Study on the labelling of products from cloned animals and their offspring

Final report

Annexes

Written by

November 2015

EUROPEAN COMMISSION

Directorate-General for Agriculture and Rural Development

Directorate C – Single CMO, economics and analysis of agricultural markets

Unit C.3 Animal Products

Contact:

E-mail:

European Commission

B-1049 Brussels

EUROPEAN COMMISSION

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Directorate-General for Agriculture and Rural Development
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November, 2015 EUR KF-07-14-091-EN-N

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1 Abbreviations and acronyms

Table 1. Country codes

Code	Full name
DE	Germany
DK	Denmark
ES	Spain
FR	France
IE	Ireland
IT	Italy
NL	The Netherlands
UK	United Kingdom
US	United States

Table 2. List of acronyms and abbreviations

Acronym	Full name
AI	artificial insemination
COOL	Country of origin labelling
Defra	Department for Environment, Food and Rural Affairs
DG AGRI	Directorate General for Agriculture and rural development
DG SANTE	Directorate General for Health and Food Safety
DG TRADE	Directorate General for Trade
DNA	deoxyribonucleic acid
EC	European Commission
EDA	European Dairy Association
ET	embryo transfer
EU	European Union
FADN	Farm Accounting Data Network
FCEC	Food Chain Evaluation Consortium
FIC Regulation	Food information to consumers Regulation
ICAR	International Committee for Animal Recording
JRC	Joint Research Centre
MS	Member State

2 Consultees

ICF, on behalf of the study team, would like to thank all those who supported the project by providing interviews, responding to enquiries and providing data.

The lists below do not include those consulted with targeted enquiries about specific data enquiries or issues.

2.1 EU level and international consultees

Table 3. EU and international stakeholders consulted

Category	Organisations interviewed
Farmers and breeding sector	Copa-Cogeca
	European Federation of Animal Science (EAAP)
	European Forum of Farm Animal Breeders (EFFAB)
	International Committee for Animal Recording (ICAR)
	International Embryo Transfer Society (IETS)
	World Holstein Friesian Federation[1]
Food industry	European Association of Dairy Trade (EUCOLAIT)
	European Dairy Association (EDA)
	Association of the processed cheese industry in the EU (ASSIFONTE)[2]
	Liaison Centre for the Meat Processing Industry in the EU (CLITRAVI)
	European Livestock and Meat Trading Union (UECBV)
	FoodDrinkEurope
	Euro Commerce

[1] Limited written material provided.
[2] Provided a statement on cloning, no interview provided.

2.2 Other consultees

Table 4. Other stakeholders consulted

	Animal species and products covered						Organisation type	Geographical coverage
	Bovine animals (beef supply chain)	Bovine animals (dairy supply chain)	Porcine animals (pig meat supply chain)	Ovine animals (sheep meat supply chain)	Caprine animals (goat meat supply chain)	Equine animals (horse meat supply chain)		
ANABIC	✓	✓					Breeding organisations	Italy
ANAPRI	✓	✓					Breeding organisations	Italy
Assocarni	✓					✓	Processors	Italy
Avantea	✓					✓	Genetic improvement companies	Italy
Beltex Sheep Society				✓			Breeding organisations	UK
Dairy Goats Cooperative					✓		Commercial farmers	The Netherlands
Dairy UK		✓					Processors	UK
Danish Agriculture and Food Council			✓				Commercial farmers; traders; slaughterhouses ; cutting plants; processors;	Denmark

	Animal species and products covered						Organisation type	Geographical coverage
	Bovine animals (beef supply chain)	Bovine animals (dairy supply chain)	Porcine animals (pig meat supply chain)	Ovine animals (sheep meat supply chain)	Caprine animals (goat meat supply chain)	Equine animals (horse meat supply chain)		
							manufacturers; retailers	
Danish Agriculture and Food Council; Knowledge Centre for Agriculture and Danish Pig Research Centre (SEGES)[3]		✓	✓				Commercial farmers; traders; slaughterhouses ; cutting plants; processors; manufacturers; retailers	Denmark
Danish Dairy Board		✓					Processors; manufacturers	Denmark
Department for Environment, Food and Rural Affairs (Defra)		✓		✓			Competent Authorities	UK
Department of Agriculture, Food & the Marine (DAFM)	✓						Competent Authorities	Ireland
DNA Ireland	✓	✓				✓	DNA testing company	Ireland

[3] SEGES representatives did not take part in an interview, but reviewed the notes of the Danish Agriculture and Food Council and concluded that there was nothing to add.

	Animal species and products covered						Organisation type	Geographical coverage
	Bovine animals (beef supply chain)	**Bovine animals (dairy supply chain)**	**Porcine animals (pig meat supply chain)**	**Ovine animals (sheep meat supply chain)**	**Caprine animals (goat meat supply chain)**	**Equine animals (horse meat supply chain)**		
Dutch Food Industry Federation (FNLI)	✓ (interview not focussing on a specific product)	✓ (interview not focussing on a specific product)	✓ (interview not focussing on a specific product)	✓ (interview not focussing on a specific product)	✓ (interview not focussing on a specific product)	✓ (interview not focussing on a specific product)	Retailers	The Netherlands
Federal Research Institute for Animal Health (FLI)			✓				Competent Authorities	Germany
France Génétique Elevage (FGE)	✓						Genetic improvement companies	France
Genus/PIC Genetics			✓				Genetic improvement companies	EU
German Cattle Breeders´ Federation (ADR)	✓	✓					Commercial farmers	Germany
German Meat Industry Association			✓				Slaughterhouses ; cutting plants; processors	Germany
German Raiffeisen Association			✓ (written response)				Commercial farmers	Germany

	Animal species and products covered						Organisation type	Geographical coverage
	Bovine animals (beef supply chain)	Bovine animals (dairy supply chain)	Porcine animals (pig meat supply chain)	Ovine animals (sheep meat supply chain)	Caprine animals (goat meat supply chain)	Equine animals (horse meat supply chain)		
Holstein UK	✓	✓					Commercial farmers	UK
Institut de l'élevage (IDELE)	✓	✓					Breeding organisations	France
Irish Farmers' Association (IFA)	✓	✓					Commercial farmers; traders	Ireland
Italian Limousine and Charolaise pure-bred breeder association (Anacli)	✓						Breeding organisations	Italy
Ministry of Agriculture, Food and Environment (MAGRAMA)	✓ (written response – not focussing on a specific product)	✓ (written response – not focussing on a specific product)	✓ (written response – not focussing on a specific product)	✓ (written response – not focussing on a specific product)	✓ (written response – not focussing on a specific product)	✓ (written response – not focussing on a specific product)	Competent Authorities	Spain
Ministry of Agriculture, Food and Forestry, France	✓	✓	✓	✓	✓		Competent Authorities	France
Ministry of Agriculture, Italy	✓					✓	Competent Authorities	Italy
Ministry of Economic	✓	✓	✓	✓	✓		Competent	Netherlands

	Animal species and products covered						Organisation type	Geographical coverage
	Bovine animals (beef supply chain)	Bovine animals (dairy supply chain)	Porcine animals (pig meat supply chain)	Ovine animals (sheep meat supply chain)	Caprine animals (goat meat supply chain)	Equine animals (horse meat supply chain)		
Affairs, Agriculture and Innovation, the Netherlands							Authorities	
Ministry of Food, Agriculture and Fisheries, Danish Veterinary and Food Administration, Denmark		✓					Competent Authorities	Denmark
Ministry of Health, Italy	✓	✓	✓	✓	✓	✓	Competent Authorities	Italy
Naba Carni						✓	Processors	Italy
National Farmers Union (NFU)		✓		✓			Commercial farmers	UK
National Union of Farming and Artificial Insemination Cooperatives (ALLICE)	✓			✓			Genetic improvement companies	France
NordGen	✓	✓					Genetic improvement companies	Denmark, Finland, Sweden
Piemontese pure-bred breeder	✓						Breeding organisations	Italy

	Animal species and products covered						Organisation type	Geographical coverage
	Bovine animals (beef supply chain)	Bovine animals (dairy supply chain)	Porcine animals (pig meat supply chain)	Ovine animals (sheep meat supply chain)	Caprine animals (goat meat supply chain)	Equine animals (horse meat supply chain)		
association (Anaborapi)								
Quantech Solutions			✓	✓			Genetic improvement companies	UK
Races de France							Breeding organisations	France
Spanish Agrifood Cooperatives					✓		Commercial farmers	Spain
Topigs Norsvin			✓				Genetic improvement companies	EU
Viking Genetics Denmark		✓					Genetic improvement companies	Denmark
Total:	**21**	**20**	**14**	**10**	**7**	**8**		

Additional contacts were made with various organisations in relation to market prices and various narrow enquiries on specific issues.

3 Data sources

Table 5. Statistical sources

Source	Link	Description
DG AGRI	http://ec.europa.eu/agriculture/statistics/agricultural/index_en.htm	Number of animals Number of slaughters Net production World production EU trade by species Trade with non-EU countries Supply balance Market prices
	http://ec.europa.eu/agriculture/beef-veal/index_en.htm	Policy instruments (carcass classification/price reporting, Export licences/export refunds, import duties/tariff quotas/licenses, market monitoring)
	http://ec.europa.eu/agriculture/pigmeat/index_en.htm http://ec.europa.eu/agriculture/sheep-goats/index_en.htm	Presentations and prices (presentations, prices, quotas, production, surveys, forecasts, feed, trade)
	http://ec.europa.eu/agriculture/agrista/tradestats/index_sem.htm http://ec.europa.eu/agriculture/statistics/trade/index_en.htm	EU's trade position in the world (values and quantities)
Eurostat	http://ec.europa.eu/eurostat/web/agriculture/data/database	Farm livestock (number of farms and heads of animals) Price indices of agricultural products Agricultural production for livestock and meat (meat production, livestock, structure of rearing)
Faostat	http://faostat3.fao.org/home/E	Production Prices Trade Investment Food balances

4 Cost of labelling requirement

4.1 Introduction

4.1.1 Purpose

This annex provides details of the build-up of the estimates of the costs of a clone labelling requirement. It adopts a conventional standard cost model approach in which the total cost is estimated based on:

- Identification of the additional obligations created by the legislation;
- An estimate of the cost per obligation for each actor subject to the obligation, derived from:
  - The cost of time of that actor required to perform the obligation, based on average duration and average cost per hour;
  - The cost of goods and/or services that the actor would need to purchase to perform the obligation;
  - An estimate of the number of times the obligation would be performed each year.

This is illustrated schematically in the figure below. The costs are provided as annual estimates in present value terms. Any ancillary benefits to the food chain associated with the changes are not quantified.

Figure 1. Illustration of the build-up of the cost model

Obligation	Unit cost		# units		Obligation cost
1:		x		⇨	
2:		x		⇨	
3:		x		⇨	
4:		x		⇨	
5:		x		⇨	
6:		x		⇨	
7:		x		⇨	
etc.		x		⇨	
			Total :		€

4.1.2 Interpretation of the results

The input assumptions used in the calculations are explained in the text that follows. In each case point estimates (rather than ranges) are used. There is, however, uncertainty attached to many of these estimates. As such, the results should be viewed as providing an indication of the potential costs under the assumed conditions rather than being definitive statements of cost.

The uncertainty over input parameters extends to core parameters such as labour costs and the time required to discharge certain obligations. Reducing this uncertainty would require:

- a more detailed specification of the scope, necessary requirements and supporting systems;
- primary research with the supply chain to determine the time consumed in performing the relevant activities for different types of enterprise, and associated employee costs for enterprises across the EU.

The costs associated with activities which are not currently undertaken in any sector are more uncertain than those that are.

When appraising the costs of a significant system change of the kind considered here it is necessary to consider the direct and indirect implications of the obligations, and how they might lead to changes in the activities being costed.

The impact may be large enough to be a non-marginal change in the cost of operating the enterprises affected. This could trigger changes in those enterprises, and in the size and shape of the market. Such market shifts could affect the scale and distribution of EU production, supply chain structures, imports and exports. First order changes could in turn trigger further adjustments until a new equilibrium is reached. It is not possible to anticipate all the changes in the market that might occur.

In such circumstances, multiplying an assumed cost per animal by the size of the current herd will not correctly capture the total costs observed if the obligation is introduced; second order adjustment costs will not be captured. The cost estimates indicate the size of the prospective burden but do not capture the response, which may come before the legislation comes into force as enterprises proactively adjust to the new regulatory regime. The scale of the cost imposed by the clone offspring labelling obligation on the pig sector are significant enough for it to be very likely that there would be changes in output and overall structure.

The specification and operation of systems used to support the registrations required is also a factor. The time required by farmers to record ancestry, for instance, will owe much to design of these new systems. Significant extension in registration obligations is likely to require many Member States to enhance or replace their existing database systems. This may involve them moving to new technology platforms and new business models (in a context where there is already variation in the technologies and charging schemes adopted). Small, privately-operated registration schemes (e.g. national breed herd books) may need to be rolled into integrated national systems. Member States have adopted different technologies and charging structures.

The obligation may also prompt behavioural responses in the supply chain that do not directly relate the administrative burdens but are instead a strategic reaction to the enforced disclosure of whether food products are derived from clones. These responses could include:

- Reformulating products to avoid the use of ingredients that may be derived from clone offspring;
- Changing sourcing strategies to reduce the risk of acquiring products containing material derived from clone offspring (e.g. procuring from EU rather than third country suppliers);
- Changes to terms of contract to exclude products and ingredients derived from clone offspring (imposing new obligations on suppliers and transferring risk up the supply change).

4.2 The obligations imposed by a clone offspring labelling requirement

The principal additional obligations imposed by a clone offspring labelling requirement on the livestock production sector have been explained in the main report. Table 6 lists the obligations relevant to the livestock production sector, on which the quantitative analysis focuses. The approach taken to quantifying the cost of each obligation is explained in the text that follows.

Table 6. Summary of additional obligations for the livestock sector

Obligation	Description	Actor(s) bearing the costs	Type (one-off / ongoing)
Start-up			
Familiarisation & preparation	Cost of learning about the obligation and its requirements. Distribution of information. Training.	Authorities, livestock producers	One-off[4]
IT system development and operation	Development and operation of enhanced registration and traceability systems	Authorities	One-off
Animal registration			
EID tagging	Time & equipment/materials cost of EID tagging of individual animals for which this is not currently required, including replacements for lost tags	Livestock producers	Ongoing
Identity	Time cost of registering individual identity for animals for which this is not currently required	Livestock producers	Ongoing
Ancestry	Time cost of registering parentage for animals for which this is not current practice	Livestock producers	Ongoing
Movement			
Transmission	Cost of recording individual animal movements where this is not currently required	Livestock producers & operators in the livestock production chain (livestock producers, markets, etc.)	Ongoing
Clone status check	Cost of checking clone status of animal at slaughter	Slaughterhouse operators	Ongoing
Administration			
Administration of identity &	Time & materials cost of maintaining the data and	Authorities	Ongoing

[4] Though staff training would be required on an on-going basis.

Obligation	Description	Actor(s) bearing the costs	Type (one-off / ongoing)
ancestry databases	communication systems required to support the registration and ancestry elements of the labelling obligation		
Verification (option)			
DNA	Cost of capture and submission of DNA sample for individual animals	Animal producers	Ongoing
DNA test	Cost of genetic profile of individual animal & its registration on DNA database	Animal producers	Ongoing
Infrastructure & systems development	Cost of building hardware, software, systems, protocols for DNA profiling, and acquisition and training of staff to operate them.	Assumed to be recovered via user fees for services	One-off
Administration of DNA database	Administration of the DNA profiles database, including handling of parentage verification checks	Authorities (cost may be recovered from livestock producers)	Ongoing

4.3 Familiarisation costs

4.3.1 Basis of costs

Enterprises the length of the food chain, from importers of genetic materials through to food retailers, would incur costs in understanding and preparing for compliance with the legislation relating to labelling of products derived from the offspring of clones. There would be wide variation in scale of the implications for individual enterprises, and in the time and resources that they would need to invest in understanding those obligations and putting in place such arrangements and systems as would be required to secure compliance.

In livestock production, enterprises in sectors where there is already individual identification of animals and ancestry recording is common (e.g. breeding of pedigree herds of dairy cattle) would see little impact. By contrast, large scale pig producers would be facing significant changes in operating practice.

Food business operators closer to the consumer would need to understand their obligations and potential liabilities, and how those might best be managed.

Preparatory studies and impact assessments make *ex ante* assumptions about the scale of learning and adjustment costs incurred by businesses when new legislation

is introduced into the food chain but it is very rare for these assumptions to be checked, through targeted research, against the actual costs incurred.

Illustrative estimates of the scale of familiarisation costs for the livestock production sector have been developed. The study has adopted the same assumptions as the *Study on the introduction of electronic identification (EID) as official method to identify bovine animals within the European Union (*Food Chain Evaluation Consortium (FCEC), for DG SANCO, European Commission, 2009), that is 5 hours per holding and 10 hours per market, assembly centre or slaughterhouse.

As noted elsewhere, the actual prevalence of clone offspring in the system would affect the preparation costs incurred by businesses. The time period provided for the food chain to adjust to the labelling obligation would also affect the preparatory costs. The EU's trading partners would need time to adjust to the requirements placed by the EU on imports (whether of genetic materials, animals, or derived products). This would include the time needed to establish arrangements, e.g. segregated supply chains.

4.3.2 Cost of labour

Valuation of time costs for EU policy changes applied to the agriculture sector is not straightforward. First, average hourly wage costs vary very substantially across the EU, from EUR 3.80 in Bulgaria to EUR 40.30/hour in Denmark (2014 figures; Eurostat, 2015). If the distribution of livestock (and so costs) does not match the distribution of labour across the EU then taking an average labour cost for the sector will not reflect the actual situation. Second, there are methodological issues with the application of wage data to the agricultural labour inputs in parts of the industry where many farmers are self-employed and taking modest incomes out of the farm enterprise. Here an imputed value of the farmers' time is needed.

Recent agricultural labour wage rates are not available from Eurostat[5]. A JRC study on sheep identification (Gianluca et al, 2007) assumed EUR 20/hour, based on a Eurostat statistical survey for 2004. FCEC referenced data from the Commission's Administrative Burden website.

For this report average labour costs have been developed for each livestock sector based on analysis[6] carried out on data collected by the Farm Accountancy Data Network (FADN) data[7]. FADN represents "commercial" farmers in the EU, so data from the smallest farming operations are not included. The definition of wages paid used in FADN is: wages and social security charges (and insurance) of wage earners. Amounts received by workers considered as unpaid workers (wages lower than a normal wage) are excluded. The data cover paid workers rather than farm owners. Farmers might consider their own time to be worth more.

The data, which are available on a Member State by Member State basis, were used to develop a weighted average wage cost for each livestock sector. This was done by weighting labour costs for each country by its share of the EU livestock population for each species, using the latest available livestock population data. This approach means that labour costs of countries that have a higher share of the livestock numbers contribute more to the overall estimate of average EU labour costs for that sector. The hourly rates are shown in Table 8.

[5] Recent labour cost reports cover sectors excluding agriculture and public administration.
[6] European Parliament, 2015.
[7] http://ec.europa.eu/agriculture/rica/

The agricultural labour cost rate has been applied to market and slaughterhouse labour. This is regarded as being reasonable based on a review of available data and cross-checks to other impact assessments.

Table 8. Assumed labour cost per hour, EUR

All livestock	Beef	Dairy	Pigs	Sheep	Goats	Horses
9.53	10.25	9.65	10.10	7.99	6.03	8.35

Source: Developed from European Parliament (2015).

4.3.3 Familiarisation cost estimate

Familiarisation costs for the livestock production sector were estimated based on an assumed amount of training time required for each holding, market and slaughterhouse to adjust to legislative changes as described in 4.3.1 of this annexes document, the hourly labour cost specified in 4.3.2, and the number of holdings affected. This can be expressed as follows:

> *Familiarisation costs = f (average familiarisation training time per holding/market/slaughterhouse, hourly labour cost, # holdings/operators)*

As a simplifying assumption an average time for familiarisation and training was assumed[8]. It was assumed that markets and slaughterhouses would require more time for training and adaption than would farm holdings as tend to have more formalised operational procedures that may be more complex to adjust.

Familiarisation costs were not calculated for each livestock sub-sector as it was not possible to distinguish between holdings, operators and markets dealing with single animal species and those handling more than one. Rather, a cross-sectoral figure was estimated to avoid issues relating to double counting. An hourly agricultural labour cost of EUR 9.53 was used to estimate the unit cost of familiarisation time (as explained in Section 8.2.2). This cost rate was applied to all entities.

Details of the cost estimates are provided below. The total exceeds EUR 360 million. Almost all of this total is cost incurred by livestock farmers.

Table 9. Assumed familiarisation costs - holdings

		All species
a	Number of holdings	7,575,810
b	Assumed time per holding, hrs*	5
c	Assumed cost per hour, EUR	9.53
	Total *(a x b x c)*, EUR m	361

**Estimate taken from FCEC, 2009*

[8] In practice variation may be expected by holding size, and also by sector since the obligation has different impacts on producers of different species.

Table 10. Assumed familiarisation costs – markets/slaughterhouses

		All species
a	Number of markets / slaughterhouses	21,914
b	Assumed time per establishment*, hrs	10
c	Assumed cost per hour, EUR [9]	9.53
	Total *(a x b x c)*, EUR m	2.09

**Estimate taken from FCEC, 2009*

4.4 Animal registration

The clone offspring labelling obligation would:

- Result in the application of electronic identification tags to porcine, ovine and caprine animals for which such tags are not currently applied due to the use of derogations in the legislation that facilitate batch processing of certain animals;
- Require each animal to be registered on a central database within a short period of its birth, thus representing a change in current practice for some porcine, ovine and caprine animals;
- Require the ancestry of each animal to be recorded and linked to the identity database.

Information capture and storage systems would need to be further developed to support this additional registration activity. The basis of the estimates of the costs of the development and use of these systems is described below.

4.4.1 System development

The labelling obligation would require further development of national livestock identity and ancestry recording systems. The issues involved are described in the main report.

4.4.2 Tagging

There is variation in how batch-identified animals are tagged. Pigs under the age of 12 months that are transported for slaughter may, for instance, be tagged with their herd mark using a slapmark (a permanent ink mark identifying the herd, applied to each front shoulder area of the pig), an ear tag, a tattoo or a temporary paint mark[10]. Sheep and goats under 12 months intended for slaughter can be identified by a single ear tag holding the flock or herd mark[11].

It is here assumed that under a clone offspring labelling obligation animals would be tagged with an EID ear tag to support more rapid processing and reduce the error rate in data capture, such as at slaughter. The EID tag would be used together with a conventional tag. For costing purposes the additional components of the obligation are therefore assumed to comprise:

[9] In the absence of a better data series, agricultural wages have been used.
[10] See, for instance, *Guidance: Animal identification, movement and tracing regulations*, UK Department for Food & Rural Affairs, https://www.gov.uk/animal-identification-movement-and-tracing-regulations , accessed 11 November 2015.
[11] Practice varies among Member States, with some requiring slaughter lambs to carry electronic identification ear tags.

- One EID tag for each additional animal that needs to be tagged plus an appropriate applicator;
- The time taken to apply the EID tag;
- An allowance for replacement of EID tags that are lost or damaged after application.

There being no provision in this study for primary research with livestock producers to determine the time taken to tag animals of different types, the estimates used are derived from the literature. This, plus variation in tag costs and the cost of time, means that the cost estimates are indicative rather than definitive.

No separate costing has been made for applicators. These are generally not expensive. Also, no adjustment has been made for activities avoided by a move to use of EIDs (e.g. application of slapmarks). Savings in time and materials from such activities will counterbalance the additional costs of EID tagging.

4.4.2.1 EID tag costs

A cost of EUR 1.50 per new EID tag is assumed. This is consistent with those found in online research conducted for this study. That research showed how unit prices vary by product and according to the volume purchased. Gianluca et al (2007) found that electronic identifiers could be bought for between EUR 1.47 and EUR 1.99. Small (2011) provides the results of market research on tag prices for different species in the UK, illustrating the range of products and prices available. In a study on bovine identification FCEC assumed a cost of EUR 2.49 (market research suggests cow tags can be more expensive than those intended for smaller animals). For this study it is tags that are suitable for porcine, ovine and caprine animals that are of particular interest because it is those animals that are affected by the removal of the option of batch identification. There are fewer pig EID tags on the market than similar tags for other species – some market development would be expected if the clone offspring labelling obligation was introduced.

Replacement tags are assumed to cost EUR 3 each[12]. This figure is again based on market research.

4.4.2.2 Time taken to apply the tag

Various figures are quoted in the literature for the time taken to apply a tag. A study by SAOS (2009) estimated 1 minute per sheep, with two people working together. Gianluca et al assumed 30 seconds for tagging a lamb scheduled to be slaughtered before 12 months. The IDEA project estimates 3-10 minutes for cattle. Gianluca et al assumed 1.5 minutes for retagging, though it is not clear whether securing access to the animal was included in this assessment. Here the initial tagging is assumed to take 30 seconds of labour per animal on average[13].

4.4.2.3 Retagging

Research suggests EID loss rates have falling and reliability improving as designs and technology have improved over the years and livestock producers have gained more experience. Some loss of tags and loss of functionality is however, inevitable. Where a tag is lost or the number is no longer picked up by a reader the farmer needs to order a replacement tag and spend time fitting it.

Burose and Zahner (2009) found a loss rate of 1.5% to 4.1% when EIDs were applied to fattening pigs. In a pilot study on EID for sheep conducted with 209 farms in Scotland, 1.7% of ear tags were lost (Scottish Agricultural Organisation

[12] These tags are available individually by order printed with a specified animal registration number. The print-to-order requirement means that they more expensive than regular tags.
[13] Animals would be tagged when small.

Society, 2009, 2011). Gianluca et al, looking at sheep and goat identification, assumed a tag loss of 5% per year. Plastic ear tag losses for sheep under Spanish conditions have been estimated at 2.7% to 6.3% for fattening lambs and 8.3% to 12.8% for breeding animals (Caja et al, 1998, 1999; Conill et al, 2002). FCEC noted loss rates of up to 5% in its study on bovine identification.

Most of the animals individually identified as a consequence of the cloning obligation would be food production animals destined for slaughter within a year. The modelling assumes a replacement cost of EUR 3 per tag, and a loss rate of 3% (i.e. 3% of additional EID tags fitted would need to be replaced before the animal was sent to slaughter).

Retagging is assumed to take 5 minutes (which would include an allowance for ordering the replacement tag).

4.4.2.4 Cost of labour

Sector-specific labour costs have been used for the different livestock sub-sectors, as explained in section 4.3.2.

4.4.2.5 Number of animals

The number of animals tagged per year is estimated from EU slaughter data for 2014. This is a simplifying assumption that births equal deaths. A deduction is made for each species for breeding animals sent to slaughter that would already have EID tags, and animals that would otherwise be individually identified (e.g. sheep exported from one Member State to another). No specific allowance is made for mortality prior to scheduled slaughter; to the extent that tags are applied to animals that do not subsequently appear in slaughter data (due to premature mortality) then the estimates will under-state tagging costs. No allowance was made for imports of live animals since these are trivial in the context of overall production.

4.4.2.6 Tagging costs

The build-up of the estimates for tagging costs is shown in the table below. The cost function may be expressed as follows:

Total tagging costs = f (cost of EID tag and re-tagging, time taken to apply tags and retag, unit cost of labour, # additional animals requiring individual identification and re-tagging each year)

It is assumed that for species for which there are existing requirements on individual identification (i.e. bovine and equine animals), no additional obligation on tagging and re-tagging would be imposed. No additional tagging costs are therefore incurred for these species.

The costs are estimated at around EUR 500m/year, as shown in Table 11. This cost element does not vary with the definition of clone offspring adopted and would be expected to fall on livestock producers[14].

4.4.2.7 Removal of ear-tag

EID tags would need to be removed after slaughter. This is an additional operational requirement for some animals (e.g. pigs of less than 12 months age sent to slaughter that have been marked by a slapmark). In other cases the animal may (in the absence of a clone offspring labelling obligation) have been carrying tags that would have been removed. This time is not separately identified.

[14] In some Member States farmers have received support in meeting the cost of electronic tags.

FCEC (2009) assume 0.6 minutes per tag for tag removal at slaughter. No specific equipment is needed. Saa et al assumed 0.67 minutes per animal for recovery and registration for sheep.

Table 11. Costs of *tagging* and re-tagging

		Bovine	Porcine	Ovine	Caprine	Equine	All
a	Cost of EID tag per animal, EUR	N/A	1.5	1.5	1.5	N/A	-
b	Cost of re-tagging per animal, EUR	N/A	3	3	3	N/A	-
c	Time taken to apply ear tag (minutes per animal)	N/A	0.5	0.5	0.5	N/A	-
d	Time taken to retag (minutes per animal)	N/A	5	5	5	N/A	-
e	Unit hourly labour cost, EUR	N/A	10.10	7.99	6.03	N/A	-
f	Number of additional animals tagged, '000s	N/A	239,397	19,882[15]	2,491	N/A	261,771
g	Number of additional animals re-tagged, '000s (based on 3% of animals tagged)	N/A	7,182	596	75	N/A	7,853
	Total cost of EID tags (a x f), EUR m	N/A	359.10	29.82	3.74	N/A	392.66
	Total time cost of tagging (c x f), EUR m	N/A	80.62	1.32	0.13	N/A	82.07
	Total cost of re-tags (b x g), EUR m	N/A	21.55	1.79	0.22	N/A	23.56
	Total time cost of re-tagging (d x g), EUR m	N/A	6.05	0.40	0.04	N/A	6.48
	Total tagging & re-tagging costs, EUR m	N/A	467.31	33.33	4.13	N/A	504.77

Note: 'N/A' = not applicable, i.e. where no additional tagging is required as a consequence of the clone offspring labelling obligation

4.4.3 Identity and ancestry recording

The costs associated with the additional identity and ancestry recording triggered by the obligation are estimated as a function of the number of additional animals, the average amount of time required to prepare for and perform the registration operation and the average cost of time. This can be expressed as follows:

[15] From 2015 most slaughter lambs in the UK (i.e. animals less than one year old) are tagged electronically. The EU figure was adjusted downwards to reflect this. The legislative change did not affect all parts of the UK.

Cost = f (# additional animals for which identity recording is required, # additional animals for which ancestry recording is required, average time per registration)

4.4.3.1 Individual identity registration

The number of additional animals requiring individual identity registration is the same as used for EID tagging in 4.4.1. It is assumed that Member States would establish enhanced systems for identity recording of the animals. Though these might be designed to support online registration, many EU farmers will not have such access and will need to be provided with alternative channels.

With the supporting systems undefined there is uncertainty about how much time it might take, on average, to register an animal. Significant economies of scale can be expected, especially if batch-based online registration was possible. Equally, many farmers will need alternative registration options that will be more time-consuming.

There are some references to similar operations in the literature. Saa et al (2005) assumed 1.5 minutes for initial identification and registration per animal and 2 minutes per animal for re-identification. FCEC (2009) assumed 0.25 minutes in its report on bovine identification. It is here assumed that the registration process would take 1.5 minutes per animal on average. The table below details the cost of individual animal registration. Total costs are estimated at EUR 67 million, of which most would be incurred by the pig sector.

Table 12. Cost of individual animal registration

		Bovine	Porcine	Ovine	Caprine	Equine	All
a	Time taken to register animal identity (minutes per animal)	N/A	1.5	1.5	1.5	N/A	-
b	Unit hourly labour cost, EUR	N/A	10.10	7.99	6.03	N/A	-
c	Number of additional animals requiring individual identification, 000s	N/A	239,397	31,240	2,492	N/A	273,129
	Total cost of registering animal identity (a x b x c), EUR m	N/A	60.47	6.24	0.38	N/A	67.09

4.4.3.2 Ancestry registration

The number of animals for which ancestry would need to be recorded is different to the number for which the labelling obligation would require individual identity. Around 310 million animals would need to be ancestry recorded, compared to 273 million that would require individual identity as a result of the obligation. No additional effort would be required for animals currently recorded in herdbooks (indeed the time required to register these animals may actually ultimately reduce where new, more efficient registration systems are introduced).

Here it is assumed that identity and ancestry recording would be done as part of the same operation. An additional provision is made for the time needed to record ancestry in addition to identity. It is assumed that an integrated database would be available and that details of parentage would be recorded when the identity number is registered. The total time required for ancestry recording is assumed to be 5 minutes per animal. Again, significant economies of scale may be possible with the appropriate enabling technology and for large scale enterprises.

The administration of the registration by the database operator is covered by the cost estimate provided at 4.4.1. Estimates of the fraction of the herd of each species for which ancestry is currently recorded have been developed (shown below).

4.4.3.3 Additional number of animals requiring individual identity and ancestry recording

Estimations of the additional number of animals in the EU that will need to be individually registered and ancestry recorded each year (under an enhanced traceability system to facilitate potential labelling of products from clone offspring) are based on:

- Standing population per species;
- Annual slaughtering data (as a proxy for total number of animals registered annually in species where more than one generation is slaughtered each year);
- The percentage of animals in each species that is individually registered and ancestry recorded, considering:
  - Proportion of individual identity registration and ancestry recording in nucleus and multiplier herds;
  - Proportion of individual identity registration and ancestry recording in commercial breeding animals;
  - Proportion of individual identity registration and ancestry recording in commercial meat production animals.
- Annual breeding herd replacement rates.

The total number of new animals entering the system each year was taken to be equivalent to the numbers slaughtered annually, with the underlying assumption of static population equilibrium. Annual slaughtering figures also capture the proportion of animals in the breeding herd that are culled each year at the end of their productive lives. Slaughtering data are also likely to include a very small number of live animals imported from third countries that are slaughtered in the EU (the majority of live imports are breeding animals). These animals do not materially alter estimations of the number of additional animals needing to be individually registered and ancestry recorded each year and have not been excluded.

The prevalence of individual identity registration and animal ancestry recording is, under current management practices, significantly higher in breeding populations than for animals bred for production. The number of additional animals in the breeding herd to which these requirements will apply was estimated by multiplying the annual breeding herd replacement rates by the proportion of the breeding herds that already have these traceability requirements in place. For the majority of species, the prevalence of individual identity registration and ancestry recording was negligible for commercial animals reared for direct consumption.

Table 13 presents assumptions and sources used to calculate additional individual identity registrations and ancestry recording for the different species.

Table 14 shows the rate of ancestry recording used for calculations relating to the bovine beef sector. Online research was conducted and enquiries were made independent experts and with authorities and relevant organisations in Member States with large beef herds. For other Member States the rates used are based on assumptions developed by the project team.

Table 13. Assumptions and sources used to calculate additional individual identity registrations and ancestry recording required

Species	Estimate of additional animals requiring recording of individual identification, '000s	Estimate of additional animals requiring recording of ancestry information, '000s	Basis of estimate / assumptions	Sources
Bovine – beef	N/A	14,539	All animals assumed to be individually registered, as per existing legislation. Annual beef and veal cattle slaughterings taken as proxy for total number of new beef and veal animals entering the system annually. Male dairy calves were assumed to enter the beef and veal herd given use of dual purpose breeds (used for dairy and beef production) common in many countries. Specific data on prevalence of ancestry recording between suckler cows and calves fattened for meat production were not available. Average ancestry recording of circa 23% (based on expert consultation and MS responses) was applied to all beef animals entering the system. Ancestry recording for male dairy calves was assumed to be considerably lower than for dairy cows but comparable on average to the beef herd (based on expert consultations).	See Table 14
Bovine – dairy (cows)	N/A	1,750	All animals assumed to be individually registered under existing legislation. Standing population of dairy cows used as reference against which new annual herd replacements were calculated. UK average annual herd replacement rates (18-35%) was used as proxy for average EU rate.	Consultations with ICAR and Wageningen University Agriculture and Horticulture

Species	Estimate of additional animals requiring recording of individual identification, '000s	Estimate of additional animals requiring recording of ancestry information, '000s	Basis of estimate / assumptions	Sources
			Ancestry recording: 70-75% of dairy cows (based on expert consultation), applied to the number of animals annually replaced. See Bovine – beef for note on male dairy calves.	Development Board (AHDB), n.d.
Pigs	239,397	245,815	Annual slaughtering data used as proxy for total number of pigs entering the production system each year. Dutch data on nucleus and multiplier herd replacement rates (obtained via consultations with Wageningen University) were used as average EU rates: Nucleus herd replacement: 80-100% each year Multiplier herd replacement: 18-24 months Nucleus herd population: 1% of total population Multiplier herd population: 11% of total population Pigs in nucleus herd assumed to be individually registered and ancestry recorded: 100% of nucleus herd. Pigs in multiplier herd assumed to be individually registered and ancestry recorded: 10% of multiplier herd. Individual identity registration and ancestry recording for commercial meat production animals assumed to be negligible based on expert consultation.	Consultations with Wageningen University and a large pig breeding company
Sheep	31,240	43,536	Individual identity registration assumed in place for all breeding animals (as these animals will be older than one year and thus require registration under existing legislation;	Consultations with Wageningen University

Species	Estimate of additional animals requiring recording of individual identification, '000s	Estimate of additional animals requiring recording of ancestry information, '000s	Basis of estimate / assumptions	Sources
			slaughter lambs are typically finished under one year of age). Additional individual identity registrations each year were thus assumed to be equivalent to the number of breeding animals replaced each year. The nucleus herd was deemed to account for an extremely small proportion of the total population and was therefore not included in population-wide calculations on individual identity registration and ancestry recording. UK annual ewe replacement rates of 20-25% were used as proxy for the EU average rates. Ancestry recording of 5% (based on French data and expert consultations) was applied to the replacement herd. Data on prevalence of individual identity registration and ancestry recording for meat production lambs slaughtered under the age of one was not available. Consultations suggested that these figures are likely in any case to be small so were not included in population-wide calculations.	Eblex (n.d.) cited in Farmers Weekly, 2014 L'Institut de l'Elevage, n.d.
Goats	2,492	3,895	Individual identity registration assumed in place for all breeding animals (as these animals will be older than one year and thus require registration under existing legislation) Additional individual identity registrations each year were thus assumed to be equivalent to the number of breeding animals replaced each year.	Consultations with Wageningen University

Species	Estimate of additional animals requiring recording of individual identification, '000s	Estimate of additional animals requiring recording of ancestry information, '000s	Basis of estimate / assumptions	Sources
			The nucleus herd was deemed to account for only a very small proportion of the total population and was therefore not included in population-wide calculations on individual identity registration and ancestry recording. Ewe replacement rates of 20-25% were also used as proxy for goat replacement in the absence of available data specific to goats. Ancestry recording of 5-10% (based on Spanish data and expert consultations) was applied to the replacement herd	
Horses	N/A	55	Individual identity registration assumed in place for all new animals born each year under existing legislation. Annual horse slaughterings taken as proxy for total number of new horses entering the system annually. Ancestry recording of 75% assumed for replacement animals.	Consultations with ICAR and Wageningen University Humane Society International, 2014

Note: N.d. = No date.

Table 14. Beef cattle ancestry recording

	% of total EU beef population	Estimated % of beef cattle ancestry recorded (dam & sire)	Population-weighted % beef cattle ancestry recording	Source	Details
EU (28 countries)			**23.1%**		
Austria	2%	10%	0.2%	ICF assumptions	Figure based on lowest of the countries which provided data (Germany).
Belgium	3%	25%	0.8%	Consultation with ICAR & ICF assumptions	Initial consultations with ICAR indicated that levels of ancestry recording in Belgium and France are likely to be similar in range. In the absence of data from national sources, Belgian figure was taken to be equivalent to France.
Bulgaria	0%	5%	0.0%	ICF assumptions	Assumed to have ancestry recording levels of half of the German figure (the rate in Germany being the lowest of those obtained by targeted research).*
Croatia	0%	5%	0.0%	ICF assumptions	Assumed to have ancestry recording levels of half of the German figure (the rate in Germany being the lowest of those obtained by targeted research).*
Czech Republic	1%	5%	0.1%	ICF assumptions	Assumed to have ancestry recording levels of half of the German figure (the rate in Germany being the lowest of those obtained by targeted research).*
Cyprus	0%	5%	0.0%	ICF assumptions	Assumed to have ancestry recording levels of half of the German figure (the rate in Germany being the lowest of those obtained by targeted research).*
Denmark	1%	75%	0.9%	Consultation with Nordgen	Initial consultation with Nordgen indicated that beef cattle ancestry recording in Denmark could be as high as 90% but did not state whether this related to suckler cows or included meat production animals. In the absence of further clarification, the Danish figure was assumed to be equivalent to Ireland and Netherlands - which had the highest levels of the countries which provided data.

	% of total EU beef population	Estimated % of beef cattle ancestry recorded (dam & sire)	Population-weighted % beef cattle ancestry recording	Source	Details
Estonia	0%	5%	0.0%	ICF assumptions	Assumed to have ancestry recording levels of half of the German figure (the rate in Germany being the lowest of those obtained by targeted research).*
Finland	1%	10%	0.1%	ICF assumptions	No data obtained. Figure based on lowest of the countries which provided data (Germany).
France	27%	25%	6.7%	Consultation with L'Institut de l'Elevage (Idele)	Figure relates to all beef animals (suckler cows and meat production animals)
Germany	9%	10%	0.9%	Consultation with German Cattle Breeders` Federation (ADR)	Figure relates to all beef animals. Under the German system if the dam is ancestry recorded, calves are also automatically registered.
Greece	1%	5%	0.0%	ICF assumptions	Assumed to have ancestry recording levels of half of the German figure (the rate in Germany being the lowest of those obtained by targeted research).*
Hungary	1%	5%	0.0%	ICF assumptions	Assumed to have ancestry recording levels of half of the German figure (the rate in Germany being the lowest of those obtained by targeted research).*
Ireland	9%	75%	6.9%	Consultation with Irish Farmers' Association (IFA)	Figure relates to all beef animals (suckler cows and meat production animals).
Italy	5%	10%	0.5%	ICF assumptions	Data received from Italian ministry and from breeding organisations were insufficient to clarify national ancestry recording levels. Consultees did not provide further clarification. Figure based on lowest of the countries which provided data (Germany).
Latvia	0%	5%	0.0%	ICF assumptions	Assumed to have ancestry recording levels of half of the German figure (the rate in Germany being the lowest of those obtained by targeted research).*

	% of total EU beef population	Estimated % of beef cattle ancestry recorded (dam & sire)	Population-weighted % beef cattle ancestry recording	Source	Details
Lithuania	0%	5%	0.0%	ICF assumptions	Assumed to have ancestry recording levels of half of the German figure (the rate in Germany being the lowest of those obtained by targeted research).*
Luxembourg	0%	10%	0.0%	ICF assumptions	Figure based on lowest of the countries which provided data (Germany).
Spain	11%	10%	1.1%	ICF assumptions	Data received from the Spanish Ministry of Agriculture were insufficient to clarify national ancestry recording levels. Other consultees did not provide further clarification. Figure based on lowest of the countries which provided data (Germany).
Malta	0%	5%	0.0%	ICF assumptions	Assumed to have ancestry recording levels of half of the German figure (the rate in Germany being the lowest of those obtained by targeted research).*
Netherlands	3%	75%	2.1%	Consultations with Ministry of Economic Affairs, Agriculture & Innovation and ICAR.	Figure relates to all beef animals (suckler cows and meat production animals)
Poland	4%	5%	0.2%	ICF assumptions	Contacts were made with the Polish Association of Breeders and Producers of Beef (Bydlo). However in the absence of available data the figure used was derived from the lowest of the countries which provided data (Germany).
Portugal	3%	10%	0.3%	ICF assumptions	No data obtained. Figure based on lowest of the countries which provided data (Germany).
Romania	1%	5%	0.0%	ICF assumptions	Assumed to have ancestry recording levels of half of the German figure (the rate in Germany being the lowest of those obtained by targeted research).*
Slovenia	1%	5%	0.0%	ICF assumptions	Assumed to have ancestry recording levels of half of the German figure (the rate in Germany being the lowest of those obtained by targeted research).*

	% of total EU beef population	Estimated % of beef cattle ancestry recorded (dam & sire)	Population-weighted % beef cattle ancestry recording	Source	Details
Slovakia	0%	5%	0.0%	ICF assumptions	Assumed to have ancestry recording levels of half of the German figure (the rate in Germany being the lowest of those obtained by targeted research).*
Spain	11%	10%	1.1%	ICF assumptions	Data received from the Spanish Ministry of Agriculture were insufficient to clarify national ancestry recording levels. Other consultees did not provide further clarification. Figure based on lowest of the countries which provided data (Germany).
Sweden	2%	10%	0.2%	ICF assumptions	No data obtained. Figure based on lowest of the countries which provided data (Germany).
United Kingdom	13%	15%	2.0%	Consultations with ICAR & national bodies	Consultation with national bodies. Initial consultation with ICAR suggested that beef ancestry recording in the UK is likely to be lower than in some other Member States such as France, Belgium and the Netherlands, as the UK relies to some extent on unstructured crossbreeding, making ancestry recording less common than in countries with greater proportions of pedigree herds.

*Newer Member States and those with less formalised livestock systems were assumed to have ancestry recording levels of half of the German figure.

Table 15. Cost of ancestry registration

		Cattle		Porcine	Ovine	Caprine	Equine	All
		Dairy	Beef					
a	Time taken to register animal ancestry (minutes per animal)	5	5	5	5	5	5	
b	Unit hourly labour cost, EUR	9.65	10.25	10.10	7.99	6.03	8.35	9.53
c	Number of additional animals requiring ancestry identification, `000s	1,750	14,539	245,815	43,536	3,895	0.05	309,589
	Cost of registering animal ancestry (a x b x c), EUR m	1.41	12.41	206.96	29.00	1.96	0.04	251.78

4.4.4 Movement recording

The clone offspring labelling obligation would require the recording of certain animal movement on an individual basis where currently movements are recorded on a batch basis. Each individual movement recording is assumed to involve:

- One scan of the EID to capture the individual animal ID number;
- The notification of the movement (e.g. by the holding on despatch of animals to slaughter), electronically or via other approved means;
- The logging of that movement on the central registry (by the competent authority or its appointed agent).

At the slaughterhouse, the registration process would need to provide the operator with information on the clone offspring status of animals so that clone offspring could be segregated as needed. This status might also be indicated by the supply chain on accompanying documentation (e.g. as a requirement of contract).

4.4.4.1 Number of additional movement records

Determination of the additional movement records triggered by the obligation is not straightforward. Factors contributing to the complexity are:

- The lack of a single set of EU level aggregate records of total animal movements for all the species of interest (EU TRACES data covers intra-EU trade but not intra-EU movement), including data on batch movements vs records of individual animal records;
- The significant differences among Member States and by species in patterns of animal movement. This includes variation in:
  - the number of movements that the average animal makes between birth and slaughter, e.g. movements between holdings and to markets or direct to slaughter (as reported in the literature).
  - the relative scale of domestic movements vs import/export movements.

Movement data from national databases have been obtained from selected Member States to provide points of reference in the estimation of overall movement figures. Some Member States provided information on the number of batches and number of animals.

Table 16. Animal movements per species in selected Member States

MS	Number of animal /batch movements, 000s					Source
	Bovine	Porcine	Ovine	Caprine	Equine	
ES	-	577 (batches)	488	91	-	Ministry of Agriculture
FR	-	613 (batches)	9,400	1,100	-	National Animal Movement Database, France
IT	-	21,690	1,289	176	-	Department for Public and Veterinary Health Health service prevention, research and services for animal health and food safety (IZS)
NL	-	21,000	1,500	300	-	Ministry of Economic Affairs, Agriculture and Innovation
UK	-	14,000	-	-	-	Vernon, M., 2011 SAC Commercial, 2006-2011 data

Note: Figures relate to individual animal movements, unless specified as batches.

Data obtained from the above countries were used to derive a population-weighted EU-wide estimation of the number of livestock movements for each of the species.

Batch movements were converted into animal movements based on average number of animals contained in each batch estimated from countries that provided both individual and batch movement data.

Table 17. Estimated EU-wide animal movements that would need to be individually recorded rather than batch-recorded

Animal movements, 000s					
Bovine	**Porcine**	**Ovine**	**Caprine**	**Equine**	**All**
-	362,042	64,261	8,414	-	434,717

4.4.4.2 Cost of additional movements

Determination of the net cost of the change in animal movement recording practice prompted by the labelling obligation is made more complicated by the fact that it would be associated with a switch to use of electronic identification of animals. EIDs can be read more quickly and reliably than conventional slaughter tags. This reduces time (and therefore costs) on farm but also at markets and slaughterhouses.

Context has a large impact on the average time required to take a reading from an EID. In small operations using hand-held readers, the average reading time per animal is expected to be higher than in large slaughterhouses using fixed readers. The literature emphasises the economies of scale achievable in EID reading costs for farms and slaughterhouses with the right technology (e.g. fixed rather than handheld reader) and operating at higher throughput. The value of time savings at markets and slaughterhouses where economies of scale can be realised can be significant[16].

The additional cost of EIDs to farmers has been a barrier to uptake of the technology but if legislation on clone offspring labelling obligation mandated use of EIDs then there are circumstances in which time savings along the supply chain would be available as a 'co-benefit' of the investment. The baseline situation in use of EIDs varies by species and by Member State. Time required varies by species, context and type of reader. Overall it is not feasible to establish whether there would be an overall saving or a net cost to the supply chain as a whole.

Savings in capturing animal data associated with use of EIDs would be offset by the additional time taken to submit movement data to the authorised registry on an individual animal (rather than batch) basis. The livestock producer, market / assembly centre or slaughterhouse would need to register the movement, referencing the individual animal identification numbers obtained from the reader. Data would need to be transferred from the reader to a computer. The manner of registration would depend on the system capabilities (online, telephone-based and paper-based options may be available).

The time implications will vary from case to case according to the scale of the holding or market operation, the design of the information system, the farm's access to the internet, etc. For operators able to exploit economies of scale and make best use of technology, the cost per animal is likely to be low.

Facilities (e.g. slaughterhouses) receiving animals would need to check the clone offspring status of the animals, e.g. to ensure animals were allocated to the correct segregated system. If confirmation of animals' clone heritage status was not

[16] An example is provided by the UK Government's impact assessment of the adoption of EIDs for slaughter lambs (Defra, 2013). The UK has mandated the use of EIDs for slaughter lambs in expectation of efficiency savings across the supply chain as a whole.

possible in real time then there would be the potential for delays in processing animals (and hence additional costs).

The data transmitted to the registry would need to be logged. The protocols for this would vary. Costs for this element of the movement registration are covered by the annual registry operating costs discussed at 4.4.1. It is assumed that the need for individual traceability of all animals would lead to Member States investing to replace any paper-based systems with online systems.

Some animal movement registers are administered by authorities without costs being recovered from the food chain while others charge. In the Netherlands, for instance, there is a charge of EUR 0.20 for registering a single movement. This redistributes costs from taxpayer to the food chain (and ultimately to consumers).

Some enterprises may incur additional capital expenditure on readers and associated equipment. This is not quantified.

4.5 Verification

4.5.1 Introduction

As noted in the main text, a documented identity/ancestry/traceability system is vulnerable to fraud as claims made under that system cannot be verified. An animal that is an offspring of a clone could be incorrectly identified as the offspring of another animal (see box) and there is no means of detecting the error. Some farming systems would be more prone to accidental mis-assignment of parentage (e.g. extensive systems).

> Multiple studies have found errors in parentage recording for sheep and goats. These studies suggest that clone offspring labelling without DNA verification could be of doubtful reliability, even in the absence of economic incentives for misreporting parentage. Segregated 'clone offspring' supply chains would avoid this problem.
>
> Rosa *et al* examined samples of blood and hair from 85 Sicilian Valle del Belice dairy sheep. Their genetic testing indicated 20.3% and 29.7% misidentification rates for females and males, respectively. In 8 cases, out of 13 maternal exclusions, the real mother was identified among other females within the flock.
>
> Jimenez-Gamero *et al.* (2006) report the result of DNA testing on Murciano-Granadina goats. They demonstrated that 16.2% of 388 identifications were incompatible with the recorded pedigree, and a further 11.9% were dubious. This suggested that a high proportion of the information derived from dam identifications may have been erroneous. They found large variation between farms in the frequency of mis-recording of dams.

DNA parentage testing potentially provides a means of verification of claims in such circumstances. Clone heritage claims could, in principle, be verified across multiple generations if a sequence of parentage tests could be applied between individual generations, tracing back up through the lineage.

The clone offspring status of any animal might be challenged. The parent animals might not be available to test (e.g. because one or both had been slaughtered). DNA parentage testing could provide a verification option for a species under a clone offspring labelling obligation only if DNA records of each animal were collected and stored. An *ad hoc* system would not provide protection against fraud.

There would be two options – to store the DNA samples, or to test the samples and store the test results (the DNA profiles) rather than the sample. Both present

significant challenges – the livestock producer would need to take a DNA sample (e.g. a blood or tissue sample) from each new animal and forward it to a designated entity together with details of the animal identity. The receiving system would need to be capable of storing or testing millions of DNA samples a year.

Testing on receipt would mean that claims for parentage might be verified at the point of registration, though this operation could itself be very burdensome if not automated.

If the EU market was closed to genetics and live animals from third countries then the DNA records could be limited in scope to live animals in the EU and provide the coverage needed for verification. However if, as at present, the EU market was open to imports of reproductive materials (and live animals) then a DNA verification system would need to cover all the livestock populations from which those imports were sourced. These populations would also need to be covered by identity and ancestry recording systems in which clone animals were identified. Reproductive materials and animals are traded around the world so the implication is that a fully comprehensive system would need to be global in scope. A global system would also be required if verification was expected to cover food imports.

The cost of a DNA-based verification system for EU animals has been considered based on information collected via research with the DNA-testing sector and reasoned assumptions. These cost estimates are necessarily highly indicative. Were universal DNA profiling for EU herds shown to be feasible and to be introduced through legislation it can be expected that significant investment would follow, innovations would occur and economies of scale be achieved such that the cost per animal would fall.

These estimates apply to the EU herd only, not to the arrangements applied by countries seeking to export genetic materials, live animals or food products to the EU.

4.5.2 DNA sampling

There are EID ear tags available on the market that are designed to integrate tissue sampling for DNA testing with the application of the ear tag. When the tag is applied to the ear a tissue sample is deposited in a tube that is pre-labelled with the identification number present on the ear tag. Market research suggests it is reasonable to assume a price of EUR 3.50/tag for modelling purposes. In practice, if such tags were widely used, it can be expected that costs would fall. The advantage of such tags is that the samples could be taken by the regular staff as part of the regular tagging process without the need for intervention by a veterinarian, and there is an automatic match of the identity of the sample to the identity number assigned to the animal. These EID sampling tags would be used in place of the regular EID tags in a scenario where verification was required, and as such the incremental cost (over and above that of the regular tag) is taken for the cost modelling (i.e. EUR 3.50 - EUR 1.50 = EUR 2.00).

The sample would need to be despatched to a designated organisation for testing and/or storage, together with documentation. An allowance of 2 minutes per sample has been provided to cover preparation and despatch, and a provision of EUR 1/unit for posting/packaging.

4.5.3 DNA testing / storage

Market research in the EU and elsewhere suggests significant variation in the prices of genotype profile tests for farm animals. For the purposes of this exercise a cost

of EUR 25/sample has been assumed[17]. It is assumed that this would be paid by the livestock producer. As noted above, it can be expected that mandatory DNA profiling would lead to changes in technologies and the market over the medium-term if a competitive market was established for these services. Work would be needed to define standardised tests for different breeds.

Substantial investments would be required in storage and testing capacity and capability if compulsory sampling was introduced. Techniques and profiling protocols would need to be agreed. The infrastructure and skills would take years to develop to the scale required to support a universal service, even if the approach was proven to be feasible.

4.5.4 Cost of DNA sampling and verification

The costs of DNA sampling and verification are assumed to be incurred by livestock producers. These costs are independent of whether or not animals already have ancestry information recorded. All animals will need to be sampled to verify ancestry claims and establish a DNA database. The costs can be expressed as follows:

> *Verification costs = f (cost of sampling tag, cost of DNA test, time take to despatch sample, cost of despatch, labour costs, total livestock population)*

The build-up of DNA sampling and verification costs are detailed in the table below. This is based on a model in which DNA profiling is conducted on all samples (rather than samples being stored and only tested by exception when parentage is challenged). If samples were stored but not routinely tested then complex storage and retrieval systems would be needed in facilities large enough to manage samples of hundreds of millions of animals per year.

The build-up of the cost estimate on the assumptions detailed below is shown in Table 18. The total cost is estimated at EUR 9.3 billion a year for the EU livestock sector. Of this EUR 8 billion is the DNA profiling cost. Verification costs incurred by third countries trading with the EU are excluded. Storage of samples may be cheaper than recording a DNA profile of every animal but would be logistically challenging. It seems likely that a requirement for a DNA-based verification mechanism would drive automation and innovation that would reduce unit costs.

Table 18. Development of estimate of the operating cost to the livestock sector for DNA sample capture and profiling

		Cattle		Porcine	Ovine	Caprine	Equine	All
		Dairy	Beef					
a	Cost of DNA sampling tag, EUR	2	2	2	2	2	2	-
b	DNA testing, EUR	25	25	25	25	25	25	-
c	Cost of dispatch, EUR	1	1	1	1	1	1	-
d	Time take to organize and dispatch samples, minutes per sample	5	5	5	5	5	5	-
e	Unit hourly labour cost, EUR	9.65	10.25	10.10	7.99	6.03	8.35	-

[17] This was a rate offered by a provider serving several Member States.

		Cattle		Porcine	Ovine	Caprine	Equine	All
		Dairy	Beef					
f	Number of animals / yr, '000s	1,750	14,539	245,815	43,536	3,895	0.05	309,589
	Total cost of DNA sampling tag (a x f), EUR m	12.73	37.82	497.06	88.37	9.69	0.43	646.10
	Total time cost of organisation and despatch of sample (d x e x f), EUR m	5.05	15.02	197.34	35.08	3.85	0.17	256.52
	Total costs of despatch (c x f), EUR m	6.37	18.91	248.53	44.19	4.84	0.22	323.05
	Total cost of DNA profiling (b x f), EUR m	159.13	472.80	6,213.19	1,104.57	121.11	5.41	8,076.21
	Total costs, EUR m	183.28	544.55	7,156.12	1,272.20	139.49	6.23	9,301.88

4.6 Summary

Based on the analysis undertaken, a clone offspring labelling obligation would trigger additional annual operating costs of over EUR 800 million per year for the EU livestock sector. This system would deliver a document-based system that would potentially be vulnerable to fraud and error. Application of a DNA-based verification system could theoretically provide security against fraud but would add substantial further costs, potentially of EUR 9.3 billion per year, and would itself involve significant technical and logistical challenges. There would be a need for significant investment in registries and associated systems to support identity, ancestry and movement recording, and in universal DNA profiling or storage systems if a DNA-based verification mechanism was adopted.

There is uncertainty in the cost analysis but it provides an indication of the likely order and distribution of the impacts. The distribution of these costs by activity and species/sector is shown in the table below.

Table 19. Indicative operational costs of a clone offspring labelling system to the livestock production sector, EUR m/yr

	Dairy	Beef	Porcine	Ovine	Caprine	Equine	Total
Tagging	-	-	467.41	33.33	4.13	-	504.77
Identity & ancestry	1.41	12.41	267.43	35.24	2.33	0.04	318.86
Sub-total	***1.41***	***12.41***	***734.74***	***65.58***	***6.46***	***0.04***	***823.63***
Verification (option)	183.28	544.55	7,156.12	1,272.20	139.49	6.23	9,301.88
Total	***183.28***	***544.44***	***7,890.86***	***1,340.78***	***145.95***	***6.23***	***10,125.51***

Note: Excludes development costs of databases and associated systems.

These costs would be incurred even if there were no clone offspring in the livestock sector, and irrespective of the definition of clone offspring adopted. They arise from the requirement for full identity and ancestry recording for all livestock, and the

need to secure the capacity to attach a clone offspring status to any animal and retain that link from birth to slaughter.

It is useful to assess these operational costs in context of the economic value of the livestock production sectors, to better understand the scale of the impacts on producers and operators.

The table below sets the operation costs associated with a clone offspring labelling system in context of the economic production value of the livestock sectors.

Table 20. Operational costs as a percentage of the economic value of livestock production sectors

	Cattle	Porcine	Ovine & Caprine	Equine
Tagging	-	1.33%	0.70%	-
Identity & ancestry	0.04%	0.76%	0.70%	0.004%
Verification (option)	2%	20%	26%	1%

Note: operational costs are assessed against the production value at basic prices of the livestock sectors using Eurostat data (2014). Separate production value data for sheep and goat sectors were not available.

Table 21 provides a summary of the build–up of operational costs of a clone offspring labelling system.

Additional costs would also be incurred in the lower parts of the supply chain, between dairies and the consumer for dairy products, and between slaughterhouses and the consumer for meat products. These include costs for

- managing information about the clone heritage status of products through the supply chain,
- segregated production arrangements where clone offspring are present and need to be managed separately on batch basis or in dedicated production lines,
- changes to product labelling,
- staff training,
- information system development, and
- adjustments to supply chain audit and verification arrangements.

There would be familiarisation costs too at the outset as processors, manufacturers, distributors and retailers worked to understand the requirements and implications of the labelling obligation. The obligation may trigger strategic responses such as changes in contract terms, changes in suppliers and reformulation of products to reduce risk and cost.

The EU's trading partners would also face significant costs in the development and operation of the systems needed to confirm clone heritage of reproductive materials, lives animals, whole cuts and processed products scheduled for export to Europe.

Table 21. Summary cost model and assumptions

Cost element	Cattle – dairy	Cattle – beef	Pigs	Sheep	Goats	Horses	Assumptions
Unit farm labour costs	FADN agricultural wage data, weighted to livestock populations in Member States.						
Familiarisation costs							
Time costs of familiarisation with new procedures and legislation at farm holdings	360.94 *Familiarisation costs incurred by holdings were calculated on an industry level rather than per species to avoid duplication of costs on mixed livestock farms with more than one species.*						• 5 hrs training / familiarisation per holding
Time costs of familiarisation with new procedures and legislation at markets and assembly centres	2.09 *Familiarisation costs incurred by operators were calculated on an industry level rather than per species to avoid duplication of costs for operators handling more than one species.*						• 10 hrs training / familiarisation per operator
Time costs of familiarisation with new procedures and legislation at slaughterhouses							• 10 hrs training /familiarisation per operator
Subtotal	***363.02***						
Tagging[18]	**Costs, millions EUR**						
Cost of EID tag	N/A	N/A	359.10	29.82	3.74	N/A	• EUR 1.5 per tag
Time cost of ear tag application	N/A	N/A	80.62	1.32	0.13	N/A	• 0.5mins per animal
Re-tag cost	N/A	N/A	21.55	1.79	0.22	N/A	• EUR 3 per tag

[18] It was assumed that no additional individual identification costs would be incurred for bovine and equine animals as they are already individually identifiable under existing legislation.

Cost element	Cattle – dairy	Cattle – beef	Pigs	Sheep	Goats	Horses	Assumptions
Time cost of re-tagging	N/A	N/A	6.05	0.40	0.04	N/A	• 5mins per animal • 3% loss rate of tags
Subtotal	N/A	N/A	***467.31***	***33.33***	***4.13***	N/A	
Individual identity & ancestry recording							
Time cost of registration of animal identity	N/A	N/A	60.47	6.24	0.38	N/A	• 1.5mins per animal
Time cost of registration of animal ancestry	1.41	12.41	206.96	29.00	1.96	0.04	• 5mins per animal
Subtotal	***1.41***	***12.41***	***267.42***	***35.24***	***2.33***	***0.04***	
Verification							
Sampling EID tag	12.73	37.82	497.06	88.37	9.69	0.43	• EUR 2 per sampling tag
Time cost of organisation and despatch of sample	5.05	15.02	197.34	35.08	3.85	0.17	• 5mins per animal
Costs of despatch	6.37	18.91	248.53	44.19	4.84	0.22	• EUR 1 postage cost
DNA profiling	159.13	472.80	6,213.19	1,104.57	121.11	5.41	• EUR 25 per DNA test
Subtotal	183.28	544.55	7,156.12	1,272.20	139.49	6.23	

Cost element	Cattle – dairy	Cattle – beef	Pigs	Sheep	Goats	Horses	Assumptions
Total (tagging and animal identity & ancestry registration), EUR m	1.41	12.41	734.74	68.58	6.46	0.04	
Total (including verification but excluding familiarisation costs), EUR m	183.28	544.44	7,890.86	1,340.78	145.95	6.23	
Total (including familiarisation costs), EUR m				10,488.53			

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6 Livestock (standing) populations, annual slaughtering, and holdings

6.1 Bovine animals

Table 15. Cattle population (000s) in the European Union by Member State (2009-2014)

Member State	Bovine animals						Dairy cows (as a subset of all bovine animals)					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
EU28 – total	**89,829***	**87,831**	**87,054**	**87,297**	**87,629**	**88,363***	**23,871**	**23,314***	**23,053**	**23,193**	**23,481***	**23,575***
AT	2,026	2,013	1,977	1,956	1,958	1,961	533	533	527	523	530	538
BE	2,535	2,510	2,472	2,438	2,441	2,477	518	518	511	504	516	519
BG	548	554	568	535	586	562*	297	314	313	294	313	302*
CY	54	55	57	57	57	60	23	23	24	24	25	25
CZ	1,356	1,319	1,339	1,321	1,332	1,373	384	375	374	367	375	372
DE	12,897	12,706	12,528	12,507	12,686	12,742	4,169	4,182	4,190	4,190	4,268	4,296
DK	1,621	1,630	1,612	1,607	1,583	1,553	574	573	579	579	567	547
EE	235	236	238	246	261	265*	97	97	96	97	98	95*
EL	675*	679*	681	685	653*	652*	145*	144*	130	132	130*	133*
ES	6,082	6,075	5,923	5,813	5,697	6,068*	828	845	798	827	857	862*
FR	19,842	19,599	19,129	19,052	19,129	19,253*	3,748	3,718	3,664	3,644	3,697	3,697*

Member State	Bovine animals						Dairy cows (as a subset of all bovine animals)					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
FI	908	909	903	901	903	907	286	284	282	280	282	283
HR	447	444	447*	452	442	441	212	207	185	181	168	159
HU	700	682	697	760	782	802	248	239	252	255	250	255
IE	6,232	5,918	5,925	6,253	6,309	6,243	1,022	1,007	1,036	1,060	1,082	1,128
IT	6,447	5,832	6,252	6,252	6,249	6,125	1,878	1,746	1,755	2,009	2,075	2,069
LT	759	748	752	729	714	737	375	360	350	331	316	314
LU	195	194	188	188	198	201	46	46	44	45	48	47
LV	378	379	381	393	406	422	166	164	164	165	165	166
MT	16	15	15	16	15	15	7	6	6	6	6	7
NL	3,998	3,960	3,912	3,985	4,090	4,169	1,562	1,518	1,504	1,541	1,597	1,610
PL	5,590	5,562	5,501	5,520	5,590	5,660*	2,585	2,529	2,446	2,346	2,299	2,248*
PT	1,447	1,503	1,519	1,498	1,471	1,549	255	243	242	237	231	234
RO	2,512	2,001	1,989	2,009	2,022	2,063*	1,419	1,179	1,170	1,163	1,169	1,192*
SE	1,482	1,475	1,450	1,444	1,444	1,436	354	349	348	346	346	344
SI	473	470	462	460	461	468	113	109	109	111	110	108

Member State	Bovine animals						Dairy cows (as a subset of all bovine animals)					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
SK	472	467	463	471	468	465	163	159	154	150	145	143
UK	9,901	9,896	9,675	9,749	9,682	9,693*	1,864	1,847	1,800	1,786	1,817	1,883*

**Provisional*

Source: Eurostat, extracted on13/05/15

Table 16. Annual slaughtering (000s) of bovine animals by Member State, 2009-2014

Member State	2009	2010	2011	2012	2013	2014
Total	**27,405**	**27,695***	**27,496***	**26,397**	**25,286**	**25,069***
AT	700	702	688	680	692	676
BE	790	835	857	823	806	835
BG	23	:	:	25	26	23
CY	18	16	16	17	15	15
CZ	269	255	248	228	221	223
DE	3,739	3,744	3,677	3,612	3,480	3,552
DK	481	495	513	490	490	486
EE	42	39	33	31	32	37
FI	267	265	268	264	267	270
IE	1,600	1,716	1,642	1,484	1,589	1,749
EL	259	247	251	239	202	189
ES	2,307	2,302	2,315	2,286	2,222	2,181
FR	4,953	5,060	5,155	4,890	4,663	4,654
HR	232	241	246	217	208	:
HU	114	106	100	94	88	91
IT	3,838	3,862	3,610	3,529	3,065	2,590
LV	96	91	87	83	80	85
LT	185	178	171	165	150	157
LU	26	27	25	23	22	24
MT	6	6	4	4	4	4
NL	2,068	2,028	2,028	1,933	1,958	1,958
PL	1,582	1,521	1,520	1,457	1,275	1,514
PT	445	405	415	409	365	341
RO	117	130	129	136	139	136
SE	498	489	491	455	453	468
SI	125	125	124	116	110	108
SK	59	51	43	37	36	34
UK	2,566	2,760	2,838	2,673	2,629	2,670

*: No data available; *Includes only those Member States for which data is available*

Source: Eurostat, extracted 29/05/2015

Table 17. Cattle and dairy cow holdings in the European Union by Member State (2007-2013)

		Number of cattle holdings								Number of dairy cow holdings as a subset of all cattle holdings						
MS	Year	Total	1 to 2 heads	3 to 9 heads	10 to 19 heads	20 to 29 heads	30 to 49 heads	50 to 99 heads	100 heads or more	Total	1 to 2 heads	3 to 9 heads	10 to 19 heads	20 to 29 heads	30 to 49 heads	50 to 99 heads	100 heads or more
EU28	**2007**	**3,385,520**	**1,407,080**	**856,380**	**287,340**	**162,590**	**188,250**	**237,290**	**246,660**	**2,535,600**	**1,227,260**	**655,430**	**168,430**	**90,540**	**104,710**	**136,630**	**152,670**
	2010	**2,621,090**	**952,930**	**618,280**	**257,620**	**147,910**	**177,730**	**213,720**	**252,960**	**1,742,430**	**739,670**	**418,990**	**136,180**	**77,660**	**94,660**	**118,500**	**156,760**
	2013	**:**	**:**	**:**	**:**	**:**	**:**	**:**	**:**	**:**	**:**	**:**	**:**	**:**	**:**	**:**	**:**
AT	2007	76,730	2,860	17,920	18,880	13,090	14,250	8,420	1,300	49,450	700	7,430	11,750	9,870	11,810	6,950	930
	2010	71,940	1,870	14,810	17,800	12,700	14,000	9,040	1,720	47,740	480	6,310	11,140	9,440	11,490	7,600	1,260
	2013	66,210	1,800	13,090	16,160	11,560	12,790	8,810	2,000	42,180	300	5,430	9,170	8,420	10,270	7,140	1,450
BE	2007	28,460	730	2,690	2,820	1,980	3,370	7,180	9,700	13,320	50	250	400	460	1,250	4,420	6,500
	2010	24,950	580	2,190	2,220	1,600	2,760	5,890	9,720	11,400	60	190	250	300	830	3,240	6,520
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
BG	2007	133,330	91,110	32,690	4,980	1,610	1,470	1,020	460	120,820	81,040	30,920	4,700	1,500	1,330	900	420
	2010	95,870	63,190	22,320	4,650	1,920	1,810	1,380	620	85,950	55,280	21,130	4,350	1,770	1,650	1,230	540
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
HR	2007	54,370	22,190	21,360	6,350	2,230	1,370	680	190	49,550	19,620	19,810	6,060	2,110	1,270	570	120
	2010	47,340	18,720	18,160	5,600	1,930	1,800	770	360	41,340	15,910	16,200	5,110	1,770	1,460	630	240
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
CY	2007	290	20	20	20	10	10	20	210	240	0	10	0	0	0	20	200
	2010	280	20	30	20	0	0	20	170	200	0	0	0	0	0	20	170

		Number of cattle holdings								Number of dairy cow holdings as a subset of all cattle holdings						
MS	Year	Total	1 to 2 heads	3 to 9 heads	10 to 19 heads	20 to 29 heads	30 to 49 heads	50 to 99 heads	100 heads or more	Total	1 to 2 heads	3 to 9 heads	10 to 19 heads	20 to 29 heads	30 to 49 heads	50 to 99 heads	100 heads or more
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
CZ	2007	13,960	3,260	3,800	1,820	1,020	1,050	920	2,090	5,620	1,280	1,380	520	330	390	350	1,380
	2010	10,080	740	2,660	1,730	920	980	1,020	2,030	3,100	170	540	320	210	290	310	1,260
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
DK	2007	15,610	450	2,080	2,480	1,690	1,880	2,020	5,020	5,380	20	70	90	110	270	710	4,120
	2010	13,580	370	1,820	2,320	1,450	1,500	1,670	4,440	4,250	0	30	40	50	110	440	3,590
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
EE	2007	7,420	2,890	2,410	770	330	320	300	410	6,080	2,380	2,000	600	260	250	220	370
	2010	4,620	1,410	1,370	530	300	300	310	410	3,520	1,100	1,050	370	200	210	220	370
	2013	3,820	760	1,110	540	280	330	330	470	2,530	520	770	310	160	210	200	370
FI	2007	18,620	290	1,060	2,440	3,230	5,240	4,560	1,810	14,390	120	550	1,860	2,690	4,490	3,600	1,090
	2010	15,640	220	780	1,700	2,390	4,130	4,180	2,230	11,910	90	410	1,250	1,970	3,510	3,250	1,430
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
FR	2007	219,960	6,580	22,740	18,130	14,450	25,430	58,720	73,910	93,120	820	2,230	2,680	4,220	9,970	33,770	39,420
	2010	199,620	5,950	19,380	16,600	12,160	20,510	47,570	77,460	82,600	940	2,640	2,660	2,670	6,770	24,510	42,410
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
DE	2007	169,690	4,620	22,390	22,480	17,240	26,180	38,490	38,280	101,070	520	3,840	7,670	8,630	17,610	30,740	32,060
	2010	144,850	2,400	12,930	19,870	14,780	22,340	33,630	38,900	89,760	220	1,970	6,270	7,210	14,700	26,680	32,730
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

		Number of cattle holdings								Number of dairy cow holdings as a subset of all cattle holdings						
MS	Year	Total	1 to 2 heads	3 to 9 heads	10 to 19 heads	20 to 29 heads	30 to 49 heads	50 to 99 heads	100 heads or more	Total	1 to 2 heads	3 to 9 heads	10 to 19 heads	20 to 29 heads	30 to 49 heads	50 to 99 heads	100 heads or more
EL	2007	21,520	3,640	5,560	3,430	1,900	2,110	2,930	1,950	8,020	940	1,810	1,390	950	1,020	1,200	720
	2010	16,790	2,710	3,960	2,470	1,520	1,740	2,590	1,800	5,780	610	1,290	940	600	680	950	720
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
HU	2007	19,800	4,640	8,400	3,230	1,060	990	700	770	12,170	2,430	5,210	2,250	740	580	420	550
	2010	19,120	5,600	7,370	2,600	1,020	870	710	960	11,370	3,060	4,550	1,620	640	520	370	600
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
IE	2007	104,930	1,470	11,300	14,510	11,640	16,680	29,700	19,630	21,320	40	260	330	490	1,570	7,640	10,980
	2010	111,000	2,540	14,730	17,770	13,620	19,160	23,120	20,050	18,460	0	0	90	280	1,230	5,200	11,660
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
IT	2007	146,990	18,220	40,920	25,960	16,180	15,410	14,470	15,830	62,790	2,350	14,630	11,630	7,030	7,770	8,590	10,810
	2010	125,880	20,970	31,430	20,350	11,680	13,400	13,580	14,490	52,130	3,290	11,040	8,450	5,240	6,510	7,810	9,790
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
LV	2007	47,350	22,040	17,950	3,920	1,310	1,000	680	450	43,690	19,800	17,130	3,650	1,200	890	610	420
	2010	35,100	15,030	13,080	3,280	1,260	1,060	810	570	30,050	11,810	12,010	2,970	1,120	930	700	520
	2013	28,960	11,530	10,440	3,070	1,230	1,080	930	670	23,640	8,620	9,110	2,610	1,050	890	770	590
LT	2007	132,600	75,190	42,960	8,850	2,390	1,700	970	550	123,170	67,470	41,560	8,700	2,340	1,640	940	520
	2010	93,050	51,520	28,350	6,890	2,300	1,840	1,330	830	85,020	45,590	26,870	6,620	2,180	1,750	1,240	770
	2013	75,340	34,990	27,960	6,370	2,050	1,740	1,360	870	64,970	28,140	25,630	5,920	1,860	1,520	1,170	740
LU	2007	1,480	20	50	70	70	120	320	820	1,090	10	10	20	30	50	240	730

		Number of cattle holdings								Number of dairy cow holdings as a subset of all cattle holdings						
MS	Year	Total	1 to 2 heads	3 to 9 heads	10 to 19 heads	20 to 29 heads	30 to 49 heads	50 to 99 heads	100 heads or more	Total	1 to 2 heads	3 to 9 heads	10 to 19 heads	20 to 29 heads	30 to 49 heads	50 to 99 heads	100 heads or more
	2010	1,460	10	50	90	80	110	280	830	810	0	0	0	0	20	140	650
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
MT	2007	230	20	40	30	10	20	40	80	190	20	10	20	10	20	30	80
	2010	290	40	80	30	20	20	40	60	140	0	10	10	10	20	40	60
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
NL	2007	35,260	610	2,840	3,110	2,280	3,630	8,770	14,020	24,510	170	890	1,040	910	2,100	7,290	12,130
	2010	32,830	660	3,030	2,720	1,800	2,900	6,750	14,980	19,810	50	190	230	340	1,130	5,040	12,820
	2013	30,240	650	2,820	2,400	1,610	2,340	5,610	14,830	18,670	50	250	270	310	870	4,120	12,810
PL	2007	718,260	322,630	242,310	78,070	35,520	26,920	10,420	2,390	651,050	284,830	221,200	73,010	34,050	25,910	9,920	2,140
	2010	514,120	178,450	182,160	72,990	34,100	29,480	13,850	3,110	425,780	139,510	146,590	63,550	31,580	28,210	13,400	2,930
	2013	424,400	121,540	147,930	67,300	34,200	31,540	17,730	4,160	334,500	93,480	112,350	53,040	28,710	27,660	15,730	3,530
PT	2007	52,130	16,660	16,990	6,030	2,680	3,530	3,280	2,970	13,500	1,820	3,470	1,930	1,220	2,060	1,920	1,080
	2010	50,040	15,750	15,490	5,660	2,760	3,270	3,670	3,440	10,450	1,120	2,000	1,300	1,050	1,690	2,010	1,280
	2013	40,730	10,610	12,420	4,970	2,820	2,950	3,440	3,530	7,770	600	970	920	790	1,240	1,850	1,410
RO	2007	1,067,730	766,680	277,740	16,110	3,610	1,850	1,180	570	1,012,410	725,610	264,820	15,170	3,430	1,760	1,110	520
	2010	728,020	536,740	172,140	12,090	3,070	2,100	1,230	650	624,990	452,870	154,920	10,950	2,760	1,850	1,070	580
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
SK	2007	15,450	11,980	2,000	280	110	120	130	820	11,540	9,080	1,570	140	40	30	50	610
	2010	9,310	5,690	1,980	360	150	140	180	820	6,300	3,880	1,530	180	60	40	50	560

		Number of cattle holdings								Number of dairy cow holdings as a subset of all cattle holdings						
MS	Year	Total	1 to 2 heads	3 to 9 heads	10 to 19 heads	20 to 29 heads	30 to 49 heads	50 to 99 heads	100 heads or more	Total	1 to 2 heads	3 to 9 heads	10 to 19 heads	20 to 29 heads	30 to 49 heads	50 to 99 heads	100 heads or more
	2013	9,290	5,240	2,140	480	170	190	200	860	6,200	3,710	1,520	250	80	50	70	520
SI	2007	40,840	7,610	18,260	8,690	3,030	2,200	860	180	19,200	2,090	7,720	4,770	2,050	1,720	710	130
	2010	36,120	6,130	15,610	7,750	3,030	2,240	1,100	260	10,950	950	3,160	2,580	1,670	1,540	860	200
	2013	34,090	5,180	15,120	7,390	2,830	2,150	1,120	300	9,770	580	2,990	2,250	1,500	1,380	830	230
ES	2007	124,010	15,910	27,830	19,790	13,120	16,170	17,230	13,960	37,290	3,600	5,500	6,830	4,670	6,470	6,680	3,540
	2010	111,840	12,260	22,170	16,970	11,610	15,350	18,110	15,370	29,460	2,410	3,500	4,010	3,660	5,680	6,260	3,940
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
SE	2007	23,880	880	3,150	3,670	2,670	3,600	5,090	4,830	7,100	0	20	160	310	880	2,460	3,260
	2010	21,590	850	2,930	3,330	2,340	3,050	4,270	4,810	5,620	0	20	110	220	560	1,680	3,030
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
UK	2007	94,620	3,880	8,920	10,420	8,130	11,630	18,190	33,460	27,520	450	1,130	1,060	890	1,600	4,570	17,840
	2010	85,760	2,510	7,270	9,230	7,400	10,870	16,620	31,870	23,540	270	840	810	660	1,280	3,550	16,130
	2013	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

: No data available

Source: Eurostat, extracted on13/05/15

6.2 Porcine animals

Table 18. Pig population (000s) in the European union by Member State (2009-2014)

Member State	2009	2010	2011	2012	2013	2014
EU 28 – total	**152,780**	**152,361**	**149,809**	**147,010**	**146,241**	**148,165***
AT	3,137	3,134	3,005	2,983	2,896	2,868
BE	6,228	6,176	6,328	6,448	6,351	6,350
BG	730	664	608	531	586	553*
CY	463	464	439	395	358	342
CZ	1,914	1,846	1,487	1,534	1,548	1,607
DE	26,841	26,901	27,402	28,331	28,133	28,339
DK	12,873	12,293	12,348	12,281	12,402	12,709
EE	365	372	366	375	359	360*
EL	1,073	1,087	1,120	1,099	1,031	1,021*
ES	25,343	25,704	25,635	25,250	25,495	26,551*
FI	1,353	1,340	1,290	1,271	1,258	1,223
FR	14,552	14,279	13,967	13,778	13,428	13,293*
HR	1,250	1,231	1,233	1,182	1,110	1,156
HU	3,247	3,169	3,044	2,989	3,004	3,136
IE	1,502	1,500	1,553	1,493	1,468	1,505
IT	9,157	9,321	9,351	8,662	8,561	8,676
LT	928	929	790	808	755	714
LU	89	89	91	89	90	93
LV	377	390	375	355	368	349
MT	66	69	46	45	49	47
NL	12,108	12,206	12,103	12,104	12,013	12,065
PL	14,253	14,776	13,056	11,132	10,994	11,266*
PT	1,945	1,917	1,985	2,024	2,014	2,127
RO	5,793	5,428	5,364	5,234	5,180	4,934*
SE	415	396	347	296	288	282
SI	741	687	580	631	637	644
SK	1,616	1,607	1,568	1,474	1,480	1,469
UK	4,423	4,385	4,326	4,216	4,383	4,486*

*Provisional

Source: Eurostat, extracted on13/05/15

Table 19. Annual slaughtering (000s) of porcine animals by Member State, 2009-2014

Member State	2009	2010	2011	2012	2013	2014
Total	**242,147**	**248,971***	**253,894**	**247,207**	**246,541**	**247,425***
AT	5,537	5,692	5,600	5,433	5,417	5,407
BE	11,161	11,896	11,765	11,695	11,915	11,855
BG	549	:	719	740	797	816
CY	722	734	711	651	609	564
CZ	3,243	3,116	2,982	2,717	2,652	2,640
DE	56,068	58,154	59,590	58,198	58,628	58,735
DK	19,308	20,114	20,875	19,461	19,108	18,781
EE	387	408	394	426	435	511
EL	1,878	1,832	1,829	1,787	1,679	1,596
ES	40,118	40,847	41,743	41,595	41,418	43,232
FI	2,343	2,248	2,267	2,142	2,145	2,055
FR	24,908	24,935	24,804	24,123	23,747	23,655
HR	1,083	1,193	1,254	1,208	1,103	:
HU	4,299	4,610	4,290	3,836	3,750	4,078
IE	2,418	2,657	2,905	2,972	2,904	3,043
IT	12,698	12,908	12,346	12,664	13,099	10,931
LT	541	703	752	751	858	851
LU	131	134	131	138	148	158
LV	324	316	313	323	344	360
MT	90	85	83	69	71	70
NL	13,816	13,944	14,594	14,318	14,014	14,596
PL	18,678	19,966	20,979	19,216	19,120	20,504
PT	5,904	5,960	5,887	5,526	5,178	5,372
RO	2,888	2,901	3,257	3,474	3,753	3,980
SE	2,956	2,936	2,845	2,586	2,551	2,562
SI	292	289	274	253	228	239
SK	776	758	642	604	574	369
UK	9,031	9,635	10,062	10,299	10,299	10,465

*: No data available; *Includes only those Member States for which data is available*

Source: Eurostat, extracted 29/05/2015

Table 20. Pig holdings in the European Union by Member State (2007-2013)

Member State	Year	Number of pig holdings								
		Total	1 or 2 heads	3 to 9 heads	10 to 49 heads	50 to 99 heads	100 to 199 heads	200 to 399 heads	400 to 999 heads	1 000 heads or more
EU 28	**2007**	**3,623,880**	**2,259,680**	**773,360**	**378,250**	**66,870**	**41,600**	**30,180**	**37,320**	**36,700**
	2010	**2,882,680**	**1,799,200**	**645,480**	**266,330**	**47,180**	**30,310**	**24,200**	**32,310**	**37,710**
	2013	:	:	:	:	:	:	:	:	:
AT	2007	45,490	22,530	8,950	4,200	1,810	2,450	2,810	2,540	210
	2010	37,760	19,140	6,650	3,330	1,410	1,830	2,460	2,640	310
	2013	29,420	14,760	4,640	2,640	970	1,490	2,020	2,560	340
BE	2007	6,990	210	250	350	230	530	920	2,050	2,470
	2010	5,890	160	210	200	130	320	660	1,740	2,460
	2013	:	:	:	:	:	:	:	:	:
BG	2007	153,860	136,830	12,810	3,610	280	140	50	70	70
	2010	82,270	68,560	10,310	2,990	170	90	40	40	70
	2013	:	:	:	:	:	:	:	:	:
HR	2007	106,060	23,390	47,040	32,540	2,310	500	180	70	40
	2010	128,060	35,930	64,150	25,920	1,100	430	350	130	50
	2013	:	:	:	:	:	:	:	:	:
CY	2007	740	320	210	110	10	0	:	10	80
	2010	630	300	200	80	0	0	0	0	50
	2013	:	:	:	:	:	:	:	:	:
CZ	2007	11,390	6,220	2,050	1,380	390	290	240	280	540
	2010	4,000	1,150	770	960	250	190	160	170	340

Member State	Year	Number of pig holdings								
		Total	1 or 2 heads	3 to 9 heads	10 to 49 heads	50 to 99 heads	100 to 199 heads	200 to 399 heads	400 to 999 heads	1 000 heads or more
	2013	:	:	:	:	:	:	:	:	:
DK	2007	7,210	100	170	510	310	450	530	1,290	3,860
	2010	5,070	110	160	270	130	160	270	690	3,280
	2013	:	:	:	:	:	:	:	:	:
EE	2007	2,890	1,580	960	210	20	10	10	30	70
	2010	1,550	800	500	150	20	10	10	10	60
	2013	750	340	260	70	10	10	10	0	50
FI	2007	2,820	40	20	140	180	480	780	840	340
	2010	2,080	40	30	70	100	300	530	670	350
	2013	:	:	:	:	:	:	:	:	:
FR	2007	35,290	13,440	5,490	2,340	790	1,170	2,650	4,590	4,830
	2010	24,450	6,610	3,530	1,980	690	1,030	2,020	3,740	4,850
	2013	:	:	:	:	:	:	:	:	:
DE	2007	79,420	9,990	12,670	14,820	7,120	7,250	7,640	12,060	7,870
	2010	60,100	7,000	8,570	9,480	4,720	5,160	5,940	10,470	8,760
	2013	:	:	:	:	:	:	:	:	:
EL	2007	33,310	19,110	6,910	5,160	910	480	320	210	210
	2010	19,330	10,230	4,580	3,030	580	340	220	160	200
	2013	:	:	:	:	:	:	:	:	:
HU	2007	282,510	184,920	70,490	24,410	1,560	470	220	120	310
	2010	183,100	102,250	63,270	15,710	900	340	180	160	290

Member State	Year	Number of pig holdings								
		Total	1 or 2 heads	3 to 9 heads	10 to 49 heads	50 to 99 heads	100 to 199 heads	200 to 399 heads	400 to 999 heads	1 000 heads or more
	2013	:	:	:	:	:	:	:	:	:
IE	2007	800	160	140	110	20	10	20	70	260
	2010	1,210	380	280	180	30	20	30	50	240
	2013	:	:	:	:	:	:	:	:	:
IT	2007	100,950	64,890	22,970	7,700	1,170	690	630	970	1,940
	2010	26,200	6,800	8,580	5,910	1,010	600	500	800	2,000
	2013	:	:	:	:	:	:	:	:	:
LV	2007	29,570	19,290	7,960	1,820	250	120	50	30	50
	2010	18,170	11,030	5,550	1,280	150	70	30	20	40
	2013	12,710	8,070	3,770	700	80	40	10	10	40
LT	2007	95,300	59,260	33,100	2,650	100	60	30	30	60
	2010	62,710	34,010	26,350	2,150	80	40	20	20	50
	2013	57,400	30,750	25,020	1,490	60	10	20	10	40
LU	2007	180	20	20	30	10	20	20	40	30
	2010	140	20	10	20	10	20	20	30	30
	2013	:	:	:	:	:	:	:	:	:
MT	2007	140	:	:	:	10	20	40	60	10
	2010	130	:	0	10	10	30	30	40	20
	2013	:	:	:	:	:	:	:	:	:
NL	2007	8,690	130	100	150	290	810	1,430	2,220	3,580
	2010	7,030	180	120	120	190	450	960	1,650	3,360

Member State	Year	Number of pig holdings								
		Total	1 or 2 heads	3 to 9 heads	10 to 49 heads	50 to 99 heads	100 to 199 heads	200 to 399 heads	400 to 999 heads	1 000 heads or more
	2013	5,530	170	130	110	130	340	680	1,150	2,840
PL	2007	664,020	172,410	182,630	233,980	43,200	20,950	7,540	2,550	750
	2010	388,460	85,090	100,220	146,780	30,960	15,300	6,270	2,860	970
	2013	278,400	67,980	69,010	100,970	21,370	10,670	4,910	2,580	910
PT	2007	67,140	47,400	13,780	4,090	460	420	290	320	380
	2010	50,080	36,450	9,590	2,770	290	270	210	200	310
	2013	40,590	30,800	6,910	1,970	220	160	110	170	250
RO	2007	1,697,580	1,382,680	290,530	23,520	550	150	50	40	70
	2010	1,655,580	1,327,000	296,700	30,820	680	160	40	40	140
	2013	:	:	:	:	:	:	:	:	:
SK	2007	39,620	30,630	7,100	1,320	140	90	90	100	160
	2010	10,780	6,050	3,700	660	90	60	50	80	100
	2013	8,990	4,780	3,110	790	90	60	30	60	70
SI	2007	31,690	12,540	14,020	3,910	510	430	200	60	20
	2010	26,440	10,630	11,790	3,090	400	300	150	60	10
	2013	23,700	10,290	9,860	2,800	320	250	120	50	10
ES	2007	108,160	49,790	30,830	6,940	3,460	2,920	2,590	5,150	6,480
	2010	69,770	27,220	17,070	6,080	2,390	2,290	2,440	4,700	7,570
	2013	:	:	:	:	:	:	:	:	:
SE	2007	2,290	140	170	270	160	190	260	540	560
	2010	1,700	120	140	200	110	110	160	350	510

Member State	Year	Number of pig holdings								
		Total	1 or 2 heads	3 to 9 heads	10 to 49 heads	50 to 99 heads	100 to 199 heads	200 to 399 heads	400 to 999 heads	1 000 heads or more
	2013	:	:	:	:	:	:	:	:	:
UK	2007	9,770	1,660	1,990	1,980	620	500	590	980	1,450
	2010	9,990	1,940	2,450	2,090	580	390	450	790	1,290
	2013	:	:	:	:	:	:	:	:	:

: No data available

Source: Eurostat, extracted on13/05/15

6.3 Ovine animals

Table 21. Sheep population (000s) in the European Union by Member State (2009-2014)

Member State	2009	2010	2011	2012	2013	2014
Total**	**88,533**	**87,386**	**86,326**	**85,790**	**84,133**	**84,950**
AT	345	358	361	365	357	349
BE	:	:	:	119	117	:
BG	1,400	1,368	1,455	1,362	1,370	1,334*
CY	300	329	356	347	313	322
CZ	197	:	:	:	:	:
DE	:	:	:	:	:	:
DK	1,852	1,800	1,658	1,641	1,570	1,601
EE	:	:	:	:	:	:
EL	8,859	9,791	9,781	9,587	9,356	9,254*
ES	19,718	18,552	17,003	16,339	16,119	15,981*
FI	:	:	:	:	:	:
FR	7,528	7,955	7,621	7,453	7,193	7,168
HR	619	630	639	679	620	605
HU	1,223	1,181	1,120	1,185	1,214	1,185
IE	3,183	3,122	3,321	3,355	3,324	3,325
IT	8,013	7,900	7,943	7,016	7,182	7,166
LT	53	59	60	83	100	124
LU	9	8	:	:	:	:
LV	:	:	:	:	:	:
MT	13	12	12	12	11	11
NL	1,091	1,211	1,113	1,093	1,074	1,070
PL	224	214	213	219	:	:
PT	2,368	2,226	2,170	2,092	2,074	2,033
RO	9,142	8,417	8,533	8,834	9,136	9,416*
SE	138	:	:	:	:	:
SI	377	394	394	410	400	388
SK	540	565	623	611	577	589
UK	21,343	21,295	21,951	22,991	22,027	23,029*

: No data available; *Provisional; **Includes those Member States for which data is available

Source: Eurostat, extracted on13/05/15

Table 22. Annual slaughtering (000s) of ovine animals by Member State, 2009-2014

Member State	2009	2010	2011	2012	2013	2014
Total	**49,449**	**47,420***	**46,980***	**44,807***	**44,353***	**43,265***
AT	311	315	327	330	333	311
BE	36	143	127	116	121	123
BG	860	:	:	:	:	:
CY	137	132	141	160	161	152
CZ	9	9	10	10	11	12
DE	972	974	1,053	1,026	997	986
DK	90	86	80	80	75	80
EE	3	5	5	7	5	6
EL	6,703	6,700	6,631	6,325	5,467	5,293
ES	11,392	11,736	11,377	10,519	10,312	9,743
FI	37	37	45	45	47	52
FR	4,448	4,429	4,532	4,357	4,236	4,231
HR	88	71	49	40	58	:
HU	9	11	9	13	14	21
IE	2,729	2,383	2,410	2,691	2,874	2,850
IT	4,123	3,744	3,433	3,288	3,031	2,517
LT	5	5	5	5	5	5
LU	2	2	2	2	2	2
LV	9	9	11	19	14	13
MT	2	3	4	4	4	4
NL	671	582	586	587	550	565
PL	45	49	32	37	37	35
PT	926	983	933	855	861	888
RO	118	376	355	178	257	376
SE	255	255	262	260	253	258
SI	9	9	9	9	8	9
SK	80	84	74	80	71	78
UK	15,382	14,289	14,477	13,767	14,549	14,655

: No data available; *Includes only those Member States for which data is available

Source: Eurostat, extracted 29/05/2015

Table 23. Sheep holdings in the European Union by Member State (2007-2013)

Member State	Year	Number of sheep holdings							
		Total	1 to 9 heads	10 to 19 heads	20 to 49 heads	50 to 99 heads	100 to 199 heads	200 to 499 heads	500 heads or more
EU 28	**2007**	**1,207,170**	**563,380**	**179,300**	**151,530**	**98,440**	**85,850**	**81,250**	**47,470**
	2010	**946,420**	**387,140**	**141,380**	**130,300**	**87,030**	**77,340**	**78,380**	**44,910**
	2013	:	:	:	:	:	:	:	:
AT	2007	15,020	6,490	3,730	3,490	890	300	110	20
	2010	14,500	5,170	3,660	3,870	1,200	410	170	30
	2013	13,780	4,800	3,570	3,550	1,210	420	210	30
BE	2007	3,890	1,420	860	890	410	210	80	30
	2010	3,300	1,270	710	740	330	160	70	20
	2013	:	:	:	:	:	:	:	:
BG	2007	137,750	111,170	15,160	6,950	2,350	1,560	440	110
	2010	91,790	68,900	11,640	5,320	3,050	1,960	820	120
	2013	:	:	:	:	:	:	:	:
HR	2007	23,120	7,870	6,330	6,110	1,690	820	230	70
	2010	30,030	10,380	7,580	7,730	2,720	1,100	450	80
	2013	:	:	:	:	:	:	:	:
CY	2007	1,450	120	170	260	270	240	270	120
	2010	1,390	100	150	280	230	220	270	150
	2013	:	:	:	:	:	:	:	:
CZ	2007	5,540	2,760	990	1,040	400	210	120	30
	2010	4,190	940	1,090	1,310	490	220	120	30

Member State	Year	Number of sheep holdings							
		Total	1 to 9 heads	10 to 19 heads	20 to 49 heads	50 to 99 heads	100 to 199 heads	200 to 499 heads	500 heads or more
	2013	:	:	:	:	:	:	:	:
DK	2007	2,780	950	490	710	340	150	100	50
	2010	2,570	770	490	740	320	130	70	50
	2013	:	:	:	:	:	:	:	:
EE	2007	2,470	1,040	530	580	180	80	40	10
	2010	1,950	670	450	480	180	100	60	20
	2013	1,780	560	410	420	200	110	50	20
FI	2007	1,890	540	300	430	290	180	140	20
	2010	1,350	260	160	300	260	190	150	30
	2013	:	:	:	:	:	:	:	:
FR	2007	66,060	17,530	10,860	11,460	6,600	6,190	8,910	4,510
	2010	56,480	12,800	9,800	9,450	6,760	5,640	8,270	3,770
	2013	:	:	:	:	:	:	:	:
DE	2007	28,080	9,230	4,870	7,030	2,720	1,600	1,330	1,300
	2010	22,270	7,420	3,150	5,610	2,450	1,400	1,110	1,140
	2013	:	:	:	:	:	:	:	:
EL	2007	132,080	31,020	22,480	27,060	17,560	18,500	13,940	1,510
	2010	91,930	15,460	13,860	18,450	13,940	15,240	13,030	1,960
	2013	:	:	:	:	:	:	:	:
HU	2007	21,780	12,620	2,990	2,340	1,200	1,070	1,020	540
	2010	26,780	16,670	3,700	2,550	1,200	1,120	1,030	510

Member State	Year	Number of sheep holdings							
		Total	1 to 9 heads	10 to 19 heads	20 to 49 heads	50 to 99 heads	100 to 199 heads	200 to 499 heads	500 heads or more
	2013	:	:	:	:	:	:	:	:
IE	2007	39,030	1,370	2,360	7,980	10,590	9,050	6,200	1,490
	2010	32,110	1,510	2,260	6,450	7,410	7,160	5,820	1,510
	2013	:	:	:	:	:	:	:	:
IT	2007	75,380	22,040	12,380	13,140	7,720	8,540	9,210	2,350
	2010	51,100	7,610	7,660	9,420	6,350	7,970	9,510	2,580
	2013	:	:	:	:	:	:	:	:
LV	2007	4,400	2,780	770	570	170	80	30	0
	2010	3,800	2,240	570	580	240	120	40	10
	2013	3,980	2,270	670	570	240	150	60	10
LT	2007	4,130	3,140	550	280	100	40	20	10
	2010	4,320	3,060	650	420	120	50	20	10
	2013	6,960	4,610	1,090	940	190	100	20	10
LU	2007	220	60	50	70	20	10	0	0
	2010	220	60	50	70	30	10	0	0
	2013	:	:	:	:	:	:	:	:
MT	2007	1,030	770	140	90	30	:	:	:
	2010	1,080	760	170	110	30	10	0	:
	2013	:	:	:	:	:	:	:	:
NL	2007	13,810	2,080	1,600	3,170	3,150	2,220	1,210	390
	2010	12,870	1,930	1,610	3,500	2,960	1,640	900	330

Member State	Year	Number of sheep holdings							
		Total	1 to 9 heads	10 to 19 heads	20 to 49 heads	50 to 99 heads	100 to 199 heads	200 to 499 heads	500 heads or more
	2013	12,340	2,260	1,780	3,420	2,390	1,360	830	310
PL	2007	16,460	10,610	2,250	1,970	950	470	190	30
	2010	11,230	6,710	1,750	1,480	740	360	150	30
	2013	9,720	5,180	1,550	1,740	680	350	190	40
PT	2007	46,550	22,350	8,990	6,570	3,130	2,740	1,940	830
	2010	51,790	25,920	10,640	6,900	3,230	2,550	1,820	720
	2013	44,070	21,720	8,910	5,980	2,940	2,110	1,750	650
RO	2007	390,560	266,510	64,550	23,580	18,110	10,120	6,170	1,520
	2010	272,280	173,940	44,240	19,140	14,400	10,860	7,510	2,200
	2013	:	:	:	:	:	:	:	:
SK	2007	3,950	2,490	420	280	180	120	250	220
	2010	3,150	1,460	480	360	200	150	250	250
	2013	3,240	1,400	570	430	170	180	240	250
SI	2007	5,920	2,190	1,700	1,470	380	140	30	0
	2010	6,180	2,360	1,780	1,470	400	120	40	10
	2013	6,240	2,340	1,910	1,560	280	120	40	0
ES	2007	79,140	18,690	8,960	11,250	7,320	7,680	12,740	12,480
	2010	68,980	13,960	8,620	10,360	6,450	6,620	12,140	10,830
	2013	:	:	:	:	:	:	:	:
SE	2007	8,020	1,200	1,510	2,640	1,400	800	380	100
	2010	8,660	1,280	1,470	2,950	1,570	850	430	120

Member State	Year	Number of sheep holdings							
		Total	1 to 9 heads	10 to 19 heads	20 to 49 heads	50 to 99 heads	100 to 199 heads	200 to 499 heads	500 heads or more
	2013	:	:	:	:	:	:	:	:
UK	2007	76,660	4,340	3,310	10,120	10,290	12,730	16,150	19,730
	2010	70,120	3,530	2,990	10,260	9,770	10,980	14,130	18,400
	2013	:	:	:	:	:	:	:	:

: No data available

Source: Eurostat, extracted on13/05/15

6.4 Caprine animals

Table 24. Goat population (000s) in the European Union by Member State (2009-2014)

Member State	2009	2010	2011	2012	2013	2014
Total**	**12,972**	**13,052**	**12,550**	**12,286**	**12,345**	**12,343**
AT	68	71.8	72	73	72	71
BE	:	:	:	36	39	:
BG	361	356.3	341	294	289	293*
CY	281	307.4	290	271	243	240
CZ	22	:	:	:	:	:
DE	:	:	:	:	:	:
DK	190**	149.9	160**	162**	130	117**
EE	:	:	:	:	:	:
EL	4,738	4,462	4,296	4,238	4,387*	4,276*
ES	2,934	2,904	2,693	2,637	2,610	2,704*
FI	:	:	:	:	:	:
FR	1,318	1,448	1,381	1,306	1,283	1,271
HR	76	75	70	72	69	61
HU	58	75	79	89	73	70
IE	:	:	:	0	0	0
IT	961	982.9	960	892	976	937
LT	15	16	15	14	14	13
LU	3	4	:	:	:	:
LV	:	:	:	:	:	:
MT	6	5.1	4.94	5	5	5
NL	415	377	392	403	409	441
PL	119	122	112	90	:	:
PT	425	419	413	404	398	382
RO	917	1,241	1,236	1,266	1,313	1,428*
SE	30	:	:	:	:	:
SI	36	35.3	34.1	35	35	36
SK	0	0	0	0***	0***	0***
UK	0	0	0	0	0	0

: No data available; *Provisional; **Estimate; ***Not significant; ****Includes those Member States for which data is available

Source: Eurostat, extracted on13/05/15

Table 25. Annual slaughtering (000s) of caprine animals by Member State, 2009-2014

Member State	2009	2010	2011	2012	2013	2014
Total	**6,299***	**6,485***	**6,390***	**5,672***	**5,091***	**4,843***
AT	52	56	59	60	61	59
BE	1	8	7	8	7	6
BG	:	:	:	:	:	:
CY	127	121	122	121	107	96
CZ	:	1	1	0	0	0
DE	22	23	26	26	23	22
DK	0	0	0	0	0	0
EE	0	0	0	0	0	0
EL	3,734	3,651	3,458	3,042	2,505	2,378
ES	1,173	1,376	1,423	1,307	1,214	1,175
FI	:	:	:	:	0	0
FR	783	822	858	680	760	719
HR	:	:	:	:	:	:
HU	0	0	0	0	0	0
IE	0	0	0	0	0	0
IT	160	149	140	148	138	133
LT	0	0	0	0	0	0
LU	0	0	0	0	0	0
LV	0	0	0	0	0	0
MT	1	1	1	1	1	1
NL	81	105	144	118	133	124
PL	7	16	3	3	1	:
PT	148	145	136	141	124	108
RO	:	:	:	:	:	:
SE	1	1	1	1	1	1
SI	:	0	0	0	0	1
SK	0	0	0	0	0	0
UK	9	11	13	15	15	19

: No data available; *Includes only those Member States for which data is available

Source: Eurostat, extracted 29/05/2015

Table 26. Goat holdings in the European Union by Member State (2007-2013)

	Year	Total	1 to 2 heads	3 to 9 heads	10 to 19 heads	20 to 49 heads	50 to 99 heads	100 to 199 heads	200 heads or more
EU 28	**2007**	**676,050**	**340,830**	**201,500**	**49,970**	**36,300**	**16,720**	**13,890**	**16,790**
	2010	**540,210**	**227,520**	**184,110**	**45,830**	**35,220**	**17,650**	**13,900**	**16,030**
	2013	:	:	:	:	:	:	:	:
AT	2007	9,730	4,950	3,660	710	280	60	40	20
	2010	9,680	4,600	3,650	850	360	90	90	50
	2013	9,410	4,300	3,670	860	360	100	80	50
BE	2007	990	380	430	100	20	20	10	40
	2010	950	400	390	70	20	20	10	40
	2013	:	:	:	:	:	:	:	:
BG	2007	113,770	74,790	34,510	2,810	1,160	290	180	20
	2010	84,580	43,810	35,390	3,160	1,380	540	240	60
	2013	:	:	:	:	:	:	:	:
HR	2007	12,600	5,280	5,380	1,030	640	210	70	0
	2010	12,250	4,310	5,600	1,060	900	250	80	50
	2013	:	:	:	:	:	:	:	:
CY	2007	2,540	100	440	380	570	350	290	420
	2010	1,990	60	320	330	450	260	220	360
	2013	:	:	:	:	:	:	:	:
CZ	2007	2,350	1,320	730	150	110	20	20	0
	2010	1,410	470	530	230	140	30	10	10
	2013	:	:	:	:	:	:	:	:

	Year	Total	1 to 2 heads	3 to 9 heads	10 to 19 heads	20 to 49 heads	50 to 99 heads	100 to 199 heads	200 heads or more
DK	2007	720	270	310	50	40	20	10	20
	2010	720	270	300	60	50	10	10	10
	2013	:	:	:	:	:	:	:	:
EE	2007	820	320	390	90	20	0	0	:
	2010	590	220	280	60	30	0	0	:
	2013	530	190	260	50	10	10	0	0
FI	2007	460	180	170	60	20	10	0	10
	2010	170	40	70	20	0	10	0	10
	2013	:	:	:	:	:	:	:	:
FR	2007	19,590	4,740	5,650	2,120	1,960	1,390	1,470	2,260
	2010	17,510	3,490	4,580	1,920	2,010	1,660	1,470	2,380
	2013	:	:	:	:	:	:	:	:
DE	2007	:	:	:	:	:	:	:	:
	2010	11,220	4,490	4,270	1,190	780	240	150	110
	2013	:	:	:	:	:	:	:	:
EL	2007	111,510	22,170	39,280	15,720	12,680	6,700	6,720	8,240
	2010	71,590	11,010	21,740	11,320	9,450	5,410	5,570	7,090
	2013	:	:	:	:	:	:	:	:
HU	2007	15,440	7,940	6,430	770	200	60	30	10
	2010	19,820	10,070	8,140	1,110	350	80	40	20
	2013	:	:	:	:	:	:	:	:
IE	2007	1,290	780	390	50	30	10	20	10

	Year	Total	1 to 2 heads	3 to 9 heads	10 to 19 heads	20 to 49 heads	50 to 99 heads	100 to 199 heads	200 heads or more
	2010	1,200	700	390	60	30	10	10	10
	2013	:	:	:	:	:	:	:	:
IT	2007	33,420	6,330	11,020	6,150	5,370	2,430	1,240	870
	2010	22,760	2,020	6,440	4,610	4,770	2,460	1,620	840
	2013	:	:	:	:	:	:	:	:
LV	2007	4,490	2,330	1,890	180	50	20	10	0
	2010	2,050	950	900	130	50	20	0	0
	2013	2,480	1,140	1,120	150	50	10	10	0
LT	2007	12,150	8,340	3,660	130	10	10	0	0
	2010	6,110	3,980	1,950	150	30	0	:	0
	2013	5,640	4,040	1,460	110	20	10	0	0
LU	2007	100	40	40	10	0	0	0	0
	2010	100	40	40	10	0	0	0	0
	2013	:	:	:	:	:	:	:	:
MT	2007	530	130	240	80	50	30	0	:
	2010	600	230	250	80	20	10	10	:
	2013	:	:	:	:	:	:	:	:
NL	2007	4,170	1,680	1,710	300	80	20	30	340
	2010	3,720	1,430	1,510	270	90	30	30	360
	2013	3,460	1,440	1,320	230	80	30	20	330
PL	2007	51,110	33,330	16,250	1,250	200	50	30	10
	2010	22,710	12,050	9,250	970	290	90	40	30

	Year	Total	1 to 2 heads	3 to 9 heads	10 to 19 heads	20 to 49 heads	50 to 99 heads	100 to 199 heads	200 heads or more
	2013	19,420	12,020	6,410	700	200	40	30	20
PT	2007	30,120	9,850	13,350	3,650	1,860	630	470	300
	2010	32,510	9,720	15,660	3,690	1,810	770	580	290
	2013	28,440	8,570	13,180	3,290	1,860	850	460	240
RO	2007	198,730	143,600	40,250	7,170	5,270	1,720	560	150
	2010	176,270	106,030	50,010	8,030	6,910	3,350	1,470	480
	2013	:	:	:	:	:	:	:	:
SK	2007	3,790	2,740	830	130	60	20	0	0
	2010	1,350	610	510	120	80	20	10	0
	2013	1,240	460	500	130	110	30	10	0
SI	2007	4,130	1,230	1,790	780	290	40	10	0
	2010	4,210	1,130	2,020	700	310	50	10	0
	2013	4,020	890	2,040	690	340	40	10	:
ES	2007	35,980	5,500	10,630	5,630	5,010	2,560	2,650	4,000
	2010	29,860	3,430	8,380	5,260	4,650	2,190	2,190	3,770
	2013	:	:	:	:	:	:	:	:
SE	2007	:	:	:	:	:	:	:	:
	2010	0	:	:	:	:	:	:	:
	2013	:	:	:	:	:	:	:	:
UK	2007	5,520	2,510	2,070	470	320	50	30	70
	2010	4,280	1,960	1,540	370	260	50	40	60
	2013	:	:	:	:	:	:	:	:

: No data available

Source: Eurostat, extracted on13/05/15

Equine animals

Table 27. Equine population in the European Union by Member State (2007, 2010, 2013)

Member State	2007	2010	2013
EU28 – total	**3,852,770**	**3,547,650**	
AT	75,960	80,970	79,300
BE	35,370	37,100	:
BG	138,670	112,630	:
CY	1,730	1,270	:
CZ	27,820	25,200	:
DE	529,920	461,780	:
DK	52,700	59,740	:
EE	5,980	6,740	6,590
EL	31,990	30,130	:
ES	276,990	317,870	:
FI	29,720	31,590	:
FR	394,000	433,890	:
HR	9,940	17,770	:
HU	62,060	71,110	:
IE	92,820	106,020	:
IT	156,610	219,160	:
LT	44,870	28,750	16,830
LU	4,330	4,600	:
LV	12,060	10,370	9,750
MT	1,060	1,750	:
NL	133,520	142,530	130,540
PL	329,160	256,640	207,070
PT	52,500	56,010	48,910
RO	905,170	592,520	:
SE	19,620	22,670	21,830
SI	7,340	6,910	8,290
SK	105,300	117,030	:
UK	315,560	294,900	:

: No data available

Source: Eurostat, extracted on13/05/15

Table 28. Equine holdings in the European Union by Member State (2007-2013)

Member State	2007	2010	2013
EU 28	**1,345,610**	**1,114,400**	:
AT	16,760	16,520	16,930
BE	6,160	5,920	:
BG	121,770	92,810	:
CY	570	360	:
CZ	4,710	3,470	:
DE	69,150	49,000	:
DK	8,180	8,210	:
EE	1,100	990	910
EL	16,280	14,140	:
ES	71,630	51,030	:
FR	55,340	54,640	:
FI	5,460	5,320	:
HR	2,360	4,310	:
HU	25,520	27,270	:
IE	16,760	17,340	:
IT	34,150	45,360	:
LT	35,350	19,110	10,360
LU	500	530	:
LV	7,740	5,500	4,640
MT	680	770	:
NL	16,110	14,610	12,980

Member State	2007	2010	2013
PL	151,650	96,160	87,250
PT	29,600	27,650	22,400
RO	579,340	489,500	:
SE	17,500	17,510	:
SI	5,080	5,950	6,030
SK	2,170	1,570	1,340
UK	43,990	38,850	:

: No data available

Source: Eurostat, extracted on13/05/15

7 Trade in live animals

7.1 Extra-EU trade

7.1.1 Bovine animals

Note: for bovines, Eurostat does not provide data on the number of live animals imported. Only data on value/volumes of imports is available. Table on volumes is provided below

Table 29. Imports of live bovine animals, volume (tonnes) (2009-2014)

Member State	2009	2010	2011	2012	2013	2014
EU28 – total	**2,856**	**303**	**288**	**173**	**124**	**136**
IT	2,282	150	66	36	33	28
AT	74	37	28	54	18	20
FR	87	45	24	13	9	20
EE	6	0	0	0	17	17
DE	60	6	50	29	12	17
RO	15	0	32	0	18	17
DK	0	0	0	0	0	12
UK	21	2	9	7	0	4
LV	0	0	0	0	2	1
ES	91	6	15	1	0	1
BG	32	0	0	0	0	0
CZ	0	1	0	0	1	0
HR	187	1	0	26	0	0
HU	0	3	50	0	0	0
LT	0	51	14	4	13	0
LU	0	0	0	2	0	0
NL	0	0	0	1	0	0
PL	0	0	0	1	0	0
SE	0	0	0	0	1	0
SI	0	2	0	0	0	0

Source: Eurostat, extracted on13/05/15

Table 30. Imports of live bovine animals by country of origin, volume (tonnes) (2009-2014)

Third country	2009	2010	2011	2012	2013	2014
EU28 – total	**2,856**	**303**	**288**	**173**	**124**	**136**
Switzerland	2,649	240	198	105	107	96
Kosovo	0	0	0	0	0	17

Third country	2009	2010	2011	2012	2013	2014
Norway	2	51	14	4	1	12
Canada	187	2	13	3	4	11
Andorra	3	7	0	1	0	1
Uzbekistan	0	0	0	33	0	0
Bosnia and Herzegovina	0	0	0	26	0	0
Somalia	0	0	0	2	0	0
Belarus	0	0	0	0	13	0
Liechtenstein	1	0	0	0	0	0
Albania	15	0	0	0	0	0
Ethiopia	0	1	0	0	0	0
Morocco	0	0	15	0	0	0
Turkey	0	3	49	0	0	0

Source: Eurostat, extracted on13/05/15

7.1.2 Porcine animals

Note: only data on volume and value available from Eurostat (not number of live animals); data on volumes is reported below

Table 31. Imports of live porcine animals, volume (tonnes) (2009-2014)

Member State	2009	2010	2011	2012	2013	2014
EU28 – total	**291**	**259**	**81**	**101**	**71**	**145**
LU	0	0	0	0	5	65
SE	26	32	27	29	18	23
HU	0	0	0	0	0	21
FI	10	11	12	4	9	7
UK	22	37	0	0	17	7
NL	1	3	0	1	3	7
EE	4	4	5	12	6	6
DE	36	22	15	7	1	6
PL	51	5	4	19	4	4
AT	0	0	0	0	2	0
BE	0	0	0	0	3	0
CZ	0	0	0	28	0	0
FR	1	0	0	0	0	0
IT	0	1	0	0	2	0
LT	141	128	17	0	0	0
LV	0	16	0	0	0	0

Source: Eurostat, extracted on13/05/15

Table 32. Imports of live porcine animals by country of origin, volume (tonnes) (2009 -2014)

Third country	2009	2010	2011	2012	2013	2014
EU28 – total	**291**	**259**	**81**	**101**	**71**	**145**
Canada	34	48	12	39	15	69
Norway	43	47	43	38	33	46
Serbia	0	0	0	0	0	21
US	17	13	1	1	17	7
Switzerland	2	8	8	7	5	3
Russia	176	144	17	0	0	0
Not specified	20	0	0	17	0	0

Source: Eurostat, extracted on13/05/15

7.1.3 Ovine animals

Note: data on number of animals is only available for pure-bred breeding sheep (reported below); for all animals, only data on volume and value is available

Table 33. Trade in live ovine animals – imports from third countries of pure-bred breeding sheep (number of animals) (2009-2014)

Third country	2009	2010	2011	2012	2013	2014
EU28 – total	**438**	**130**	**61**	**102**	**127**	**433**
Switzerland	265	94	29	54	73	356
New Zealand	0	10	29	36	20	77
Canada	11	21	0	0	0	0
Norway	162	5	0	12	34	0
Russia	0	0	3	0	0	0

Source: Eurostat, extracted on13/05/15

Table 34. Trade in live ovine animals - imports from third countries (tonnes) (2009-2014)

Member State	2009	2010	2011	2012	2013	2014
EU28 – total	**28**	**9**	**322**	**6**	**7**	**29**
UK	1	3	1	2	1	17
ES	0	0	0	0	0	5
DE	12	2	1	2	1	4
AT	3	3	1	2	3	3
FR	0	0	0	0	1	1
BG	0	0	269	0	0	0

Member State	2009	2010	2011	2012	2013	2014
DK	9	0	0	0	0	0
EE	0	0	0	0	2	0
HU	3	0	49	0	0	0
IT	1	1	0	0	0	0

Source: Eurostat, extracted on13/05/15

Table 35. Trade in live ovine animals – imports from third countries (tonnes) (2009-2014)

Third country	2009	2010	2011	2012	2013	2014
EU28 – total	**28**	**9**	**322**	**6**	**7**	**29**
Switzerland	19	5	3	4	5	19
New Zealand	0	1	1	2	1	5
Andorra	0	0	0	0	0	5
Canada	1	2	0	0	0	0
Norway	9	1	0	0	2	0
Turkey	0	0	318	0	0	0

Source: Eurostat, extracted on13/05/15

7.1.4 Caprine animals

Table 36. Trade in live caprine animals – imports from third countries (number of animals) (2009- 2014)

Member State	2009	2010	2011	2012	2013	2014
EU28 – total	**549**	**137**	**360**	**120**	**154**	**358**
AT	207	64	37	52	34	93
DE	65	29	39	40	98	155
FR	209	44	4	18	10	35
ES	0	0	251	0	0	0
IT	65	0	16	10	12	73
PL	0	0	11	0	0	0
SK	3	0	0	0	0	0
Other Member States	0	0	2	0	0	2

Source: Eurostat, 2015

Table 37. Trade in live caprine animals – imports from third countries (number of animals) (2009-2014)

Third country	2009	2010	2011	2012	2013	2014
EU28 – total	**549**	**137**	**360**	**120**	**154**	**358**
Switzerland	546	93	108	113	152	356
Russia	3	0	0	0	0	2
Andorra	0	0	251	0	0	0
Chile	0	44	0	0	0	0
Liechtenstein	0	0	0	7	0	0
US	0	0	1	0	2	0

Source: Eurostat, extracted on13/05/15

7.1.5 Equine animals

Table 38. Trade in live equine animals – imports from third countries (number of animals) (2009-2014)

Member State	2009	2010	2011	2012	2013	2014
EU28 – total	**10,446**	**8,218**	**7,137**	**6,354**	**5,752**	**7,908**
NL	1,455	1,742	1,783	1,529	982	1,928
DE	1,771	1,841	1,861	2,032	1,694	1,786
SE	1,313	710	560	512	541	1,077
UK	906	823	591	575	730	883
FR	1,069	727	637	638	662	560
ES	301	293	278	196	203	466
IE	281	264	297	208	271	380
BE	111	52	46	129	246	313
DK	362	238	238	184	164	194
PL	34	50	74	65	37	60
HU	4	24	541	11	28	47
AT	47	59	36	43	45	45
IT	2,145	820	66	75	25	40
BG	27	42	33	17	33	39
FI	23	17	22	12	23	20
EE	0	7	13	5	15	19
LV	0	2	5	0	2	19
LT	472	424	15	6	5	10
PT	0	0	0	5	4	9
CZ	16	22	19	28	8	8
HR	74	28	8	14	3	5
CY	0	0	2	0	0	0
EL	4	2	0	0	6	0
LU	3	0	0	0	0	0
MT	0	1	0	1	0	0
RO	4	10	0	2	0	0
SI	3	0	8	60	16	0
SK	21	20	4	7	9	0

Source: Eurostat, extracted on13/05/15

Table 39. Trade in live equine animals – imports from third countries (number of animals) (2009 – 2014)

Third country	2009	2010	2011	2012	2013	2014
EU28 – total	**10,446**	**8,218**	**7,137**	**6,354**	**5,752**	**7,908**
US	3,001	2,298	2,195	1,875	1,615	2,633
Switzerland	1,290	1,219	1,090	1,140	1,189	1,267
Iceland	1,445	956	925	1,107	1,082	1,192
Argentina	1,591	1,308	789	622	474	515
Norway	360	373	391	355	377	913
Belarus	1,154	518	16	11	0	3
Andorra	202	203	220	123	121	391
United Arab Emirates	230	290	184	172	168	162
Uruguay	421	248	26	26	26	21
Canada	167	119	114	79	62	77
Other	585	686	1,187	844	638	734

Source: Eurostat, extracted on13/05/15

Intra-EU trade

Note: data on intra-EU exports may be different from intra-EU imports; the explanation of lack of comparability is below:

In theory, intra-EU trade statistics based upon Community concept should be fully comparable […]. Dispatches from Member State A to Member State B, as reported by A, should be almost equal to arrivals into B from A, as reported by B. […] However, since the Intrastat system came into operation, 19 bilateral comparisons have revealed major and persistent discrepancies in the intra-EU trade statistics. Therefore, comparisons dealing with intra-EU trade statistics have to be made cautiously and should take into account the existence of these discrepancies. The main reasons for the discrepancies are known and are represented by the thresholds, the nonresponse and their related adjustments; statistical confidentiality; triangular trade; time lags in the registration of the transactions; misclassification of goods; or by other methodological differences. Many Member States regularly carry out bilateral studies to find out at detailed product level where the problems are and to resolve them. However, remedies are not easily found despite all the analyses done.

Source: Methodology notes:
http://epp.eurostat.ec.europa.eu/newxtweb/setuplistmeta.do

7.1.6 Bovine animals

Note: aggregated statistics on the total number of bovine animals traded are not available from Eurostat; data is available at disaggregate level. Totals below have been calculated from the sum of the different categories.

Table 40. Intra-EU imports – live bovine animals (number of animals) (2009 – 2014)

	2009	2010	2011	2012	2013	2014
EU28 – total	**3,695,956**	**3,884,150**	**3,851,663**	**3,539,763**	**3,495,253**	**3,714,165**
Pure-bred for breeding	349,013	317,422	291,384	374,078	437,549	549,774
Other	3,346,943	3,566,728	3,560,279	3,165,685	3,057,704	3,164,391

Source: Eurostat, 2015

Table 41. Intra-EU exports – live bovine animals (number of animals) (2009 – 2014)

	2009	2010	2011	2012	2013	2014
EU28 – total	**4,212,290**	**4,226,836**	**5,025,021**	**3,807,875**	**3,742,424**	**3,707,816**
Pure-bred for breeding	332,919	267,082	229,418	218,836	218,536	231,911
Other	3,879,371	3,959,754	4,795,603	3,589,039	3,523,888	3,475,905

Source: Eurostat, extracted on 13/05/15

7.1.7 Porcine animals

Note: aggregated statistics on the total number of pigs are not available from Eurostat; data is available at disaggregate level (see categories in table below)

Table 42. Intra-EU imports – live porcine animals (number of animals) (2009 – 2014)

	2009	2010	2011	2012	2013	2014
EU28 – total (excluding non-domestic[19] species)	**23,994,989**	**25,826,474**	**25,324,695**	**27,288,101**	**28,522,279**	**29,753,858**
Purebred breeding swine	496,157	563,847	492,122	405,506	566,223	571,308
Domestic swine, weighing < 50 kg (excl. purebred for breeding)	13,391,083	15,028,860	15,205,637	17,112,315	17,841,988	19,964,761
Live domestic sows, having farrowed at least once, weighing >= 160 kg (excl. purebred for breeding)	359,144	376,831	303,252	292,822	276,661	233,593
Live domestic swine, weighing >= 50 kg (excl. sows having farrowed at least once and weighing >= 160 kg, and those purebred for breeding)	9,748,605	9,856,936	9,323,684	9,477,458	9,837,407	8,984,196

Source: Eurostat, extracted on13/05/15

Table 43. Intra-EU exports – live porcine animals (number of animals) (2009 – 2014)

	2009	2010	2011	2012	2013	2014
EU28 – total (excluding non-domestic species)	**24,165,846**	**26,501,926**	**25,539,196**	**27,684,572**	**29,707,405**	**29,446,925**
Purebred breeding swine	394,255	710,783	718,911	855,748	1,301,361	560,897
Domestic swine, weighing < 50	13,722,396	15,538,246	15,747,326	18,053,024	19,021,041	20,259,047

[19] Live swine of non-domestic species include, for example, wild boar and warthogs (European Commission, 2015)

	2009	2010	2011	2012	2013	2014
kg (excl. purebred for breeding)						
Live domestic sows, having farrowed at least once, weighing >= 160 kg (excl. purebred for breeding)	294,332	362,436	302,123	264,875	274,320	298,129
Live domestic swine, weighing >= 50 kg (excl. sows having farrowed at least once and weighing >= 160 kg, and those purebred for breeding)	9,754,863	9,890,461	8,770,836	8,510,925	9,110,683	8,328,852

Source: Eurostat, extracted on13/05/15

7.1.8 Ovine animals

Table 44. Intra-EU imports – live ovine animals (number of animals) (2009 – 2014)

	2009	2010	2011	2012	2013	2014
EU28 – total	**3,402,705**	**3,415,915**	**3,431,203**	**2,867,947**	**2,648,945**	**2,717,242**
Pure-bred sheep for breeding	23,278	20,087	27,514	20,634	38,804	64,147
Live lambs (sheep up to a year old) (excluding purebred breeding animals)	2,782,862	2,831,832	2,971,338	2,463,470	2,281,150	2,313,379
Live sheep (excluding lambs and purebred breeding animals)	596,565	563,996	432,351	383,843	328,991	339,716

Source: Eurostat, extracted on13/05/15

Table 45. Intra-EU exports – live ovine animals (number of animals) (2009 – 2014)

	2009	2010	2011	2012	2013	2014
EU28 – total	**4,010,997**	**3,824,041**	**3,611,026**	**2,867,134**	**2,884,724**	**2,720,355**
Pure-bred sheep for breeding	120,541	95,004	58,603	53,797	48,897	134,609
Live lambs (sheep up to a year old)	3,479,221	3,260,217	3,059,946	2,397,691	2,444,611	2,253,766

(excluding purebred breeding animals)						
Live sheep (excluding lambs and purebred breeding animals)	411,235	468,820	492,477	415,646	391,216	331,980

Source: Eurostat, extracted on13/05/15

7.1.9 Caprine animals

Table 46. Intra-EU imports – live caprine animals (number of animals) (2009 – 2014)

	2009	2010	2011	2012	2013	2014
EU28 – total	**60,824**	**99,374**	**78,324**	**59,452**	**38,389**	**42,746**
Purebred breeding goats	2,678	14	229	1,105	2,406	1,771
Live goats (excluding purebred for breeding)	58,146	99,360	78,095	58,347	35,983	40,975

Source: Eurostat, extracted on13/05/15

Table 47. Intra-EU exports – live caprine animals (number of animals) (2009 – 2014)

	2009	2010	2011	2012	2013	2014
EU28 – total	**44,721**	**17,609**	**49,285**	**35,049**	**43,477**	**23,189**
Purebred breeding goats	109	459	726	738	2,812	1,517
Live goats (excluding purebred for breeding)	44,612	17,150	48,559	34,311	40,665	21,672

Source: Eurostat, extracted on13/05/15

7.1.10 Equine animals

Table 48. Intra-EU imports – live equine animals (number of animals) (2009 – 2014)

	2009	2010	2011	2012	2013	2014
EU28 – total	**347,710**	**79,558**	**201,702**	**74,794**	**117,256**	**137,056**
Purebred breeding horses	269,846	12,184	49,927	13,677	57,764	30,631
Horses for slaughter	59,266	54,730	48,205	51,425	48,305	95,253
Live horses (excluding for slaughter, purebred for breeding)	18,598	12,644	103,570	9,692	11,187	11,172

Source: Eurostat, extracted on13/05/15

Table 49. Intra-EU exports – live equine animals (number of animals) (2009 – 2014)

	2009	2010	2011	2012	2013	2014
EU28 – total	**99,558**	**62,158**	**81,335**	**78,686**	**75,752**	**75,858**
Purebred breeding horses	22,254	9,781	28,915	30,104	21,071	17,190
Horses for slaughter	64,330	40,770	40,347	34,439	40,421	31,493
Live horses (excluding for slaughter, purebred for breeding)	12,974	11,607	12,073	14,143	14,260	27,175

Source: Eurostat, extracted on 13/05/15

8 Trade in reproductive materials

Notes:

- Eurostat only provides data on bovine semen imports; no data on other reproductive materials / other species are available from Eurostat
- Eurostat data on bovine semen imports for 2009 (=6,956,816 units) differ from the equivalent TRACES data from our previous study (=1,878,621 units) even not considering Norway, Switzerland
- Our 2009 data from the previous report is below

Table 50. Bovine reproductive materials are the largest component of the EU import trade in animal reproductive materials (2009)

Species	Number of imported units of semen	Number of imported embryos	Number of operators potentially affected
Bovine	1,878,621	4,062	53
Porcine	235	-	12
Ovine	1,441	-	2
Caprine		-	2
Equine*	261,145	-	51

Sources: Eurostat Structural Business Statistics (2009), extracted on 18/07/12; and TRACES data provided by DG SANCO (2009).

**Most, if not all, equine reproductive material imports are used in the production of animals destined for non-food uses.*

8.1 All animals - embryos

Table 51. Countries known to export embryos (2013)

Species	Country	Number of embryos exported
Bovine in-vivo derived (IVD)	US	15,896
	Canada	12,758
	Argentina	2,946
	Australia	2,426
	South Africa	659
	New Zealand	28
Bovine in-vivo fertilised ovum pick-up (IVF OPU)	Dominican Republic	590
	Canada	122
Sheep IVD	South Africa	399
	New Zealand	214
Goats IVD	South Africa	552
	New Zealand	171

Species	Country	Number of embryos exported
Swine IVD	Canada	118

Source: IETS, 2014. Note: data on exports are not available for most European and Asian countries. Underreporting is also likely due to information sensitivity.

8.2 Bovine animals

Table 52. Imports of bovine semen from third countries, units (2009 – 2014)

Third country	2009	2010	2011	2012	2013	2014
EU28 – total	**6,956,816**	**8,637,329**	**9,080,581**	**8,350,523**	**8,557,679**	**9,686,201**
US	3,718,110	4,310,917	4,259,280	3,973,683	4,303,762	5,335,783
Canada	2,613,608	3,384,688	3,615,642	3,483,059	3,279,045	3,378,018
Norway	66,294	413,371	574,755	388,942	517,953	455,385
New Zealand	342,828	316,596	251,594	305,198	248,830	270,223
Switzerland	113,834	159,610	349,380	146,039	163,021	174,249
Bosnia and Herzegovina	39,142	44,446	28,778	31,963	32,174	48,262
Russia	0	0	0	1,200	0	20,180
Brazil	0	0	0	0	0	2,577
Argentina	0	0	0	0	0	1,524
Australia	0	0	0	0	6,001	0
Iceland	0	0	0	0	5,840	0
China	0	0	0	10,000	1,032	0
Colombia	0	0	0	0	21	0
Costa Rica	0	0	0	8,110	0	0
Peru	0	0	0	2,328	0	0
Singapore	0	0	1,116	0	0	0
Turkey	0	0	36	0	0	0
Uruguay	60,000	7,701	0	0	0	0
South Africa	3,000	0	0	0	0	0
Not specified	0	0	0	1	0	0

Source: Eurostat, extracted on 13/05/15

9 Meat and dairy production and trade

9.1 Beef and dairy products

Table 53. Net bovine meat production in the EU by Member State, kT carcass weight equivalent (cwe), 2009-2014

MS	2009	2010	2011	2012	2013	2014*
EU28	**7,980**	**8,114**	**8,052**	**7,708**	**7,388**	**7,546**
AT	224	225	221	221	227	219
BE	255	263	272	262	250	258
BG*	29	20	21	20	19	18
CY	4	4	5	5	5	5
CZ	77	74	72	66	65	66
DE	1,190	1,201	1,171	1,150	1,115	1,139
DK	127	132	134	126	126	127
EE	14	12	11	11	9	9
EL	57	58	59	56	50	46
ES	598	607	604	591	581	571
FI	82	83	83	81	81	83
FR	1,480	1,535	1,573	1,491	1,421	1,433
HR	58	63	57	47	47	44
HU	32	28	26	25	23	24
IE	514	559	547	495	518	582
IT	1,055	1,075	1,009	981	855	825
LT	45	44	42	41	38	40
LU	9	10	9	9	8	9
LV	20	18	18	17	17	18
MT	2	1	1	1	1	1
NL	402	389	382	373	379	369
PL	389	391	390	378	347	424
PT	103	94	96	93	84	80
RO	159	102	113	101	93	93
SE	152	150	149	137	137	143
SI	35	36	36	33	32	32
SK	18	16	13	12	12	11
UK	850	924	936	883	848	878

* Estimate

Source: European Commission, 2015d. Short Term Outlook for EU arable crops, dairy and meat markets in 2015 and 2016. DG AGRI.

Table 54. Aggregate bovine meat production and trade in the EU, kT cwe, 2009-2014

	2009	2010	2011	2012	2013	2014*
Gross Indigenous Production	8,027	8,217	8,199	7,867	7,496	7,661
Net Production	7,980	8,114	8,052	7,708	7,388	7,546
Imports of meat	363	321	286	275	304	307
Import share of total production	5%	4%	3%	3%	4%	4%
Exports of meat	84	253	327	210	161	207
Export share of total production	1%	3%	4%	3%	2%	3%
Consumption	8,259	8,182	8,011	7,773	7,530	7,646

Source: Derived from European Commission, 2015d. Short Term Outlook for EU arable crops, dairy and meat markets in 2015 and 2016. DG AGRI.

Table 55. Value of cattle production in the EU, millions EUR (basic prices)

MS	2009	2010	2011	2012	2013	2014
EU28	**28,442**	**28,447**	**31,062**	**33,628**	**32,767**	**32,017**
AT	831	800	905	950	946	899
BE	1,172	1,185	1,193	1,162	1,115	1,123
BG	120	110	126	132	121	83
CY	10	10	10	11	12	12
CZ	282	247	264	265	256	248
DE	2,875	3,162	3,730	4,160	3,674	3,426
DK	334	365	398	434	421	403
EE	34	33	41	40	51	29
EL	252	204	256	234	233	227

MS	2009	2010	2011	2012	2013	2014
ES	2,269	2,325	2,495	2,643	2,502	2,400
FI	333	344	347	363	402	383
FR	7,290	7,175	7,483	8,005	8,149	8,008
IE	1,491	1,518	1,811	2,135	2,147	2,003
HR	238	242	239	223	169	153
HU	125	133	206	198	178	172
IT	3,249	3,199	3,450	3,581	3,373	3,259
LT	88	105	119	111	96	87
LU	56	55	57	75	64	70
LV	40	36	42	47	39	37
MT	4	4	3	4	4	3
NL	1,507	1,333	1,407	1,526	1,628	1,583
PL	951	969	1,101	1,155	1,107	1,190
PT	474	528	577	523	469	455
RO	448	211	255	288	303	331
SE	380	455	500	509	550	514
SI	139	138	154	151	143	139
SK	194	190	175	156	154	121
UK	3,260	3,368	3,717	4,550	4,460	4,659

Source: Eurostat, extracted 22/05/15

Table 56. Value of bovine meat imports by main countries of origin, millions EUR, 2009-2014

Country of origin	2009	2010	2011	2012	2013	2014

Argentina	462	439	449	397	373	372
Australia	63	66	96	112	150	181
Brazil	203	262	331	345	396	435
Namibia	68	62	87	84	67	78
New Zealand	34	45	32	37	43	41
The US	47	84	134	159	163	179
Uruguay	271	258	275	283	271	290
Total (including rest of world)	**1215**	**1312**	**1458**	**1444**	**1502**	**1625**

*Includes meat of bovine animals, fresh or chilled; meat of bovine animals, frozen; fresh or chilled edible offal of bovine animals; frozen edible bovine tongues; frozen edible bovine livers; frozen edible bovine offal (excluding tongues and livers)

Source: Derived from Eurostat, extracted on 22/05/15

Table 57. Value of bovine meat exports, by main export destinations, millions EUR, 2009-2014

Export destination	2009	2010	2011	2012	2013	2014
Bosnia and Herzegovina	15	21	33	30	48	68
Switzerland	49	68	96	80	97	93
Norway	15	3	26	52	41	30
Russia	66	224	268	224	146	141
Turkey	1	195	340	103	1	2
Total (including rest of world)	**265**	**702**	**1,042**	**754**	**649**	**811**

*Includes meat of bovine animals, fresh or chilled; meat of bovine animals, frozen; fresh or chilled edible offal of bovine animals; frozen edible bovine tongues; frozen edible bovine livers; frozen edible bovine offal (excluding tongues and livers)

Source: Derived from Eurostat, extracted on 22/05/15

Table 58. Domestic dairy production in the EU by product type, kT, 2009-2014

	2009	2010	2011	2012	2013	2014*
Fresh dairy products (milk and cream)	46,589	46,992	46,800	46,717	47,063	47,296
Whole milk powder	693	704	691	672	728	693
Skimmed milk powder	1,047	965	1,096	1,109	1,101	1,047
Butter	2,082	2,073	2,110	2,153	2,137	2,220
Cheese	9,108	9,341	9,391	9,603	9,665	9,840
Total	**59,518**	**60,075**	**60,087**	**60,254**	**60,693**	**61,480**

*Estimate

Source: European Commission, 2015d. Short Term Outlook for EU arable crops, dairy and meat markets in 2015 and 2016. DG AGRI.

Table 59. Value of dairy trade in the EU, millions EUR (basic prices), 2009-2014

	2009	2010	2011	2012	2013	2014
Imports	558	576	628	638	654	705
Exports	5,168	7,107	8,079	8,717	9,331	10,217

Source: Derived from European Commission, 2015d. Short Term Outlook for EU arable crops, dairy and meat markets in 2015 and 2016. DG AGRI.

9.2 Pig meat

Table 60. Net pig meat production in the EU by Member State, kT cwe, 2009-2014

MS	2009	2010	2011	2012	2013	2014*
EU28	**22,015**	**22,686**	**22,993**	**22,518**	**22,359**	**22,681**
AT	533	542	544	530	528	522
BE	1,082	1,124	1,108	1,110	1,131	1,118
BG	73	69	71	71	71	76
CY	58	57	55	52	49	43
CZ	300	291	275	250	243	245
DE	5,265	5,463	5,615	5,473	5,487	5,446
DK	1,585	1,668	1,720	1,606	1,591	1,589
EE	33	34	34	38	38	41
EL	125	121	122	122	115	103
ES	3,291	3,369	3,469	3,466	3,431	3,560
FI	206	203	202	193	195	186
FR	2,038	2,039	2,023	1,977	1,954	1,955
HR	83	148	128	127	107	94
HU	427	452	433	393	368	399
IE	196	214	234	241	239	254
IT	1,628	1,635	1,573	1,624	1,631	1,598
LT	60	73	75	79	87	86
LU	10	10	10	11	11	12
LV	39	37	38	36	36	38
MT	7	8	7	6	6	6

NL	1,275	1,288	1,347	1,332	1,307	1,376
PL	1,719	1,850	1,904	1,815	1,786	1,940
PT	396	407	407	384	367	382
RO	471	418 b	425	426	421	438
SE	262	265	257	234	235	237
SI	44	44	39	36	30	31
SK	88	84	71	65	63	44
UK	720	772	806	825	833	862

* Estimate

Source: European Commission, 2015d. Short Term Outlook for EU arable crops, dairy and meat markets in 2015 and 2016. DG AGRI.

Table 61. Aggregate pig meat production and trade in the EU, kT cwe, 2009-2014

	2009	2010	2011	2012	2013	2014*
Gross Indigenous Production	22,121	22,753	23,055	22,554	22,385	22,717
Net Production	22,015	22,686	22,993	22,518	22,359	22,681
Imports of meat	45	29	18	19	16	15
Import share of total production	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
Exports of meat	1,510	1,815	2,151	2,154	2,201	1,921
Export share of total production	7%	8%	9%	10%	10%	8%
Consumption	20,550	20,900	20,860	20,384	20,173	20,775

Source: adapted from European Commission, 2015d. Short Term Outlook for EU arable crops, dairy and meat markets in 2015 and 2016. DG AGRI.

Table 62. Value of pig production, millions EUR (basic prices), 2009-2014

MS	2009	2010	2011	2012	2013	2014
EU28	**31,902**	**31,151**	**33,706**	**36,704**	**37,351**	**35,160**
BE	1,324	1,397	1,551	1,657	1,626	1,457
BG	162	119	138	143	163	145
CZ	380	357	361	371	369	335
DK	2,470	2,566	2,900	3,183	3,201	3,085
DE	6,688	5,774	5,833	6,603	6,823	6,132
EE	73	69	87	87	91	86
IE	295	328	389	436	470	465
EL	252	254	336	269	266	250
ES	4,642	4,927	5,528	5,945	6,097	5,924
FR	2,868	2,847	3,176	3,426	3,450	3,174
HR	293	229	224	215	192	167
IT	2,507	2,459	2,801	2,971	3,078	2,998
CY	62	63	63	69	66	67
LV	71	70	76	71	76	68
LT	157	142	136	169	161	139
LU	21	21	22	28	28	25
HU	648	607	651	722	713	727
MT	14	14	13	11	14	15
NL	2,434	2,316	2,547	2,859	2,816	2,629
AT	726	720	774	857	857	788
PL	2,362	2,391	2,553	2,727	2,636	2,415

MS	2009	2010	2011	2012	2013	2014
PT	545	545	552	627	627	584
RO	934	906	833	866	965	950
SI	64	61	59	56	49	48
SK	143	130	137	143	155	133
FI	299	288	304	324	349	310
SE	370	402	421	454	495	438
UK	1,096	1,150	1,242	1,415	1,518	1,605

Source: Eurostat, extracted 22/05/15

Table 63. Value of pig meat imports by main countries of origin, millions EUR, 2009-2014*

Country of origin	2009	2010	2011	2012	2013	2014
The US	18.8	20.3	11.6	10.4	6.8	7.8
Chile	49.1	29.2	24.4	21.8	17.8	11.2
Switzerland	2.9	5.2	4.3	5.1	5.6	7.7
Total (including rest of world)	**88.6**	**69.3**	**66.5**	**68.4**	**50.7**	**51.2**

*Includes fresh, chilled, frozen meat of swine; fresh, chilled edible offal of swine; frozen edible livers of swine; frozen edible offal of swine (excluding livers)

Source: Derived from Eurostat, 2015.

Table 64. Value of pig meat exports by main export destinations, millions EUR , 2009-2014*

Export destination	2009	2010	2011	2012	2013	2014

China	140	190	484	811	903	957
The US	124	134	136	159	170	255
Australia	123	127	122	183	157	213
Hong Kong	392	410	670	562	540	595
South Korea	185	230	488	385	261	557
Total (including rest of world)	**2643**	**3247**	**4476**	**5014**	**4991**	**4932**

*Includes fresh, chilled, frozen meat of swine; fresh, chilled edible offal of swine; frozen edible livers of swine; frozen edible offal of swine (excluding livers)

Source: Derived from Eurostat, 2015.

9.3 Sheep and goat meat

Table 65. Net sheep and goat meat production in the EU by Member State, kT cwe, 2009-2014

MS	2009	2010	2011	2012	2013	2014*
EU-28	**1,007**	**948**	**956**	**921**	**910**	**898**
AT	8	8	8	8	8	8
BE	1	3	3	3	3	3
BG	21	22	23	24	26	27
CY	6	5	5	6	5	5
CZ	4	4	4	5	5	5
DE	39	38	40	38	37	32
DK	2	2	2	2	2	2
EE	1	1	1	0	0	0
EL	135	133	130	124	102	98

MS	2009	2010	2011	2012	2013	2014*
ES	133	142	142	132	127	120
FI	1	1	1	1	1	1
FR	108	109	112	108	104	105
HR	7	7	6	6	6	6
HU	0	1	1	1	1	1
IE	55	48	48	54	57	58
IT	59	37	34	32	37	26
LT	1	1	1	1	1	1
LU	0	0	0	0	0	0
LV	1	1	1	1	1	6
MT	0	0	0	0	0	0
NL	15	15	15	15	14	14
PL	2	1	1	1	1	1
PT	19	21	20	18	18	19
RO	78	57	61	58	54	54
SE	6	5	6	6	5	6
SI	2	2	2	2	2	2
SK	1	1	1	1	1	1
UK	303	283	289	276	290	299

* Estimate

Source: European Commission, 2015d. Short Term Outlook for EU arable crops, dairy and meat markets in 2015 and 2016. DG AGRI.

Table 66. Aggregate sheep and goat meat production and trade in the EU, kT cwe, 2009-2014

	2009	2010	2011	2012	2013	2014*
Gross Indigenous Production	1,010	959	978	947	943	934
Net Production	1,007	948	956	921	910	898
Imports of meat	272	240	222	190	200	188
Import share of total production	27%	25%	23%	20%	21%	20%
Exports of meat	6	12	15	25	36	32
Export share of total production	1%	1%	2%	3%	4%	3%
Consumption	1,273	1,176	1,163	1,086	1,073	1,053

Source: adapted from European Commission, 2015d. Short Term Outlook for EU arable crops, dairy and meat markets in 2015 and 2016. DG AGRI.

Table 67. Value of sheep and goat production, millions EUR (basic prices), 2009-2014

MS	2009	2010	2011	2012	2013	2014
EU28	**5,237**	**5,053**	**5,684**	**5,517**	**5,244**	**5,383**
AT	25	23	25	27	26	27
BE	15	12	2	8	9	10
BG	149	122	153	166	114	87
CY	24	24	24	24	23	23
CZ	2	2	3	3	3	4
DK	5	5	5	4	4	4
DE	144	139	144	158	195	198
EE	2	3	3	3	3	3
EL	789	775	843	725	662	645

MS	2009	2010	2011	2012	2013	2014
ES	1,066	798	931	983	859	846
IE	158	164	188	203	202	223
FI	7	6	7	8	8	9
FR	711	776	799	794	806	831
HR	48	52	53	58	32	42
HU	52	51	56	57	58	56
IT	228	215	192	196	188	178
LT	3	3	3	4	5	5
LU	1	1	1	1	1	1
LV	2	2	2	3	3	3
MT	0	0	0	0	0	0
NL	127	92	81	104	89	87
PL	4	7	7	7	8	7
PT	86	104	103	96	94	99
RO	198	146	210	194	196	258
SE	19	22	26	27	25	24
SI	9	8	6	6	5	5
SK	12	15	15	10	10	8
UK	1,352	1,485	1,800	1,647	1,616	1,698

Source: Eurostat, extracted 22/05/15

Table 68. Value of sheep and goat meat imports by main countries of origin, millions EUR, 2009-2014*

Country of origin	2009	2010	2011	2012	2013	2014
Australia	79	79	112	81	81	102
New Zealand	839	842	991	872	796	826
Total (including rest of world)	**993**	**1001**	**1198**	**1007**	**923**	**981**

*Includes fresh, chilled, frozen meat of sheep and goats. Imports of sheep and goat offal is not included as only aggregated data for sheep, goat and equine offal was available in Eurostat. The proportion attributable to imports of sheep and goat offal is not known.

Source: Derived from Eurostat, 2015

Table 69. Value of sheep and goat meat exports by main export destinations, millions EUR, 2009-2014*

Export destination	2009	2010	2011	2012	2013	2014
Angola	1	2	2	1	1	2
Hong Kong	0.6	1	4	18	34	30
Vietnam	2	3	4	3	0.0	0.0
Switzerland	8	15	23	22	22	20
Total (including rest of world)	**20**	**42**	**59**	**76**	**102**	**102**

*Includes fresh, chilled, frozen meat of sheep and goats. Exports of sheep and goat offal is not included as only aggregated data for sheep, goat and equine offal was available in Eurostat. The proportion attributable to exports of sheep and goat offal is not known.

Source: Derived from Eurostat, 2015

9.4 Horsemeat

Table 70. Value of equine production, millions EUR (basic prices), 2009-2014

MS	2009	2010	2011	2012	2013	2014
EU28	**740**	**834**	**840**	**910**	**917**	**982**
AT	7	1	1	1	2	3
BE	4	0	5	4	4	4
BG	2	1	2	0	0	0
CY	0	0	0	0	0	0
CZ	0	0	0	0	0	0
DE	66	56	66	68	66	66
DK	9	16	19	19	21	21
EE	0	0	0	0	0	0
EL	1	2	2	2	3	3
ES	60	71	68	66	54	49
FI	3	3	3	2	2	1
FR	45	62	56	30	58	58
HR	3	2	1	1	1	1
HU	3	2	2	3	2	2
IE	173	151	137	195	191	248
IT	67	70	75	80	85	90
LT	0	3	1	1	0	0
LU	0	0	0	0	0	0
LV	0	0	0	0	0	0
MT	0	0	0	0	0	0

MS	2009	2010	2011	2012	2013	2014
NL	14	82	87	103	103	104
PL	30	49	19	19	18	18
PT	2	2	3	7	8	7
RO	11	12	36	27	22	21
SE	61	56	61	62	63	60
SI	3	3	3	4	4	4
SK	0	0	0	0	0	0
UK	173	188	196	216	210	221

Source: Eurostat, extracted 22/05/15

Table 71. Value of horse meat imports by main countries of origin, millions EUR, 2009-2014*

Country of origin	2009	2010	2011	2012	2013	2014
The US	0.0	0.6	5	7	12	16
Argentina	38	32	29	27	29	25
Australia	4	2	0.7	1	1	0.4
Brazil	17	6.0	4	5	3	2
Canada	28	27	27	29	18	14
Mexico	19	21	17	20	18	16
Uruguay	10	9	11	11	7	8
Total (including rest of world)	**115**	**98**	**94**	**100**	**89**	**81**

*Includes meat of horses, asses, mules or hinnies, fresh, chilled or frozen. Imports of equine offal is not included as only aggregated data for sheep, goat and equine offal was available in Eurostat. The proportion attributable to imports of equine offal is not known.

Source: Derived from Eurostat, 2015.

Table 72. Value of horse meat exports by main export destinations, millions EUR, 2009-2014*

Export destination	2009	2010	2011	2012	2013	2014
Switzerland	1.6	2.2	3.5	6.5	6.0	6.8
Japan	0.9	0.9	1.0	1.0	1.5	1.8
Kazakhstan	:	1.2	4.1	3.0	1.5	1.7
Russia	:	0.0	0.3	1.4	:	0.1
Total (including rest of world)	**2.5**	**4.4**	**8.9**	**12.9**	**11.5**	**11.7**

: No data available

*Includes meat of horses, asses, mules or hinnies, fresh, chilled or frozen. Exports of equine offal is not included as only aggregated data for sheep, goat and equine offal was available in Eurostat. The proportion attributable to exports of equine offal is not known.

Source: Derived from Eurostat, 2015.

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