	RO	CZ
Matching Member States	BE, LU, DK	AT	EE, LT, LV	CY, IE, MT	FI, SE	PT	EL, SL, HR	BG	HU, SK

4 IMPACT OF OPTIONS ON THE DAIRY SUPPLY CHAIN

This chapter examines the impact of the selected labelling options on the dairy supply chain.

4.1 Analysis of options

Mandatory origin labelling will induce costs as well as benefits with the net effect on the internal market, trade, producer and consumer welfare being a result. In this section the focus will be on the

impacts on the supply chain. In Chapter 5 the impacts on trade and consumers will be further discussed. Impacts on the administrative burden for processors are also dealt with in this Chapter (see section 4.2).

The costs accrue in particular to processors, at different stages of the supply chain. Mandatory origin labelling introduces physical and administrative costs associated with the labelling, can restrict firms in their sourcing choices or impose additional costs with respect to sourcing, can imply adjustments in the way of processing (e.g. keep product milk and milk ingredients of different origins separated or specifically treated, have required extra stops and cleaning in the production process, have induced changes in transportation and storage, etc.). See table 27 for an overview of the seven scenarios and a brief summary of the cost impacts, with a further explanation below.

The first option considered is the labelling/non-labelling option (defined in Table 27 as scenario 0). As has been described before six possible options are being investigated in the case studies for origin labelling of milk and milk used as an ingredient in dairy products, which each include a different type of product labelling. These six scenarios include three geographical levels of origin ('EU origin', 'Group of Member States origin', and 'Multi-country origin') and the reference to two stages of the supply chain (first place of processing of the raw milk, and origin of the place of milking).

In order to assess the impacts two approaches are applied:

- qualitative, analytical reasoning approach using descriptive information with respect to the dairy supply chains and information from the case studies.
- quantitative modelling approach using estimated cost increases due to origin labelling, as derived from the case studies and supply chain indicator information.
- specific product approach, for those products for which only limited information from the case studies has become available and/or the complexities appeared to be so specific and large that a separate treatment is the best way to address them.

In Table 27 in each cell a reference is made to the type of analysis that is applied (qualitative in 5 out of 7 cases).

Table 27. Summary of main supply chain impacts (main cost increase of production, competitiveness) of different origin labelling scenarios and type of analysis applied

Levels of geographical origin	Stage of the supply chain	
	First place of processing of the raw milk	Place of milking
Labelling/non-labelling	<u>Scenario 0 (qualitative).</u> In several Member States there is voluntary labelling signalling information about origin (place of processing and/or place of milking) where additional costs are covered by premium paid for the labelled product (commercial product differentiation).	
EU origin EU / non-EU	<u>Scenario 1 (qualitative).</u> Zero or low extra costs (0-1%) to processors for most dairy products analysed. *	<u>Scenario 4 (qualitative).</u> Zero or low extra costs (0-1%) to processors for most dairy products analysed. *
Group origin A group of Member States of <i>possible</i> origin e.g. [DE] <u>or</u> [BE] <u>or</u> [NL] <u>or</u> [FR]	<u>Scenario 2 (qualitative).</u> Relatively low extra costs (1 to 2%) to processors for most dairy products analysed.	<u>Scenario 5 (qualitative).</u> Relatively low extra costs (1 to 2%) to processors for most dairy products analysed.
Multi-country origin Member States of <i>definite</i> origin ('multi-country origin') e.g. [DE] <u>and</u> [BE] <u>and</u> [NL]	<u>Scenario 3 (qualitative).</u> Moderate to very high cost (> 2-3%) increases to processors in case of international sourcing. In this scenario a reasonable threshold level is important.	<u>Scenario 6 (quantitative).</u> Considered as 'worst case scenario'. Moderate to very high cost increases (> 2-3%) to processors in case of international sourcing. In this scenario a reasonable threshold level is important.

*Processed cheese being an exception;

The information in Table 27 is based on the information coming from the case studies. In the following paragraphs the results summarised in Table 27 are discussed:

4.1.1 Scenario 0: Labelling versus non-labelling

When discussing the need for labelling rather than having a situation with non-mandatory country of origin labelling the functioning of markets is crucial. The central question then is whether those consumers that are interested in knowing the origin of the products they buy are served by the suppliers.

This is the case if there are suppliers that voluntarily label products in such a way that the country of origin or place of provenance is easily recognizable for consumers. Voluntary labelling then assures that consumers have the option to choose between an origin- labelled product and a non-origin labelled product. Voluntary labeling is done because it creates a premium paid by consumers interested in knowing the origin and/or because it provides a competitive edge for a business compared to other business. Usually only part of the products that are consumed will be labelled.

As regards the supply chain, voluntary origin labelling is thus a business case: the consumers interested in the voluntary origin-labelled product can buy such a product but will have to pay a premium to compensate for the additional costs of production that have to be made. Firms that supply these voluntarily labelled products will be those which can do so at lowest costs (relative to other firms which freely choose not to origin-label their products).

In case of mandatory labelling every product is labelled. Since this is then an obligation, like for example tracing) it is not directly relevant whether this option is supported by a sufficiently high willingness to pay from consumers. Because the labelling is obligatory the cost will be covered by the whole chain (consumers, processors and primary producers). A consumer having a preference (and willingness to pay) for a product from a specific origin can then buy this product, but will not have to pay directly for the origin information.

Summarizing, if markets function properly and there is a group of consumers interested in origin labelled products in such a way that their willingness to pay is more than the costs associated with voluntary labelling of origin, then they will be served with a voluntary labelled product and the suppliers to these consumers will have a profitable business case in doing so.

4.1.2 Scenarios 1 and 4: EU/non-EU labelling

EU/non-EU labelling was the most preferred labelling option among the mandatory labelling option for all interviewed dairy processing firms, because they expected the costs of this option to be minimal. Except for a few cases at the eastern border of the EU all processors source their raw milk from EU Member States.

The costs to the supply chain of implementing such a labelling scenario would then be those related to the marking of the products (e.g. stamping them), but low costs would have to be made to adjust the production process. Also the administrative actions that have to be done to prove the EU origin of their produce is estimated to involve minimal costs.

One important exception is the case of processed cheese, which is a composite product based on worldwide sourcing of ingredients from both within and outside the EU. For the processed cheese industry the costs of this scenario would be non-zero and could negatively affect their business model.

Generally speaking for this scenario the interviewed firms did not see much difference in terms of the cost impact for the first place of processing of the milk (scenario 1) or the place of milking (scenario 4).

However, again the processed cheese sector, which uses ingredients from outside the EU is an exception. Linking the ingredients sourced from outside the EU to the place of milking rather than the first place of processing is seen as an unfeasible option.

4.1.3 Scenarios 2 and 5: Labelling of a Group of Member States

In these scenarios firms can label Member States of possible origin. As such this scenario serves those processors that source their milk and milk ingredients from a fixed group of Member States, but where different batches of products may contain milk ingredients from different combinations of the Member States within the group.

This group labelling option will allow the firms involved to label the origin of their products without imposing on them substantive changes in the way the production process is currently organized. Compared to firms sourcing from only one Member State (which will always incur some costs for adding an origin label to their products), the firms operating in a group of Member States will have similar relatively low costs under this scenario.

However, firms sourcing from many Member States and/or third countries (i.e. not limited to a specific fixed group) will face higher costs under this scenario as they will be required to indicate all countries of origin. The impact on costs will depend on the product considered. For drinking milk they are likely to be lower than for products using more than one milk ingredient. For example yogurts may include milk powder as well as milk, and butter may be made from cream and milk.

Processed cheese is one dairy product likely to face significant costs of labelling under this scenario.

However, as in the other scenarios the processed cheese sector, which uses ingredients from outside the EU is an exception. Linking the ingredients sources from outside the EU to the place of milking rather than the first place of processing is seen as an unfeasible option. In general reference to the place of milking will increase the costs for dairy processors slightly more than a reference to the place of first processing.

4.1.4 Scenarios 3 and 6: multi country of origin labelling

In contrast with scenarios 2 & 5 this category refers to the use of milk from all the Member States listed on the label. Of all the possible labelling options this category imposes the most strict conditions and involves the most significant costs. For firms that already source their raw milk and other ingredients from a single Member State this scenario may not involve serious additional costs.

Firms sourcing raw milk and ingredients from different Member States are likely to incur additional costs under this scenario. If a product is labelled to include milk and/or milk ingredients from three Member States (as might be relevant for firms operating in border regions) they have to ensure that each product batch indeed includes milk from the three countries listed.

A processing firm under this scenario has to ensure that the product contains milk or milk ingredients from all the Member States that are indicated on the label. This can require mixing of ingredients from the labelled origins that otherwise would not have been necessary. This implies that in case of seasonality or other sources of variation in availability a processor might have to take extra measures to ensure a balanced mix of different origins, satisfying the label.

This is likely to require changes in the way the production process is currently organized (which will involve costs) and probably also that additional provisions are made (e.g. separate storage facilities for raw milk and milk ingredients coming from different origins) to influence and control the product flows in the processing factory.

Firms produce multiple types of products (e.g. butter going to the final consumer [subject to labelling of origin] and butter going from business to business (not necessarily subject to labelling of origin) can experience complications and a general increase in the complexity of the production process and its management and administration. A reference to the place of milking will increase the costs for dairy processors slightly more than a reference to the place of first processing.

Other possible general problems can include increased waste (from the end of batches), increased waste water, difficulties in obtaining origin information in business-to-business sales, increased machinery costs.

In several interviews firms expressed concern about the consequences of additional costs while already facing very low margins and operating in a competitive environment which limits the extent to which their clients will be prepared to pay for the additional costs imposed on them to satisfy the labelling legislation.

Rather than mixing raw milk and milk ingredient streams from different origins, firms might choose to separate product flows from different origins. This might involve additional “switches” in the production process, including a loss of costly production time and costs associated with cleaning. The need for cleaning as well the extent to which cleaning will be required will depend on the specific

details in the implementation of this labelling option, in particular the thresholds that will be specified can have an impact on the costs.

For example, if a dairy product produced in a firm sourcing milk and milk ingredients from three Member States (A, B and C) and labelled as being produced with raw milk and milk ingredients of Member State A would imply that at least 95% of the ingredients originate from Member State A with the remainder allowed to originate from other Member States (say Member State B and C) this flexibility may allow firms to do less intensive cleaning than in the case of “zero tolerance”. Note that when firms choose for a mixing strategy rather than a separation strategy the thresholds (then being minimum thresholds) will also be important. Threshold levels (of approximately 5 to 15%) at which a particular origin must be stated on the label might reduce the expected cost increases substantially.

Imposing a labelling option like those of scenarios 3 and 6 might require a complete reorganisation of the whole production process, for example to store ingredients of different origin. However most operators interviewed reasoned from the existing situation and practices and the adjustments that have to be made to continue with these rather than in terms of a complete reorganisation of the production process.

As a result, the cost increases estimated for these scenarios might be sometimes in the higher range since not all optimization possibilities that in practice will be available were fully taken into account in the answers provided. In a number of cases the interviewed firms indicated that they might choose to substantially change their production process or even close down certain activities.

Another remark that was frequently made was that it would be important to have a sufficiently long implementation time when such a labelling option requiring serious adjustments to the current production practices would be implemented. The longer the implementation period, the better adjustments can be fitted in a general investment strategy that combines also other objectives as those resulting from the origin labelling requirements.

4.1.5 Miscellaneous impacts and costs

The interviewed firms referred to the potential indirect costs they could face due to a mandatory origin labelling requirement:

- Labelling options will reduce the flexibility of firms. Multi-plant processing firms indicated that they use to reallocate milk and milk ingredient flows over different plants when there are technical problems with certain machinery (which frequently occurs) or in case of maintenance activities at specific plants. Mandatory origin labelling options will reduce a food business operator’s flexibility in this regard and impose an additional indirect cost relative to the current situation.
- A number of interviewed operators indicated that they were unsure whether additional costs would be imposed on them as a result of a retailer’s response to origin labelling. For example, a retailer using processed cheese with non-EU milk ingredients may ask its supplier to use only EU milk and milk ingredients because this better fits into the retailer’s marketing profile. Some branded products might be perceived by consumers at present as coming from a specific origin or Member State, while this may not actually be the case. Mandatory origin labelling might cause a processor to re-position its product and necessitate changes on the production process.
- Another indirect cost was indicated by interviewed operators that were already involved in producing products having a voluntary label of origin (referring to a Member State or specific production region). They argued that as a side effect of mandatory origin labelling their business case would be eroded since consumers might then become more reluctant to pay a premium for their product.

4.1.6 Internal and external competition

The impacts on costs of production induced by mandatory origin labelling will usually be unevenly distributed over different types of processors. As was already indicated before, firms which only locally source and are specialized in producing a relatively simple product (perhaps with only a single milk ingredient) may expect generally low or even zero additional costs. However, other firms, in particular those sourcing milk and milk ingredients from different Member States or purchasing milk ingredients from outside the EU might face different (non-zero) costs.

Any imbalances that were created might affect the relative competitive position between food businesses, both on the internal domestic market as well as in intra-EU trade. Whereas from economic reasoning adding a cost to a production process (for example as a consequence of meeting the consumer interest with respect to knowing the country of origin of products) in a competitive market environment will be passed on to the final user of the product, in reality this may not be the case.

If consumers demonstrate an insufficient willingness to pay for the additional costs of mandatory origin labelling, powerful retailers may be able to transfer the burden (at least partly) to upstream stages of the supply chain, including the primary producer. This can affect all food businesses, but in particular those that are disproportionately affected by the origin labelling legislation will suffer a weakened competitive position.

Introduction of mandatory origin labelling not only affects the competitive position of individual businesses in their domestic market, but also the external competition with foreign markets. Here the impact will depend on the relative average cost increases faced by the dairy supply chains (at Member State level) as well as by the consumer preferences for products from a specific origin.

Whereas for most scenarios additional costs are low, the supply side impacts are not likely to generate big shifts in competitive positions of the dairy sectors at Member State level. For relatively high cost impact scenarios (see scenarios 3 and 6) and taking into account the heterogeneity that has been observed across Member States, adjustments in the competitive positions of particular sectors cannot be excluded.

Since the dairy supply chain is a high fixed cost industry, a likely response to changes in the competitive position will be finally translated to a lower farm gate price for raw milk. This is in particular likely for cooperatives, which operate as windows for milk valorisation on behalf of the primary producers.

4.1.7 EU quality indications (PDO, PGI, TSG)

In the analysis three case studies focused on GI (geographical indication) products (PDO and PGI). By its GI policy the EU promotes and protects names of quality agricultural products and foodstuffs, by which it aims to help consumers as well as producers (in particular in less favoured or isolated rural areas). Geographical indication can refer to a country level designation, but usually refers to a more specific region located within a country.

The EU's GI policy relies essentially on two main tools, PDO (protected denomination of origin) and PGI (protected geographical indication)¹². For consumers GI provides information on the origin of the product, and its quality, which is co-determined by the method of production and the origin of products and raw materials.

¹² A PDO product satisfies two conditions: i) its quality or characteristics are essentially and exclusively linked to a particular geographical environment of the place of origin, and ii) the production and processing of the raw materials, up to the stage of the finished product, have to take place in the defined geographical area, where the product's name refers to. A PGI has also to be produced in the area where its product name refers to, but it is sufficient when at least one of the stages in the production has taken place in the area.

GI cheese products receive a premium from consumers, with WTP values of 15%-20% of the product value having been observed (Requillart, 2007)¹³. Due to the restrictions with respect to location and the technical requirements with respect to production, processors often face high production costs compared to the regular non-GI protected products. Costs might be associated with specific feeding restrictions (e.g. a ban on the use of silage), as well as from practices that are due to the specific agro-ecological and climatic context (e.g. dairy farming in mountainous regions). Cost mark-ups may be 20% of the cost of production of un-regulated products.

Whereas PDO and PGI create a legal EU-recognized protection, there are also branded products and products registered under other appellation schemes that are similarly valued by consumers and can be seen as alternatives for PDO or PGI products.

From the case studies it was found that the additional costs of mandatory labelling of the country of origin is negligible for PDO products since these products are coming from a well-defined origin, since that is part of the standard product characteristic.

However, fears were expressed by respondents in the case studies that a generic system of mandatory origin labelling may erode the value of PDO products. Mandatory origin labelling might introduce additional or different labels of origin. These changed labels can create confusion with consumers, because they may increase the number of products that the consumer perceives to be a potential substitute for current PDO products.

This intensifies the competition between PDO products and mandatory country of origin labelled products. This would then create a downward pressure on the premium that PDO products currently receive from consumers. Because farmers producing PDO labelled products cannot do much to change their relatively high cost structure, this would create a competitive disadvantage for PDO products. This change in competitiveness and profitability could affect the participation (entry and exit of individual dairy farmers) and weaken the position of dairying in areas that are already vulnerable because of their disadvantage in production conditions (e.g. less favoured regions). The mandatory country of origin labelling is from that perspective not coherent with EU geographical indications of quality (PDO and PGI).

Mandatory labelling of origin of milk ingredients may increase transparency to consumers (e.g. a PGI dairy product that is produced by a processor in a specific region, with milk from that region and dairy ingredients from another country) but lead to a decline in the "reputation" of a product, where consumers thought that exclusively local ingredients were used. While this increase in transparency will be good for consumers it might hurt vested interests of current suppliers and may increase production costs if milk ingredients have to be sourced nationally.

Mandatory country of origin labelling of dairy milk and milk ingredients might contribute to a clearer distinction between PDO, PDI and other products with appellations of origin. This contributes to having better informed consumers, but can lead to shifts in the reputation of products as they are currently perceived by consumers. Potentially this may affect the competitive position of products (e.g. PGI products losing value relative to regular products).

In conclusion, it can be argued that introducing mandatory country of origin labelling for milk and milk ingredients can have ambiguous effects on the competitive position of GI-products relative to regular comparable dairy products, even though the additional labelling costs for GI-products turned out to be generally negligible. The increase in transparency creates a gain for consumers but might lead to shifts in the relative consumer reputation of some products, which may have negative

¹³ Requillart, V. (2007) On the Economics of Geographical Indications in the EU. Toulouse School of Economics (GREMAQ-INRA & IDEI). Paper to be presented at the workshop 'Geographical Indications, Country of Origin and Collective Brands: Firm Strategies and Public Policies' (Toulouse, June 14-15, 2007).

impacts for current suppliers of these products. Products with a strong linkage to location (e.g. PDO) might strengthen their profile relative to products with a more weak linkage to origin (e.g. PGI).

As the TSG indication is based on the specific and traditional character of products and does not create links to specific geographical areas, there should be no impact, either positive or negative, on the competitive position of TSG products.

4.1.8 Impact on demand and trade

Based on the analysis above, which suggest that in terms of willingness to pay, most consumers are only prepared to pay “a little more” for origin labelled products one would expect limited shifts in demand (i.e. changes in demand patterns due to origin labelling) for most of the labelling options considered in this study.

From the literature review that was done as background study for this analysis, it appeared that there are several motives consumers mention to indicate why they are interested in the region of origin. These include ethical-social as well as environmental concerns.

Given the fragmented information, our analysis does not allow to draw further conclusions from this. However, the motives mentioned might suggest a tendency of consumers to have a preference for supporting the local economy and local environment. To the extent such tendencies are relevant one would expect the demand for foreign products to decline rather than to increase and also a non-increasing impact on trade in general. For specific cases (products and Member States) the impacts on trade might be ambiguous (Jongeneel et al, 2014)¹⁴.

4.1.9 Environmental impact

Mandatory origin labelling will have an impact on the environment. A study of KWA bedrijfsadviseurs¹⁵ has shown for the labelling of per MS of the place of milking an increased water and chemical consumption, food losses and CO2 emissions in factories that process milk from different countries of origin. Increases can be foreseen in the range of 10%-25% for waste water discharge, 30%-40% CO2-emissions, for transport up to 30%, and 54% for food loss, due to an assumed 30% increased cleaning times (more frequently cleaning), less efficient use of raw materials and more food miles.

For years, the dairy industry has taken actions to optimize the efficiency of the production processes. There are also agreements between governments and industry that focus on for example on improving energy efficiency. Much progress has been achieved already, making the next steps in energy reduction difficult as it is. Mandatory origin labelling will make it even more difficult to reach the targets for energy reduction.

In addition, the European Commission and some Member States have set targets for reducing food waste.. These environmental impacts and food losses can be reduced if mandatory origin labelling is combined with thresholds (i.e. a certain proportion of the product up to a limit can have another origin than stated on the label).

¹⁴ Jongeneel, R and Baltussen, W. (2014) Analyzing the impacts of mandatory country of origin labelling in EU pork and poultry sectors on markets, cost of production and trade. Paper prepared for presentation at the 14th EAAE Congress, Ljubljana, August 26-29, 2014.

¹⁵ KWA bedrijfsadviseurs: Bovenkamp M.Sc., M.V. van den en Oldenhof M.Sc., S., Environmental impact of origin labelling for four dairy products: Cheese, Butter, Yoghurt and Fruit yoghurt, Amersfoort, KWA Bedrijfsadviseurs B.V., 2014.

4.1.10 Quantitative analysis

With respect to the impacts of mandatory origin labelling on the competitive position, production, consumption and trade of Member States, one scenario (scenario 6) has been analysed using the CAPRI (partial equilibrium) modelling tool, which includes supply, processing, demand and trade for key dairy products at Member State level for the EU-27 (this CAPRI version does not include Croatia as an EU Member State), while its market module also accounts for EU dairy trade with third countries. At the moment of the research no baseline calculations for the CAPRI model were available for the EU 28. For this reason we had to rely on the baseline calculations for EU27 for the period 2012-2020.

The scenario analysed (scenario 6 “Multi-country origin label referring to the place of milking”) can be interpreted as a scenario generating the highest costs to processors relative to all other scenarios considered.

As regards the other scenarios 0 to 5 no modelling analysis was applied because the costs were relatively low and precise estimates were lacking (except for scenario 3). The impacts for scenario 3 will be rather similar to those of scenario 6 and as such the simulations for scenario 6 can also be seen as an approximation of the expected impacts for scenario 3.

It is recognised that the quantitatively analysed products (fresh milk and cheese products) represent only a limited subset of a much broader list of dairy products (including butter, yogurts, skimmed milk powder, cream, whole milk powder and whey powder). For other products the information coming from the case studies did not allow an easy generalization to Member State impacts. The milk and dairy products distinguished in the CAPRI model differs from the division made in this study. The main difference is that fresh milk (CAPRI term) includes drinking milk, yogurt and buttermilk.

The following table provides the average cost impacts as calculated at Member State level, the production weighted average for all the Member States that were included in the case studies, as well as the minimum and maximum values (derived from the estimates for different firms in the case studies).

The average value can be interpreted as a proxy for the expected average cost increase at EU level, since the case study countries together represent 78% of the EU milk production and are chosen in such a way as to best reflect the heterogeneity in EU dairying. Note that the average expected cost increases for drinking milk and cheese are rather similar.

Table 28. Average cost impacts* as estimated at Member State level for fresh milk and cheese in case of scenario 6 (multi-country origin; place of milking)

	Fresh milk	Cheese
NL	2.10%	2.90%
DE	8.00% (4.00%)**	4.20% (2.10%)
PL	0.90%	0.70%
UK	0.00%	0.00%
FR	0.30%	1.60%
ES	1.20%	0.60%
IT	0.15%	0.30%
RO	6.00% (3.00%)	6.00% (3.00%)
CZ	3.00%	3.00%
Minimum	0.00%	0.00%
Maximum	8.00% (4.00%)	6.00% (3.00%)
Average	2.15%	2.12%

** Expressed as percentage increases of the cost of production at the processor level*

***Figures in brackets are the percentage cost increases for the sensitivity analysis*

Note that in particular Germany (DE) and Romania (RO) show relatively high cost impacts. When comparing the estimates for these countries with estimates for countries having several similarities (e.g. comparing Germany with the Netherlands) there is no clear explanation why these costs are so high, even though the food businesses interviewed were pointing to their being involved in cross border trade and international milk ingredient sourcing. The German cost estimate might be a signal of strong opposition to the introduction of mandatory country of origin labelling. This might have prevented them from searching for a least cost solution to cope with mandatory origin labelling requirements. In Romania the case study for fresh milk and cheese showed that every cost increase in Romania is regarded as excessive because the dairy processors have difficulties in making any profit. A quote from the case study “This company will not be able to cover the costs of labelling the origin of raw milk”. By the country expert it was estimated that 60% of the Romanian processed raw milk will face the same kind of additional costs. The other 40% will face almost no additional costs.

Comparing the cost estimates obtained for the EU dairy sector with estimates in other studies focusing on or including dairy (Terluin et al, 2013)¹⁶ and with the estimates found for other sectors (Baltussen et al, 2013¹⁷; Brester et al, 2004¹⁸) it can be concluded that the obtained cost estimates are roughly in line with the results found elsewhere. As other studies also show, the estimates, though reasonable, will have a margin of uncertainty since firms find it difficult to estimate the costs (Carlsson et al 2014)¹⁹ and/or may have a reason to not report their least cost estimate. Also, the aggregation procedure to get Member State-level estimates from the case study estimates contains a subjective element, even though it is based on a number of objective and relevant supply chain and market situation-criteria.

The above table provides an overview of the cost shocks that have been applied in the simulation analysis. However there was no clear information on the willingness to pay for country labelling of origin for specific consumer groups in the case study countries (e.g. consumers having a strong interest in origin labelling, with a specific preference for drinking milk originating from their own Member State, consumers not interested in country of origin labelling, etc.). Also the modelling tool did not allow products coming from different Member States to be treated as heterogeneous products (they must be perfect substitutes). Therefore impacts on the demand side were not included in the quantitative modelling analysis and the willingness to pay is not clarified.

Consumer preferences and willingness to pay for origin labelling are dealt with in a sensitivity analysis (see section 5.2) with the aim of providing an indication of how consumer interest in country of origin labelling might affect trade flows.

A second sensitivity analysis has been performed by increasing the processing costs for all types of milk and dairy products distinguished within the CAPRI model, with the cost increases as depicted in Table 28 for fresh milk.

¹⁶ Terluin, I.J.; Benninga, J; Berkhout, P., Immink, V.M. Janssens, S.R.M.; Jongeneel, R.A., Rau, M.L.; Tacken, G.M.L. (2012), Origin labelling: cost analysis for producers and consumers The Hague : LEI part of Wageningen UR (LEI-report/ research area International policy 2012-067a)-46p

¹⁷ Baltussen, W. , R. Jongeneel, P. van Horne, J Helming, D. Dewar Study on mandatory origin labelling for pig, poultry and sheep & goat meat AGRI-2012-EVAL-01 Final Report 3 June 2013

¹⁸ Brester et al, 2004 Brester, G.W., Marsh, J.M., Atwood, J.A. (2004) Distributional Impacts of Country-of-Origin Labeling in the U.S. Meat Industry. Journal of Agricultural and Resource Economics 29(2): 206-227.

¹⁹ Carlsson, C., Johanson, H., Lagerkvist, C.J., Sundström, K. and Wilhelmsson, F. (2014). Origin labelling of food; Costs and benefits of new EU legislation for Sweden. Lund, AgriFood Economics Centre.

4.2 Differences between dairy products

The most stringent scenario (Scenario 6: multi-country origin) has the following impact per dairy product:

Drinking milk: moderate cost increases are foreseen (0 to 5%) because most factories producing drinking milk do not import ingredients.

Cheese: slightly higher cost increases are expected (0-7%) than for drinking milk because for some cheeses milk ingredients (i.e. fat) are added.

PDO/PGI cheese: the additional costs increases are expected to be nil, but origin labelling may dilute some of the added value of the PDO/PGI product.

Goat and sheep cheese production: in the present situation frozen curd is used to counter the seasonality of milk production. Origin labelling makes it costly for at least some of the processors to realise a year round production cycle. For goat and sheep cheese produced under a PDO/PGI label origin labelling will not increase the costs because the ingredients are already sourced locally.

The origin labelling will have no or very little impact on the buffalo dairies, because they do not import dairy ingredients.

Butter: higher additional costs are expected than for drinking milk and cheese. The main reasons are multiple sourcing, concentrated production and multiple recipes.

Yogurt: higher additional costs are expected than for drinking milk and cheese. For yogurt manufacture, commodities like skimmed milk powder and whey powder are bought on the world spot market and imported from several countries. If these commodities have to be labelled, then high cost increases are expected.

Yogurt with fruits: interviewees judged it impossible to label the origin of fruits. Fruits are coming from all over the world and seasonality plays an important role. The response will be that yogurts with fruits will be offered only during a certain part of the year (buying from one country).

Processed cheese: a new kind of business model would be needed to implement origin labelling. In the present situation labelling each ingredient with the Member State of milking is virtually impossible in practical terms. Even at the level of labelling EU or non-EU origin, the processed cheese processors expect a cost increase because more expensive ingredients with known origin have to be bought.

Dairy ice cream: this is a invariably a composite product without an EU definition. Dairy ice cream has a range of possible milk ingredients including fresh whole milk, cream, skimmed milk, skimmed milk powder, butter oil, whey powder, condensed milk and whey protein concentrate. No estimate of the expected cost increases could be made due to reluctance of the ice-cream sector to cooperate in some of the case studies.

4.3 Administrative burden on companies from origin labelling

Administrative costs can be related to any additional costs of origin labelling. In the non-labelling option only costs associated with voluntary labelling of origin play a role. Since voluntary labelling represents a commercial business case, the costs of voluntary labelling can assumed to be more than compensated for by the buyers of the voluntary labelled product. With option 1 and 4 (EU or non-EU origin label) there will be barely any additional administrative costs for EU firms attached. The small cost increase is related to the adaptation of the label (small one-off costs). If the implementation

period is long enough the additional costs become more or less equal to zero because the adaptation can take place at a moment that also other adaptations have to take place. The same will apply for other options (country of origin level) when companies source raw milk only from domestic dairy farmers. According to the industry, country of origin labelling will create limited new administrative costs. The current administration systems already allow the transmission of all information to the public authorities.

For options 2 and 5 (group origin with respectively place of first processing and place of milking) data from the case studies on the additional costs for the options at country level are low (less than 0.5% of total cost increase). These costs mainly relate to the adaptation of the software used in the company and are once-only. In adjusting the software simultaneous changes can be made to provide the public authorities with the correct information.

For the options 3 and 6 (multi country origin with respectively place of first processing and place of milking) the highest increase in administrative costs can be expected. However, for most case studies this cost increase is less than 10% of the total cost increase caused by the mandatory labelling options.

In many of the case study interviews food businesses said they have to adapt the production plan for implementing the origin regulation and will not adapt the present factory structure. An implication of this could be that the cost calculations made during the case studies will probably overestimate the real costs of implementation.

5 IMPACT OF OPTIONS ON TRADE, CONSUMERS AND ADMINISTRATION

5.1 Trade

5.1.1 *Qualitative assessment*

Key elements for understanding the trade impacts associated with introducing mandatory labelling of origin are the impacts on relative cost differences between Member States and shifts in consumer preferences (revealed rather than stated).

The potential cost impacts on the supply chain are extensively discussed in chapter 4. A detailed discussion on the impact on consumers is provided in Section 5.2 of this chapter. Since the impact on net trade is a result of domestic supply and demand responses (shifts of curves and movements along supply and demand curves) the insights obtained in Sections 4.1 and 5.2 explain the expected changes in trade flows.

The expected impacts are explained and summarized in Table 29. For scenario 0 no change at all is expected as the scenario coincides with the current situation. For scenarios 1, 2, 4 and 5 the expected impacts are small. The most significant impacts in relative terms are expected for scenarios 3 and 6.

Note that only cost impacts were implemented, which will lead to adjustments in supply, demand and trade. In some cases (e.g. processed cheese) firms indicated that the introduction of a mandatory label of origin could lead to full abandonment (discontinuity) of sourcing ingredients from a specific origin. This type of impact is not well-captured by the modelling tool, which assumes more smooth adjustment patterns (continuity, but at a different scale).

The impact of mandatory origin labelling with respect to EU trade with third countries is expected to be small and also of an ambiguous nature. On the one hand mandatory labelling of origin allows EU

consumers to give dairy products originating from the EU a preferred choice, which would have a negative impact on EU imports of milk and milk ingredients from third countries. On the other hand the costs of production of dairy products in the EU will increase as a result of the additional labelling costs, which puts them at a competitive disadvantage relative to the products from third countries (only if they do not incur additional costs under a new mandatory origin legislation).

In particular consumers that are not interested in origin but rather focus on price may be interested in more competitive products originating from third countries. This latter impact is positive for the exports of third countries to the EU. In case the cost increase associated with mandatory origin labelling would turn out to be larger than the consumers (revealed) willingness to pay, a net decline in EU demand might result, which would induce the EU to expand its exports.

Table 29. Summary of expected impacts on Intra-EU and international trade

Levels of geographical origin	Stage of the supply chain	
	First place of processing of the raw milk	Place of milking
Labelling/non-labelling Status quo	<u>Scenario 0.</u> If it can be assumed that markets function properly under non-mandatory labelling, niche markets will develop associated with voluntary labelling of origin addressing the needs of interested consumers, where the users are paying a price for the products that will include a compensation for the costs of voluntary origin labelling. The existing trade flows already include this phenomenon and no further changes are expected	
EU origin EU / non-EU	<u>Scenario 1.</u> Minor impacts on intra-EU and international trade are expected (raw milk is close to being a non-tradable product) but some EU processors may abstain from ingredient sourcing outside the EU.	<u>Scenario 4.</u> As it is estimated to be impossible to determine the place of milking associated with the dairy ingredients sources outside the EU a negative impact on EU imports of milk ingredients from third countries is expected. Intra-EU trade will not be affected.
Group origin A group of Member States of <i>possible</i> origin e.g. [DE] <u>or</u> [BE] <u>or</u> [NL] <u>or</u> [FR]	<u>Scenario 2.</u> No significant impacts on intra-EU and international trade are expected because of small changes in relative costs of production and this option generates limited additional information to consumers (almost no shift in supply and demand).	<u>Scenario 5.</u> No significant impacts on intra-EU and international trade are expected because of small changes in relative costs of production and this option generates limited additional information to consumers. (almost no shift in supply and demand).
Multi-country origin Member States of <i>definite</i> origin ('multi-country origin') e.g. [DE] <u>and</u> [BE] <u>and</u> [NL]	<u>Scenario 3.</u> Changes in international and intra-EU trade are expected because of the relative large and heterogeneous changes in costs of production and this labelling option is giving the most specific information to consumers allowing them to maximum extent possible to express their preferences for origin (at country level)	<u>Scenario 6.</u> Changes in international and intra-EU trade are expected because of the relative large an heterogeneous changes in costs of production and this labelling option is giving the most specific information to consumers allowing them to maximum extent possible to express their preferences for origin (at country level)

5.1.2 Quantitative assessment

A quantitative assessment has been made of the impacts of scenario 6 (for fresh milk and cheese) using the CAPRI-modelling tool. This assessment aims at gaining further insight into the potential market and trade effects of the introduction of a mandatory labelling of country of origin or place of provenance.

Since the CAPRI model was not able to make a distinction between drinking milk and fresh dairy products (e.g. yogurt and buttermilk) identical shocks were applied for both groups. Based on the information coming from the case studies the use of similar cost impacts could be defended, as far as the origin labelling will be related to milk and milk as an ingredient in dairy products. As an example, in yogurt products alongside milk also milk powder is often used as an ingredient, while also non-milk ingredients (e.g. strawberry yogurt) may play a role. If these other ingredients would be subject to a similar origin labelling procedure the labelling costs for fresh dairy products are likely to increase further and be larger than those identified for drinking milk.

In the market impact simulation using the CAPRI model the following information has been used:

- the cost shocks that have been identified for the nine case study countries (see Table 28);
- the cost shocks for the remaining EU-27 Member States have been determined using a matching procedure (see Table 26 and explanation in Section 3.3).

It is important to note that no demand shocks (demand curve shifts resulting from changes in the willingness to pay) have been included in the analysis. Partly this was due to the lack of reliable information on willingness to pay (although a clear interest of consumers in country of origin labelling was identified) and partly this was because the CAPRI model sees all EU dairy products, from whatever Member State they originate as perfect substitutes, which complicates the implementation of Member State specific demand shifts.

Not taking into account the impact of demand or willingness to pay-shifts has implications for the interpretation of the trade modelling results. As is shown in Jongeneel et al (2014)²⁰ under this assumption consumer welfare will unambiguously be negatively affected, as will total consumer demand. However consumer welfare results might be more relevant when considering voluntary labelling than in case of mandatory labelling as changes in demand will also lead to changes in trade flows.

It should be noted that although the impacts on trade, consumption and production appeared to be rather limited, these are market- or sector-wide impacts. Whereas the latter can be limited, the impacts on specific firms (e.g. a firm operating in a border region) can be a manifold of these market impacts. Based on the case study information, as well as on the analysis of the market structure and supply chain analysis, mandatory origin labelling is expected to have unevenly distributed negative impacts for specific individual firms, which can be serious, even though at market level impacts are small.

In the market impact simulation it is assumed that the same option of mandatory origin labelling is applied to drinking milk as well as to cheese and fresh dairy products. One could imagine that different products would be treated in a different way. Some simulations have been done, only introducing origin labelling for one product group, but not for another (not reported). In that case

²⁰ Jongeneel, R and Baltussen, W. (2014) Analyzing the impacts of mandatory country of origin labelling in EU pork and poultry sectors on markets, cost of production and trade. Paper prepared for presentation at the 14th EAAE Congress, Ljubljana, August 26-29, 2014.

spill-over effect between different consumer product markets could occur, that you will find much less in case of a more balanced introduction of mandatory country of origin labelling.

The results will be presented for blocks of EU Member States (EU-15, EU-10, EU-2) and the EU as an aggregate (EU-27), while also minimum and maximum values will be denoted, as to provide an impression of the variation of results over individual Member States. Subsequently the impact on prices (processor/producer and consumer), production and consumption, trade, and primary production will be discussed. Results are presented as percentage changes relative to a base line, where the base year reference levels are separately provided. Note that in the CAPRI-modelling context the year 2020 is chosen as the reference year, including a full implementation of the expected impacts of the milk quota abolition in 2015.

5.1.2.1 Impact on prices

As Table 30 shows the introduction of the mandatory labelling option (scenario 6) has an upward impact on processor prices as well as consumer prices, due to the additional costs associated with the labelling of origin. In percentage terms the impact of the processor price increase is larger than the price increase to consumers, but note that these percentages apply to price levels at different stages of the supply chain (ex-factory, retail). Since the market module in the CAPRI model treats the products from different Member States as perfect substitutes the law of one price holds within each of the country blocks (e.g. EU-15, EU-10, EU-2) presented below.

Table 30. Impact on prices of drinking milk and fresh dairy products, and cheese due to mandatory origin labelling (see scenario 6). All prices in baseline in € per tonnes.

	Fresh milk				Cheese			
	Baseline		% change		Baseline		% change	
	Processor price	Consumer price	Processor price	Consumer price	Processor price	Consumer price	Processor price	Consumer price
EU-15	1 002	965	2.5% (1.4%)	1.5% (0.9%)	5 618	5 827	1.3% (1.0%)	1.0% (0.9%)
EU-10	571	511	0.8% (0.8%)	0.7% (0.7%)	3 391	4 035	0.7% (0.7%)	0.6% (0.7%)
EU-2	657	594	4.6% (2.3%)	3.5% (1.7%)	3 072	4 045	1.8% (1.0%)	1.2% (0.8%)
EU-27	932	891	2.4% (1.4%)	1.4% (0.8%)	5 198	5 507	1.3% (1.0%)	1.0% (0.7%)

Note: Numbers in brackets refer to changes related to a sensitivity scenario in which the cost increases for Germany and Romania are halved (see Table 28 for more details).

The figures in brackets show the impact if the cost increases in Germany (8% for fresh milk and 4.2% for cheese) and Romania (6% for both fresh milk and cheese) are halved. From Table 30 it can be concluded that the impact for price change at processor level and at consumer level for fresh milk are almost halved (especially for the EU 15 and EU 2) compared to the baseline scenario (price increase at processor level becomes 1.4% instead of 2.5% for fresh milk). For cheese the impact of a lower cost increase on the processor and consumer prices are less than for fresh milk. The price increase at processor (consumer) level is 1% (0.9) instead of 1.3% (1.0%).

5.1.2.2 Impact on production and consumption

The following table shows the net impacts on production and human consumption appear to be limited (in all cases 1.3% or less) and mostly negative (due to the lack of a WTP-shock - see the commentary below Table 34 for a further discussion on this point). This limited impact on production

and consumption should be no surprise since it was already noted that the impact on prices has been limited. So processors and consumers will have only a slight incentive to change their behaviour. Even between EU MS the differences are limited. For the production of cheese and milk the changes are limited between +2.4 % for fresh milk in France and +1.3 % in Austria for cheese and minus 6% in Germany for fresh milk and -2% in Belgium for cheese. Consumption for fresh milk decreases between 0.2% (CZ) and 1.2 % (BU) and consumption of cheese decreases between 0.2 % (7 EU MS) and 1% (RO) (see table 31).

Table 31. Impact on production and consumption of fresh milk and fresh dairy products, and cheese due to mandatory origin labelling (see scenario 6; * 1000 tonnes).

	Fresh milk				Cheese			
	Baseline		% change		Baseline		% change	
	Product- ion	Consump- tion	Product- ion	Consump- tion	Product- ion	Consumpt- ion	Product- ion	Consump- tion
BE	1 417	981	0.3%	-0.4%	73	180	-2.0%	-0.2%
DK	662	756	0.8%	-0.3%	326	116	-1.2%	-0.2%
DE	10 958	7 558	-6.0%	-0.7%	2 188	1 757	-0.1%	-0.3%
AT	1 214	877	-4.7%	-0.4%	160	173	1.3%	-0.3%
NL	1 625	2 335	-0.3%	-0.5%	939	431	-0.5%	-0.3%
FR	6 762	5 809	2.4%	-1.1%	1 861	1 661	-0.7%	-0.6%
PT	1 030	1 331	0.6%	-0.8%	78	129	0.1%	-0.4%
ES	5 131	5 055	0.5%	-0.7%	415	458	0.1%	-0.3%
EL	618	877	1.8%	-0.5%	269	363	0.2%	-0.5%
IT	2 716	4 193	1.9%	-0.9%	1 269	1 327	-0.1%	-0.4%
IE	629	951	1.2%	-0.7%	145	29	0.1%	-0.2%
FI	827	888	1.9%	-0.5%	117	112	-1.0%	-0.3%
SE	1 310	1 354	2.0%	-0.4%	121	141	-1.3%	-0.2%
UK	6 901	8 685	1.6%	-0.5%	335	629	0.2%	-0.5%
CZ	733	805	-1.5%	-0.2%	155	166	-0.9%	-0.3%
EE	253	212	0.1%	-0.3%	37	25	0.0%	-0.3%
HU	885	816	-1.1%	-0.3%	95	90	-0.5%	-0.3%
LT	417	430	0.1%	-0.4%	129	47	0.0%	-0.3%
LV	144	265	0.0%	-0.4%	54	26	0.0%	-0.3%
PL	4 327	4 399	0.1%	-0.3%	948	648	0.0%	-0.3%
SL	358	226	0.6%	-0.3%	31	17	-0.2%	-0.2%
SK	446	411	-1.5%	-0.3%	45	34	-0.8%	-0.2%
CY	92	106	0.4%	-0.2%	13	15	-0.3%	-0.2%
MT	24	27	0.1%	-0.2%	0	7	0.0%	-0.3%
BU	188	195	-0.2%	-1.2%	90	37	-1.1%	-0.7%
RO	330	279	0.4%	-0.9%	272	524	-1.5%	-1.0%
EU-15	41 800	41 648	-0.7% (-0.4%)	-0.7% (-0.4%)	8 295	7 507	-0.3% (-0.2%)	-0.4% (-0.3%)
EU-10	7 680	7 698	-0.3% (-0.3%)	-0.3% (-0.3%)	1 506	1 074	-0.1% (-0.2%)	-0.3% (-0.3%)
EU-2	518	474	0.2% (-0.1%)	-1.0% (-0.5%)	362	561	-1.4% (-0.7%)	-1.0% (-0.6%)
EU-27	49 998	49 820	-0.6% (-0.4%)	-0.6% (-0.4%)	10 163	9 142	-0.3% (-0.2%)	-0.4% (-0.3%)
All MS								
Min change			-6.0%	-1.2%			-2.0%	-1.0%
Max change			2.4%	-0.2%			1.3%	-0.2%

Note: Numbers in brackets refer to change related to a sensitivity scenario in which the cost increases for Germany and Romania are halved (see Table 28 for more details).

If the cost increases in Germany and Romania are halved (the figures in brackets in Table 31) the impact on production and consumption also decreases. For the Romania and Bulgaria the impact is halved, for the EU-15 the impact on production decreases by at least 25% (Germany is part of this block) and for the EU10 virtually nothing changes in production or in consumption compared to the baseline scenario.

5.1.2.3 Impact on trade

With the domestic demand and supply responses being limited, the derived impact on the net trade positions of Member States is also expected to be limited (in absolute amount; the percentage changes can be much larger in particular when net imports or exports are initially small relative to domestic production and consumption of dairy products). This is what is shown in Table 32.

As is shown at the bottom part of Table 32 (see the minimum and maximum rows) for individual Member States the percentage changes in net trade that were observed can be substantial (81% increase for net trade in Spain (small import of 76,000 tonnes decreases to about 15,000 tonnes). As already noted, it should be recognised that often the net trade positions are small and that in that case even small changes in absolute amounts of exports or imports can result in large percentage changes. For more specific country information about import and export volumes of specific dairy products (as well as their net trade) also see the tables in section 2.8 of this report.

Table 32. Impact on net trade of fresh milk and fresh dairy products, and cheese due to mandatory origin labelling (see scenario 6). All figures in 1000 tonnes.

	Fresh milk			Cheese		
	Baseline Net export	Change Net export	% change	Baseline Net export	Change Net export	% change
EU-15	146	-1	-1% (0%)	546	12	2% (2%)
EU-10	-27	2	-8% (-3%)	341	2	1% (1%)
EU-2	41	7	17% (8%)	-210	1	-1% (-1%)
EU-27	159	8	5% (2%)	678	16	2% (2%)
Range per Member State						
Minimum			-17%			-13%
Maximum			81%			8%

Note: Numbers in brackets refer to changes related to a sensitivity scenario in which the cost increases for Germany and Romania are halved (see Table 28 for more details). A negative net export (see baseline net export value for EU-10) is a positive import. An increase in the net exports for a country that is initially a net importer implies a reduction of its imports.

The figures in brackets show the results when the cost increases in Germany and Romania due to mandatory labelling are halved. Compared to the baseline the trade in fresh milk will not be affected for the EU 15. There is more impact on trade of fresh milk (lower changes compared to the baseline) for EU 10 and EU 2. For cheese there is virtually no change in trade compared to the baseline scenario and with the scenario of high cost increases due to labelling in Germany and Romania (increase of net trade of 2% on EU-27 level)b.

5.1.2.4 Impact on farm income

The model shows mandatory origin labelling to have a negative impact on farm income (see Table 33). The additional costs of origin labelling are partly passed on to farmers in terms of a reduction of the farm gate milk price. The decline in milk price induces a less than proportional decline in the milk supply (inelastic price response). On average the farmers return from selling raw milk declines by 1% or by €632 million. In the case of halved cost increases in Germany and Romania the farmers' return shows a smaller decline of 0.5% - 0.6%. The impact on farm income is mainly caused by price impacts and only to a small extend caused by a lower supply of milk.

Table 33. Impact on primary production (milk price (€ per tonnes) and milk supply (1000 tonnes)) due to mandatory origin labelling (see scenario 6).

	Baseline		% change	
	Milk price	Milk supply	Milk price	Milk supply
EU-15	436	126 642	-0.6% (-0.4%)	-0.2% (-0.1%)
EU-10	318	20 795	-0.5% (-0.6%)	-0.1% (-0.1%)
EU-2	266	5 463	-8.1% (-3.9%)	-0.9% (-0.4%)
EU-27	414	152 900	-0.8% (-0.5%)	-0.2% (-0.1%)
Minimum			-9.5% (-4.6%)	-1% (-0.7%)
Maximum			+2.1% (+1.3%)	+0.6% (+0.4%)

Note: Numbers in brackets refer to changes related to a sensitivity scenario in which the cost increases for Germany and Romania are halved (see Table 28 for more details)

5.1.2.5 Impacts without and with a WTP-shock

The results above are conditional on no willingness-to-pay shock. Because in the simulation (see Tables 30 - 33) consumers are not prepared to pay more for the origin labelled products, there is a fall back in demand due to the cost increase. As a result prices in all stages of the supply chain, as well as production, come under downward pressure.

In order to provide some insight into the impact of a positive willingness to pay shock with the CAPRI model an additional simulation was done, where all the costs shocks were similar to the ones use for the quantitative assessment that has been described above.

In addition a generic positive willingness to pay shock of 0.8% of the wholesale price has been taken into account. This number has been calculated for the EU as a whole using Eurobarometer information (see also Table 35 from Section 5.2). This average WTP shock has been applied to all EU-Member States, even though it is known that there are significant differences with respect to the willingness to pay.

The following table provides a comparative overview, showing how the results presented above are likely to change under this assumption.

Table 34. Overview of average EU27 impacts (as a percentage difference to the baseline) to consumers, processors and dairy farmers when the introduction of mandatory origin labelling (see scenario 6) is supported by a willingness to pay shock of 0.8%

	No WTP		With WTP	
	Fresh milk	Cheese	Fresh milk	Cheese
Consumers				
Price	1.4	1.0	2.0	1.6
Demand	-0.6	-0.4	-0.1	0.1
Processors				
Price	2.4	1.3	3.2	2.2
Supply	-0.6	-0.3	-0.1	0.0
Primary production				
Milk price	-0.8 (-0.5)		0.0 (+0.3)	
Milk supply	-0.2 (-0.1)		0.0 (+0.1)	

Note: Numbers in brackets refer to changes related to a sensitivity scenario in which the cost increases for Germany and Romania are halved (see Table 28 for more details)

Source: Study calculations with CAPRI-model

As the above table shows, when consumers are prepared to pay 0.8% more, the negative impact on demand more or less vanishes. Dairy processors could in that case pass on the cost due to labelling to the final consumer.

Note that as a consequence also the negative impact on supply is no longer an issue (except for some rounding margin). This positive impact of a willingness to pay shock also translates to primary production. Rather than becoming under pressure (as was the case without a positive willingness to pay shock) now the average EU27 price paid for raw milk supply could be comparable to the baseline. The sensitivity analysis show that average in the EU27 the milk price and supply of primary production could also slightly increase if the positive impact of the willingness to pay shock is included and cost increase for Germany and Romania and connected Member States are halved.

5.2 Consumers

5.2.1 Evaluation of labelling options

In the EU there is a wealth of literature on consumer interest in the geographical origin labelling of milk and dairy products, which demonstrates that **consumer interest is strong**. This evidence is generally backed up by the results of the most recent Eurobarometer 410 survey (2014).

Results of the Special Eurobarometer 410²¹ indicate that a large majority (84%) of EU citizens consider it necessary to be able to identify the place of origin of milk, whether sold as such or as an ingredient in dairy products; more than half of Europeans (54%) consider it to be “*totally necessary*” and some 30% to be “*somewhat necessary*”. Other studies (FCEC consumer survey 2013; BEUC, 2013; FSA, 2010; NatCen, 2010; CLCV, 2012; Zühlsdorf et al, 2013; Haaster-de Winter and Ruissen, 2012) generally confirm the results of the Eurobarometer 410 survey. These results are presented in Table 35.

²¹ Special Eurobarometer 410, Europeans, Agriculture and the Common Agricultural Policy, European Commission, 2014. Conducted between November and December 2013. http://ec.europa.eu/public_opinion/archives/ebs/ebs_410_en.pdf.

5.2.2 Consumer willingness to pay for different labelling options

While there is a strong consumers' interest in origin labelling of milk as an ingredient, this is **not necessarily reflected in their willingness to pay (WTP) for this information.**

In the Eurobarometer 410 survey respondents were asked whether they were willing to pay 1-2% more for the origin to be indicated on the label of dairy products and minor meats (the survey question included both types of products). As can be seen from Table 35 (see right part) on average 53% of the respondents or consumers in the EU-28 is prepared to pay 1-2% more for origin labelled products.

However the results indicate that there is a difference between the consumers expressing an interest in origin labelling and those that state to be prepared to pay 1-2% more. As an example, in Spain 88% of respondents indicated an interest in origin labelling, whereas at the same time less than half (47%) said they would be prepared to pay 1-2% more for this information.

On average just over half (53%) of the Eurobarometer respondents in the EU-28 indicated they would be willing to pay 1-2% more, while some 84% indicated they consider it 'necessary'/'totally necessary' to receive origin information on dairy products. These results imply that about 30% of the respondents interested to know the origin of dairy products but are not willing to pay 1-2% more (or more) for this information. This difference between stated interest and WTP has been observed before (FCEC, 2013) as a 'paradox' in consumer attitudes with respect to origin labelling.

Based on the results of the Eurobarometer 410 on the expressed WTP for the case study countries, indicative WTP estimates have been calculated, which are in the range of 0-2%.

As is known from the literature on contingent valuation and consumer choice experiments, there is usually a difference between stated preferences (e.g. as expressed in a contingent valuation study) and revealed preferences (as expressed in actual consumer behaviour in the market when making the actual purchasing choices).

This appears to be confirmed by the Eurobarometer 410 survey results, which indicate a relatively low 'stated' willingness to pay, as only just over half (53%) of respondents said they would be, in principle, willing to pay 1-2% more for the origin information, while 42% would not be willing to pay. Two reasons may explain this: i) consumers may think they have "the right to know", i.e. that origin information should be provided by food business operators without imposing additional costs on consumers; or ii) consumers may think that origin information can be provided at no cost for food business operators (free lunch) since there are extensive information tracking systems in place along the food supply chain, implying that operators should be able to reveal the origin information on the product label without undertaking further action i.e. without additional cost.

Table 35. Consumer interest, understanding and willingness to pay for origin labelling in case study countries and EU-28 (% of respondents) *

	Consumer interest in origin labelling **			Reference level **		Geographical indication **			Consumer' expressed willingness to pay		
	Totally necessary	Somewhat necessary	Total	Place of transformation	Place of milking	EU/non-EU	Region of origin	Country of origin	Share of respondents willing to pay 1-2% more ***	% of respondents interested but not willing to pay 1-2% more	Average WTP estimate (% of price) ****
NL	31	33	64	43	39	33	19	46	52	12	0.21
DE	56	27	83	67	46	40	50	67	65	18	
PL	32	47	79	63	47	17	39	57	43	36	
UK	49	28	77	52	59	18	28	49	57	20	
FR	62	24	86	68	74	30	33	69	56	30	
ES	62	26	88	67	59	27	39	71	41	47	1.65
IT	59	33	92	69	65	26	39	72	53	39	2.03
RO	57	27	84	71	49	36	46	58	39	45	
CZ	56	28	84	54	70	21	32	69	48	36	
EU minimum	31	11		43	39	17	19	43	33		
EU maximum	83	47		76	72	40	60	61	83		
EU average	54	30	84	65	57	28	45	50	53	31	0.80

* Table composed on the basis of the findings of Eurobarometer 410, including own calculations (LEI). The WTP findings apply to dairy and minor meats, without it being possible to distinguish individual product categories.

** Information based on Eurobarometer 410 survey (2014)

*** A little more was indicated to be 1% to 2% of the consumer price. Information based on Eurobarometer 410. The survey question was whether consumers are willing to pay 1-2% more for both dairy and minor meats. The survey question included both dairy products and minor meats.

**** Own estimate (LEI) based on Eurobarometer 410.

Source: LEI, based on Eurobarometer 410 (2014)

5.2.3 Consumer understanding and preference for different labelling options

Table 35 provides information that enables to rank the different labelling options in terms of their value to consumers (i.e. the way in which consumers address their preferences).

On average, respondents to the Eurobarometer 410 survey indicated to prefer an origin label referring to the place of transformation (77% of respondents) over the place of milking (68%), although the difference between both options is small. For 3 out of the 9 Member States included in the case studies the preferences is in fact reversed, i.e. the place of milking is preferred by a larger percentage of consumers than the place of transformation.

At the EU-28 level 28% of the respondents participating in the Eurobarometer survey said it would be sufficient for them to know whether milk comes from within or from outside the EU. A much larger group, 50 % of respondents, indicated that they find it necessary to know the country of origin. A somewhat smaller group (45%) indicated to want to know the region where the product is originating from. Here region refers to a region within a country, but it might be similar for a region crossing the borders of Member States (e.g. the Alps-region) or even to a region consisting of two Member States.

The information in Table 35, as well as the information from the Multi criteria Mapping (MCM) workshop with stakeholders enables to rank the different labelling options that are analysed in this study. In line with the EU28 results of the Eurobarometer on consumer interest in all the case study countries (Netherlands being an exception), consumers rank country of origin first (e.g. scenarios 3 and 6) above region of origin (e.g. scenarios 2 and 5), and they rank region of origin above EU/non-EU origin information (scenarios 1 and 4).

The input from the consumer association in the MCM workshop suggested that consumers would prefer a reference to the place of milking above a reference to the first place of transformation. As regards the place of transformation they indicated that this should be a processing stage and not a re-packing or handling activity, because otherwise consumers might be misled. It was recognized that a clear definition of dairy products using milk as an ingredient is needed and that “origin” might be an unsuitable wording in case a product is not wholly produced in one Member State.

5.2.4 Summary of conclusions on consumer need to be informed

The analysis of the indicators on the consumers’ need to be informed (i.e. consumer interest, understanding/awareness, willingness to pay, and the extent of voluntary origin labelling) is summarised in the following table.

Table 36. Analysis of the indicators on the consumers’ need to be informed

Milk and milk used as an ingredient in dairy products		
Theme	Conclusion	Evidence
Consumer interest	Consumer interest to know the origin of drinking milk and milk in dairy products is strong	Special Eurobarometer 410 (2014); FCEC survey (2013); BEUC study (2013); DG SANCO study on voluntary labelling (2013); consultation with consumer organisations
Understanding of ‘origin’	EU consumers have different views as to which ‘origin’ should be indicated (place of milking or	Special Eurobarometer 410 (2014); FCEC survey (2013);

Milk and milk used as an ingredient in dairy products		
Theme	Conclusion	Evidence
	transformation) and as to the motivations behind their interest to know the origin. Most consumers thought the EU/non-EU indication would not be satisfactory for milk-based products.	BEUC study (2013); consultation with consumer organisations
Willingness to pay (WTP)	<p>Interest in origin is not necessarily reflected in consumers' WTP, while there are substantial variations between MS.</p> <p>Examples:</p> <ol style="list-style-type: none"> 1. On average across the EU 53% of consumers are willing to pay 1-2% more for origin labelling, whereas 42% consumers are not willing to pay more. WTP differs substantially between MS: majority of consumers in 16 MS willing to pay 1-2% more, majority of consumers in 11 MS not willing to pay more. 2. On average across the EU, 50% of respondents have indicated WTP for origin labelling on cheese at the highest price premium of 28%. WTP varies substantially between MS. But results may overestimate WTP as the study includes PDO/PGI schemes under origin labelling. 3. All existing studies indicate that the price is a more important factor for the consumer when buying food products ranking it at a higher order than geographical origin (with price, appearance, quality, use by date, brand, generally indicated by consumers as the most relevant aspects affecting their purchasing decisions). 	<ol style="list-style-type: none"> 1. Special Eurobarometer 410 (2014); 2. DG SANCO study on voluntary labelling (2013) 3. DG SANCO study on voluntary labelling (2013); FCEC survey (2013); BEUC study (2013); LEI (2012); evidence from consumer organisations' surveys
→ Consumers' attitudes	There is a ' <i>paradox</i> ' in consumer attitudes, in terms of the fact that consumers' strong interest in the origin of food is not necessarily reflected in their willingness to pay for this information.	
Extent of voluntary COOL	Voluntary origin schemes approved at national or concerted industry level (beyond PDO/PGI as such) are generally limited. Where they exist, they form part of a wider quality initiative. The prevalence of EU quality schemes in the sector (for cheese) may explain the limited occurrence of VCOOL.	Consultation with the industry (2013) and consumers' organisations; DG SANCO study on voluntary labelling (2013);
EU quality schemes	Cheese is the second largest food category covered by EU quality schemes (PDO/PGI) in terms of the number of registered PDO/PGI denominations, accounting for 1/3 of the PDO/PGI turnover in 2009. However, in total, only 8% of the cheeses produced in the EU are protected by an EU quality scheme (PDO/PGI).	DOOR database; Eurostat

Source: Agra CEAS (study findings)

5.2.5 Ranking origin labelling versus non-labelling

The discussion above focuses on different origin labelling options, but did not explicitly assess the labelling versus non-labelling option (see scenario 0). The information from the Eurobarometer 410 survey is not directly usable to answer this question. In this survey it has not been asked for example whether consumers think they have already sufficient freedom of choice, i.e. have the ability to choose products that are voluntary labelled with an origin label.

From Table 9 (see Section 2.8) it appears that in nearly all the case study countries there are dairy products carrying a voluntary origin label. The presence of voluntary origin labelling can as such be interpreted as an indicator that there is consumer demand for origin labelling and that this demand is to some extent (i.e. depending on actual implementation of the voluntary labelling schemes) met by the market. Where there is a group of consumers prepared to pay a premium for origin information, voluntary origin labelling has a commercial business case when the returns exceed the costs. According to this reasoning, where markets function properly an optimal mix of origin-labelled and non-origin-labelled products will be supplied and consumed.

Non-labelling also has as an advantage over any mandatory labelling scenario in that it is only addressed to consumers who are interested in the origin of the products they buy (and may be prepared to pay a higher price). For those that are not interested in origin labelling or are not willing to pay more (e.g. 42% of respondents to the Eurobarometer 410 were not willing to pay even 1-2% more), they are left with the choice of not having to pay the cost burden associated with the provision of origin information that has no value for them. This discrepancy between those who benefit and those who pay is an important consideration in the provision of public goods.

In other words, mandatory origin labelling allows those interested in the origin labelling to externalize part of the costs associated with it to third parties (i.e. consumers not interested in labelling and producers not interested or efficient in supplying this information). While it expands the freedom of choice for consumers interested in origin labelling, at the same time mandatory origin labelling reduces the freedom of choice for those consumers (and producers) not interested in the origin label.

From the review of the consumer literature it appeared that for many (non-interested and interested) consumers the price of the product was a more important characteristic to consumers than its origin. This emphasizes the need to choose for a system which allows consumers a maximum freedom with respect to the choice of the combination of product characteristics and price to pay.

Applying welfare-economic reasoning, from a societal point of view it can be argued that introducing mandatory origin labelling in a market economy where voluntary origin labelling already exists would extend labelling beyond its optimal scale and have a negative impact on total welfare. Since voluntary labelling including a reference to regional or national origin was observed to play a role in all the case study countries examined, the current situation can be argued to ensure "freedom of choice" to consumers interested in the origin of dairy products.

In case of a well-functioning market environment, including an adequate provision of dairy products carrying a voluntary origin label, non-mandatory labelling is a preferred option to all mandatory labelling scenarios. However, as was noted above, the strategic behaviour of consumers having an interest in origin labelling may induce them to still express a preference for a mandatory labelling scenario since it further expands their freedom of choice and allows them to share the cost-burden associated with origin labelling.

In order to evaluate mandatory labelling scenarios against a non-labelling (=voluntary labelling) scenario it is crucial to know how the functioning of the market is assessed. Although the empirical evidence showed that voluntary labelling of origin of dairy products is generally occurring, the

findings of the consumer research might suggest that consumers are not yet satisfied with the current situation because a large number of them indicate they find it (“totally”) necessary to know the origin of the dairy products containing milk as an ingredient.

Reasons for the potential consumer “dissatisfaction” with the current labelling situation that were raised during the stakeholder workshop could be that mandatory labelling would:

- establish a uniform public standard and by that reduce the confusion that sometimes exists with respect to the voluntary labels currently used;
- would increase the trust of consumers in the reliability of the information as it is backed by a legal requirement rather than being based on commercial business interests only.

In combination with a “right to know” line of reasoning, these concerns could explain why consumers would prefer mandatory labelling over voluntary labelling.

Another issue could be whether the amount of voluntary labelled products supplied to the market is adequate. Since origin labelling will introduce additional costs a supplier will need to have a clear signal about the willingness to pay in the market (e.g. revealed rather than stated preference) for a voluntary labelled product because otherwise there will be no business case.

The information about the willingness to pay (Eurobarometer 410, see also Table 35) generally indicates a low willingness to pay from consumers. Since most willingness to pay studies are based on stated preferences (e.g. open surveys rather than for example on hedonic pricing analysis) this can make the indicated low willingness to pay information even more uncertain.

The uncertainty and risks in this regard may prevent suppliers from stepping into an origin-labelled niche market, unless it can be done at very low cost or unless the origin label can be used in combination with other product characteristics to ensure a premium payment (from the case studies it appeared that voluntary labelling of origin or region is often combined with other product characteristics differentiating the product from other competing products in the market).

Based on the observations made above one would not expect a large share of voluntary labelled products. As such, based on the material examined for this study, there is no hard evidence to argue that the market for dairy products is currently not properly functioning with regards to existing voluntary origin labelling schemes. In order to draw further conclusions on this additional research would be necessary.

5.2.6 Indicative WTP estimate for origin labelling for dairy products in EU-28

In order to have an indication about the order of magnitude of the consumer willingness to pay (WTP), given that the only evidence available to date are the results of the Eurobarometer 410 survey, an indicative WTP estimate has been calculated, using a number of critical assumptions. Results are presented in Table 36.

First an estimate has been made of the amount of dairy products produced for direct consumption (mainly based on 2012 production data). Note that this approach implies that direct consumption is assumed to be roughly equal to consumption and might ignore that part of the production are not directly going to a final consumer (e.g. butter going to the food processing industry and being used as an ingredient in bakery products).

The consumer prices for the products in 0 have been estimated based on the prices for specific consumer dairy products as identified from five Dutch retailers (measured at 3 February, 2014).

As retailers in the Netherlands are known to be competitive and efficient, the prices thus determined will be at the lower end of the price range for these products in the EU. For the willingness to pay the

figure of 0.80% of the consumer price (see Table 35) is used. The total WTP for the products considered is estimated to be close to 640 million euro. It is noted again that this information is based on consumer stated preferences and may deviate from revealed preferences as may actually be observed in the market (see section 5.2.2).

Table 37. Indicative estimate of consumer willingness to pay (WTP) in EU-28 for origin labelling for a selection of dairy products *

Dairy product	Consumption (1 000t)	Estimated consumer price €/t	WTP/t	Total WTP (million €)
Drinking milk	31 750	635.00	5.08	161
Fresh dairy products **	13 764	886.70	7.09	98
Cheese	9 230	4 160.00	33.28	307
Butter	1 987	4 576.00	36.61	73
Total				639

* Selection includes the products that were confirmed by the participants of a stakeholder workshop including organisations representing EU consumers to be considered as products in which milk can be considered to be the main ingredient. This selection excludes processed cheese and ice cream.

** Includes products like yogurts, cream for direct consumption, etc. The production of fresh dairy products is estimated based on Requillart et al (2008)²²

Source : LEI

5.3 Administrative cost and burden for Member States Competent Authorities

This section has been drafted on the basis of evidence collected by Agra CEAS Consulting in a consultation of Member State Competent Authorities carried out as part of the present and other studies on food origin labelling conducted for the European Commission in 2013 and 2014²³.

At the level of Member State Competent Authorities, the aim has been to establish the cost implications from the introduction of new origin labelling rules on a mandatory basis for enforcement authorities. In accordance with the European Commission guidelines²⁴, the assessment of administrative burden distinguishes between administrative burden and the substantive compliance costs which are incurred by the implementation of the legislation as such (i.e. the cost of controls):

- The term 'administrative burden' refers to the costs of the information collection and reporting obligations, such as the obligations to notify, to submit a report, to register, to

²² Vincent Réquillart, Bouamra-Mechemache, Z, Jongeneel, R (2008) "Economic Analysis of the Effects of the Expiry of the EU Milk Quota System", Rapport IDEI, n. 5, Rapport final pour la Direction Générale de l'Agriculture- Commission Européenne.

²³ Including the 2014 DG SANCO study on the application of rules on mandatory country of origin labelling or place of provenance of unprocessed foods, single ingredient products and ingredients that represent more than 50% of a food, conducted by the Food Chain Evaluation Consortium (FCEC) and led by Agra CEAS Consulting. In addition, evidence has been supplemented with and checked against the conclusions of the similar consultations with Member State Competent Authorities conducted in 2013 by Agra CEAS Consulting (FCEC) for the DG SANCO study on the mandatory indication of origin or place of provenance of meat used as an ingredient.

²⁴ EU Commission's Impact Assessment Guidelines (European Commission, 2009):

http://ec.europa.eu/governance/impact/commission_guidelines/commission_guidelines_en.htm

label etc. Information obligations that may arise from the new origin labelling rules have implications in terms of staff time needed, the qualification of staff needed, staff unit costs, all of which contribute to the costs of tasks to be delivered.

- The term 'compliance costs' refers to the costs of operational obligations, such as import inspections or inspections at places of production and the implementation of labelling rules. These refer to additional controls that may need to be carried out by enforcement authorities compared to the current average levels of controls/costs in Member States. It is noted that costs borne by the enforcement authorities may be transferred to stakeholders through fees charged.

In terms of **administrative burden**, the consultation with Member State Competent Authorities has indicated that the main impacts are expected for the familiarisation with the information obligations/training and data inputs/record keeping related to inspections and audits (verification checks). In terms of the Options, it was noted that the higher the level of detail of the information to be provided, the more significant impacts are expected, although it has not been possible to quantify this. It is noted that it has been difficult for Member State Competent Authorities to distinguish the costs of staff time associated to these actions, from the more general costs of staff time associated to the inspections; therefore, the discussion on additional control costs provided below include administrative burden.

In terms of **compliance costs**, the following two observations of key relevance to calculating these costs which were made by Member State Competent Authorities in the previous studies on origin labelling remain valid, based on the updated evidence collected:

- a. **Status quo (baseline):** currently, the controls carried out to verify the compliance of operators to the provisions of the EU food labelling rules form part of the wider national inspection plans of verification controls targeted at food business operators. These plans are: generally drawn on an annual basis; risk-based (targeting specific products/sectors and food business operators, on the basis of regularly updated risk assessments); and, extend over the entire food safety and hygiene policy area for which enforcement controls are performed by the Competent Authority. In this context, it has been very difficult for the Member State Competent Authorities to separate the time currently spent, if any, in verifying origin labelling claims during these inspections, from the time spent on other items covered during the inspection visit. In view of the anticipated difficulties, Member State Competent Authorities have been asked to identify as a proxy the additional time spent and costs of controls stemming from the introduction of other comparable rules (e.g. mandatory origin labelling for beef), but this has proven equally difficult in most cases.
- b. **New rules:** as a general principle, Member State Competent Authorities noted that the higher the level of precision of the declaration on the origin of the foods/ingredient/s, the higher the control costs involved to enforce the new rules. It was also noted that, generally, an increase of controls and administrative burden is expected upfront, i.e. immediately after the introduction of the new rules, but after the first implementation period, costs might somewhat be reduced once:
 - i. The traceability system of food business operators has been put in place or adapted to the new rules;
 - ii. The required databases at the level of the control authorities for monitoring traceability have been set up or adapted to the new rules; and,
 - iii. Official inspectors are becoming more familiar with the new rules.

Although the above difficulties inhibit the estimation of costs likely to be borne by Member State Competent Authorities, the general observation drawn from nearly all Member State Competent Authorities that commented on the administrative costs and burden (18 MS) is that an increase in control costs, in terms mainly of the required increase in staff/staff time, is expected in all cases.

In principle, the greater the level of detail required by the origin labelling rules, the higher the increase in the control costs. This implies that:

- Scenarios 3 and 6 will have a greater impact than scenarios 2 and 5;
- Scenarios 1 and 4 will have negligible/minimal impact, due mainly to the fact that imports of non-EU milk and most dairy ingredients/products are rather limited.
- Depending on the product, the modality of indicating the place of milking could require more detailed controls than the modality of indicating the first place of processing; for example, in the case of cheese, scenario 6 could be more demanding than scenario 3.
- The increase in control costs, in principle and depending on the product, as we move from scenarios 1/4 to scenarios 3/6 is due to the increase in the volume/complexity of the documentation that requires verification to establish the origin of the products. This especially holds for milk because raw milk is in some processes first separates in proteins and fat components and put together to other dairy products in later processes. It is noted that further down the supply chain, where trade and blending of raw material prevails (e.g. dairy products), control costs for the verification of the origin/provenance of milk as an ingredient are expected to be higher than for less processed/traded dairy products.
- It is noted that the increase in control costs is mainly in terms of the number of staff needed. This increase in staff will be necessary to allow the required increase in the time needed for controls if mandatory origin labelling is included in the list of legal provisions that are checked during current inspection visits.
- This cost will be mitigated by the existing traceability systems in place as highlighted in bullet point i. above.

In this context, the presence of mandatory traceability information and electronic record-keeping at the level of FBOs are important factors to take into account. It implies that some origin information is readily available at least in the primary steps of the supply chain and this could mitigate costs to the extent that this information is transferred further down the supply chain.

Some data on the additional costs of controls were provided during the 2013 Member State Competent Authority consultation in the context of the FCEC study on the mandatory origin labelling of meat as an ingredient²⁵. Most Member State Competent Authorities that had provided some quantitative estimate of the scale of the anticipated additional costs in that study had indicated that they expect, in principle, a 10-30 % increase in control costs in terms of verification checks carried out at food business operator point, including administrative burden (for options which can broadly be considered equivalent to scenarios 3 and 6²⁶). The additional costs of controls for the milk supply chain are expected to be comparable with these previous estimates.

While the above could be relevant cost estimates in principle, *in practice* the following conclusions must be borne in mind when it comes to the actual increase in control costs to be expected. These conclusions were made by Member State Competent Authorities in the 2013 FCEC study on origin labelling and are validated by the updated evidence collected and the Focus Group discussion conducted as part of the 2014 FCEC study on the application of rules on mandatory country of origin

²⁵ FCEC, 2013. Study on the application of rules on voluntary origin labelling of foods and on the mandatory indication of country of origin or place of provenance of meat used as an ingredient., Brussels, 10 July 2013.

²⁶ The options covered in the FCEC 2013 study were similar but not exactly the same as those covered in the present study.

labelling or place of provenance of unprocessed foods, single ingredient products and ingredients that represent more than 50% of a food:

- Where the funding allocated to national control authorities by the state budgets is not increased - and the tendency in the current economic climate continues to be stable or reduced budgets – then the increase in the staff time needed to perform inspections would need to be compensated by cost savings elsewhere. This could lead potentially to a reduction in the frequency at which controls are being performed, or a change in priorities i.e. reductions in the focus of the controls in other legislative areas. Both could have detrimental consequences, particularly in Member States where the control authorities have undergone severe budgetary cuts in recent years, leading to a situation where controls on origin labelling might not be properly carried out therefore jeopardising the enforcement of any new rules. It was generally acknowledged that the priority of Member State Competent Authorities is the enforcement of food safety, based on consideration of risks, and in a situation of scarce resources enforcement of origin labelling will not always be high on the list of control priorities. Although these costs are expected to be ultimately passed on to FBOs through the charging of fees (under Regulation 882/2004), this would not solve the issue of allocating sufficient budgets from state coffers specifically to perform controls along the food chain.
- Beyond the cost and efficiency of the controls, Member State Competent Authorities have also emphasised the need to consider how to improve the effectiveness of controls. As was also pointed out in previous studies, these controls are currently based on documentary checks and therefore raise a key question on the ability of the enforcement authorities to verify the information provided in the supporting documents. The more detailed the level of information to be provided, the higher will be the challenge for enforcement authorities to verify this information.
- The potential increase in administrative costs could be mitigated by the traceability system that should be set up. If this is effectively and efficiently set up, it should allow controls to be made easier, faster and better. As pointed out in the relevant sections of this report dealing with traceability, the EU traceability system is not presently designed to provide the traceability information that would be required for origin labelling purposes and considerable investment would need to be undertaken to perform the required adaptations in the production/storage/distribution process to ensure full traceability along the supply chain for the different products.
- Innovation/new technologies, in particular RFID tools and isotope analysis, could also facilitate traceability and controls, thus mitigate costs. However, this might occur only longer term, not in the short to medium term as the uptake of this technology at the moment, more generally in the food supply chain across the EU28, is very scattered and virtually non-existent for the most part.

Most Member State Competent Authorities remain unconvinced that isotope analysis can provide a cost-effective solution for wider implementation of origin verification controls, as: a) the costs of this testing are high; b) the available test methods are not widely tested yet; c) the technology is not applicable across the range of food products, particularly where ingredients are mixed. Even in the case of RFID it was noted by several Member States that although the technology has been around for many years, so far it has not resulted in significant cost savings in traceability and controls. In addition several Member States pointed out that as these new technologies are generally very high cost, it is questionable whether they can be introduced in all food businesses concerned and across the EU-28, and that costs would be disproportionately felt by smaller companies and Member States.

It was also pointed out that enforcement of origin labelling would be particularly hard in the case of products imported from third countries, both at the level of Competent Authorities in these countries and at the level of verification checks performed on imports at EU borders.

In the absence of available tools for effective implementation, and given the complexity of supply chains, nearly all of the consulted Member State Competent Authorities have raised concerns on the potential risk of both genuine errors and fraudulent practices; this risk will be higher the stricter and more detailed the rules to be put in place. Documentary checks, the most widely used basis of the current controls, are generally not considered sufficient. Where there is significant trade between countries, there may well be need for agreements between the administrative authorities of Member States, and with third countries, to enable the building of trust and cooperation between control authorities. Finally, issues of liability along the supply chain would also be raised by any such rules. Especially for commodity products involving trade on the spot market (e.g. whole milk powder), ensuring origin labelling is both very difficult and costly.

5.4 Qualifications

There are a number of qualifications that should be kept in mind when assessing the results obtained. The most important ones are:

- The measurement of the costs of mandatory country of origin labelling has been based on a well-chosen, but still limited number of case studies, which involved surveying dairy processors that repeatedly indicated to have difficulties in estimating the costs associated with mandatory country of origin labelling scenarios. Moreover the interviewed dairy businesses for competitive reasons had no interest in revealing their cost of production information to any external party, and when prepared to provide (additional cost) estimates could have had strategic reason not to report their least cost estimate, but rather a higher cost impact;
- The aggregation from the case study information to a scenario-specific cost increase estimate at Member State level involved several steps based on objective criteria, but still includes some (unavoidable) subjective elements in the weights attached to different criteria.
- The trade impact analysis relies on the CAPRI modelling tool, which was selected as the best option available out of a set of alternative models (including GTAP and AGMEMOD), but has still as a limitation that it focuses on net trade and might underestimate the impact of product heterogeneity in the markets for dairy products. Accounting for such factors could have led to lower shifts in trade flows than those reported above.
- The modelling tool had other limitations which created difficulties to fully capture the complexities (e.g. good disaggregation could not always be extended to a very specific product level) and details of the dairy markets and dairy supply chains (e.g. imperfect competition due to for example potential market power of retailers is ignored). As shown in Plastina et al (2008)²⁷ such factors are co-determining the final outcome.
- Although in contrast to voluntary labelling, the willingness to pay has no direct relevance in case of mandatory origin labelling, WTP-estimates may play a role in trying to assess the impact on general or social welfare. It has to be realized however that the estimates that were derived in this study are imprecise, based on stated rather than revealed preferences and should be interpreted very carefully.

²⁷ Plastina, A., Giannakis, K and Pick, D. (2008) Market and welfare effects of mandatory country-of-origin labelling in the US speciality crops sector. Paper presented at the American Agricultural Economics Association Annual Meeting, Orlando, FL, July 27-29, 2008.

5.5 Summary of impacts

The impacts of the different policy options including mandatory labelling of origin (scenarios 1 to 6) with respect to their impact on processors, consumers, trade, the administrative burden, are summarized in the table below.

The final column in the table presents a qualitative estimate of the net impact the different mandatory origin labelling options will have on society, taking into account all other aspects mentioned in the table. Note that in contrast with the case of voluntary labelling, in case of mandatory labelling there is no necessity of having the monetary benefits outweighing the monetary costs associated with the labelling of origin. Labelling will in that case be imposed by the legislator and the supply chain and consumers jointly have to cover the costs. However, since non-labelling is still an option that is considered and policy makers are interested in enhancing social welfare, adding an estimate about the impact on society as a whole is useful.

Table 37: Identified impacts on processors, consumers, trade and administrative burden of different labelling options

Labelling scenario	Additional costs to the supply chain	Impacts for consumers	Impacts on EU trade	Additional private administrative costs	Additional public administrative costs	Expected net (direct) impact
0 Non-labelling (i.e. status quo: voluntary origin labelling)	Negligible costs	Only consumers who are prepared to pay will be served. Both interested consumers and non-interested consumers have freedom of choice	No changes compared to baseline	No costs	No costs	Consumer benefits for (voluntary) labelling are by definition compensating costs (this is the business model); consumers not interested have access to non-labelled (lower priced) products
1 EU/non-EU; place of first transformation	Very low, with an exception for processed cheese	Relatively low consumer interest	Very minor effects expected	Minimal costs	Minimal costs	Benefits are unlikely to outweigh costs; if so net benefits will always be small
4 EU/non-EU; place of milking	Very low, with an exception for processed cheese and other consumer applications using ingredients	Relatively low consumer interest	Very minor effects expected	Minimal costs	Minimal costs	Benefits are unlikely to outweigh costs; limited but negative impact expected
2 Group of Member States; place of first transformation	Low costs with an exemption for processed cheese. Voluntary labelled products and	Significant consumer interest, but unclear willingness to pay	Limited impacts expected	Costs likely to be lower than in multi-country origin option, but	Costs likely to be lower than in multi-country origin option, but can come	Benefits and costs are unlikely to balance; net impact likely to be negative

Labelling scenario	Additional costs to the supply chain	Impacts for consumers	Impacts on EU trade	Additional private administrative costs	Additional public administrative costs	Expected net (direct) impact
	PDO/PGI labelled dairy products may face an indirect cost			can come close	close	
5 Group of Member States; place of milking	Low costs with an exemption for processed cheese. Voluntary labelled products and PDO/PGI labelled dairy products may face an indirect cost.	Significant consumer interest, but unclear willingness to pay	Limited impacts expected	Costs likely to be lower than in multi-country origin option, but can come close costs for place of milking can be slightly higher than for place of first processing	Costs likely to be lower than in multi-country origin option, but can come close; costs for place of milking can be slightly higher than for place of first processing	Benefits and costs are unlikely to balance; net impact likely to be negative
3 Multi-country origin: place of first transformation	High costs, ranging from 0 to 8% at Member State level (drinking milk, cheese, yogurt; higher for other products), and 0 to 45% at individual firm level	Option has high consumer interest; just over half of the consumers indicate they are prepared to pay a little bit more	High impacts on trade flows, but % changes in net trade less than 5% for most Member States	High costs	High costs	Both benefits for consumers interested in knowing the origin and costs for operators are high when compared to other options
6 Multi- country;	High costs, ranging	Option has second	Highest impacts	High costs,	High costs cost	Both benefits for

Labelling scenario	Additional costs to the supply chain	Impacts for consumers	Impacts on EU trade	Additional private administrative costs	Additional public administrative costs	Expected net (direct) impact
origin place of milking	from 0 to 8% at Member State level (drinking milk, cheese, yogurt; higher for other products), and 0 to 45% at individual firm level	high consumer interest; just over half of the consumers indicate they are prepared to pay a little bit more	on trade flows, but % changes in net trade still for most Member States less than 5%	cost slightly higher than for options of place of first processing.	slightly higher than for options of place of first processing.	consumers interested in knowing the origin and costs for operators are high compared to the other options.

* When labelling is extended to of all dairy ingredients the costs can be much higher.

** Costs: low (<1%), medium (1-3%) and high (>3% cost increase of the wholesale price).

The preference of supply chain participants for the different options is correlated with the expected cost increase for their businesses. In the industry there is generally a strong preference for non-mandatory labelling of origin.

Moreover, the introduction of a mandatory labelling scheme would erode the business case underlying current voluntary labelling initiatives. Businesses able to label the country of origin at all stages because they source locally or have a voluntary labelling in place can live with any option, since the cost impacts for them will be low. Some of the firms operating in border regions and/or being involved in cross border sourcing have a strong preference for options 2 and 5 over options 3 and 6.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

6.1.1 *Option 0: Non mandatory labelling*

- 1) Introducing mandatory origin labelling would limit the freedom of choice for consumers not interested in origin labelling (which is still a substantial group) and oblige them to pay for an information system that does not benefit them.

There is a clear consumer interest in origin labelling, but information on actual willingness to pay is limited. Studies measuring willingness to pay indicate that this willingness to pay is low, while it is also known from the literature that willingness to pay estimates based on stated (rather than revealed) preferences tend to be overstated. In a well-functioning market one would expect that the group of consumers interested in the labelling of origin will be served by suppliers offering voluntary labelled products. This is under the condition that these consumers are prepared to pay at least the extra costs associated with voluntary labelling.

The presence of voluntary origin labelling, in almost all EU MS can as such be interpreted as a signal that the market is properly functioning. There is a group of consumers willing to pay for origin information and there are companies making a commercial business case by offering voluntary origin labelling.

Since voluntary labelling referring to regional or national origin was observed in all the case study countries, the current situation can be said to ensure “freedom of choice” to consumers interested in the origin of dairy products. Also, consumers not interested in labelling the origin of products but rather in the price of products have freedom of choice under this system as they can choose non-labelled products.

- 2) There could be still an argument for policy intervention if the voluntary labelling that is currently applied could potentially mislead consumers when the place of transformation and the origin of the primary ingredient differ. In the case studies, workshops and interactions with stakeholders no strong signal about consumers being misled have been found. It is noted that the base line legislation on voluntary origin labelling is evolving, as the adoption of new implementing rules for Article 26(3) of the FIC Regulation is expected in the near future. When the origin of the primary ingredient is different from the labelled food origin (place of transformation), the new rule will request the indication of origin of the primary ingredient or the indication that its origin is different to that of the food.
- 3) The introduction of mandatory labelling means that the advantage of a voluntary label covering the same origin (in this case a country) will in principle disappear if the voluntary label covers no other benefit. Introducing mandatory labelling where voluntarily origin labelling already exists creates negative impacts for these products.

6.1.2 Options 1 and 4: EU/non-EU mandatory origin labelling

Signals from the stakeholder workshop undertaken during the study and a review of the literature make clear that consumers find the option of EU/non-EU labelling unsatisfactory. Furthermore, specific industries, such as processed cheese or yogurt, could face possible additional costs and the option would involve some additional private and public administrative costs. This option is therefore not attractive from a societal point of view.

6.1.3 Options 2 and 5: Group of Member States mandatory origin labelling

There are some benefits to consumers, but their magnitude is difficult to determine. This holds even more so for their willingness to pay.

Compared to options 3 and 6 (multi country origin), group labelling leads to substantially lower costs to the dairy processing industry.

The public and private administrative burdens will be higher than in the case of EU/non-EU labelling, but are likely to be lower than in case of multi-country origin labelling.

In the "OR" labelling case (Group of Member States mandatory origin labelling) monitoring can largely focus at the firm level. In the "AND" option (see options 3 and 6 - multi-country of mandatory origin labelling) monitoring needs to focus at product level. The 'AND' option is more complex and demanding than the 'OR' option because almost all dairy firms produce several products .

6.1.4 Options 3 and 6: Multi-country mandatory origin labelling

Options 3 and 6 (multi-country of origin labelling) provides the most comprehensive origin information of all the options, but will cause the highest increase in production costs in dairy supply chains.

The biggest cost increase is expected for butter followed by yogurt, cheese and drinking milk. It is practically very difficult to declare the fruits in yogurt (too many origins and origins changing within the year). Even for the production of sheep and goat cheese the cost increases are high in the case of a year round production cycle. For many PDO/PGI products no cost increase is expected. For processed cheese costs could not be defined, but they will be high.

For individual firms the expected cost increase cost can be far higher (above 10% additional costs of the cost of production) depending on:

- the character and complexity of the production process. When many different milk ingredients are used in manufacturing a product (e.g. milk plus cream, plus skimmed milk powder, plus whey powder) the overall cost of labelling the origin of each of these ingredients would be high and possibly difficult to achieve. In addition, if many different dairy products, each containing multiple milk ingredients are made in one factory at the same time the costs of labelling tend to increase exponentially.
- the method of sourcing milk or milk ingredients (low to zero costs in case of exclusively domestic sourcing; exponential cost increase as the number of origin sources increases);
- the traceability system in place (lower costs if a good traceability system exists);
- the degree of integrated production (if the production chain is more integrated the additional costs for origin labelling will decrease).

Options 3 and 6 also increase the administrative costs for firms and national governments. The cost increase depends greatly on the level of control (strictness of regulation). However, from the case studies only limited quantitative insights could be given on the level of the cost increase. The figures

gathered show additional administrative cost increases of 1-10% of the total cost increase related to detailed origin labelling. Economies of scale will inevitably result in lower costs for larger plants (e.g. software development, inspection costs). National governments will face a cost increase in the short term to enforce the origin labelling. In the long run this enforcement will be part of the overall control of food companies and total costs will be limited by national budgets.

According to model calculations, Options 3 and 6 will produce relative changes in intra-EU and third party trade. Since the impacts on domestic production and consumption of dairy products at Member State level were limited (on average less than 1%), the impacts on net trade will also be limited (in volume terms). The impacts of origin label on the trade can be negative (less trade) and positive (more trade), depending on changes in relative cost of production patterns for the EU, and the final revealed 'willingness to pay' of consumers.

6.2 Recommendations

Recommendation 1: No need for mandatory origin labelling

Based on the analysis, the study found no clear need to introduce mandatory origin labelling for milk and milk used as an ingredient in dairy products.

Voluntary origin labelling appears to be a more suitable solution than mandatory, because it already satisfies the need of the consumer to be informed on origin. Moreover, the research did not find any evidence that consumers are presently being misled. Furthermore, the base line legislation on voluntary origin labelling is evolving, as the adoption of new implementing rules for Article 26(3) of the FIC Regulation is expected in the near future.

This recommendation is based on a cost-benefit type of reasoning, the method chosen in this research showing that the cost of mandatory labelling might not outweigh the benefits to consumers (as measured by their willingness to pay). Mandatory origin labelling will have a disproportionately high impact on food businesses located near to borders between Member States. This also applies to food businesses participating in EU dairy product supply chains involving cross-border (EU and non-EU) transactions. Moreover, the production process in the dairy sector often involves many different milk ingredients and the task of origin labelling would multiply with the number of these ingredients.

Consumers, who are not interested to pay for origin labelling, will have more freedom of choice.

Recommendation 2: Choice for country of origin

If it would be decided to implement a system of mandatory labelling, the best choice would be the multi-country of origin.

The multi-country of origin option is the most informative for consumers, especially when the number of origins is limited and most particularly when the product has a single origin. However, the costs for the dairy supply chain and the public and private administrative costs will be the highest among all the options considered.

Recommendation 3: Differentiation over products

If origin labelling becomes mandatory, a product specific approach is recommended in order to take into account complexities in the production process, sensitivity of private and public sector costs with respect to the way a new regulation will be implemented, and variations in consumer interest.

The impacts on costs of production as well as the consumer appreciation for knowing the origin differ by product:

- The cost impacts depend on the complexity of the production process (i.e. the number of milk ingredients) and the level of processing. Also the specification of threshold or tolerance levels in origin labelling requirements will affect costs. Even for products like goat and sheep milk, mandatory origin labelling can increase costs in the case of year round production. For goat and sheep cheese, frozen curd is used from different origins to produce cheese in periods when milk production is low (i.e. out of season). This does not hold for buffalo cheese as this production takes place within one country (Italy).
- The interest in origin of the ingredients in a consumer product is known to decline as the level of processing goes up. This means for example that the origin of drinking milk and the milk used to make cheese and butter is considered more important than the origin of the milk used to make processed cheese. Therefore, willingness to pay generally declines as the level of processing increases.
- The administrative burden for both the private sector (accountability systems) and public sector (monitoring and inspection) will depend on the chosen labelling option as well as its design.